

MEN, MONEY, MACHINES
STUDIES COMPARING COLLIERY OPERATIONS AND FACTORS OF PRODUCTION
IN BRITISH COLUMBIA'S COAL INDUSTRY TO 1891

by

DANIEL THOMAS GALLACHER
M.A., University of Victoria, 1970

A DISSERTATION SUBMITTED IN PARTIAL FULFILLMENT OF
THE REQUIREMENTS FOR THE DEGREE OF
DOCTOR OF PHILOSOPHY

in
THE FACULTY OF GRADUATE STUDIES
Department of History

We accept this dissertation as conforming
to the required standard

THE UNIVERSITY OF BRITISH COLUMBIA
May, 1979

© Daniel Thomas Gallacher, 1979

In presenting this thesis in partial fulfilment of the requirements for an advanced degree at the University of British Columbia, I agree that the Library shall make it freely available for reference and study.

I further agree that permission for extensive copying of this thesis for scholarly purposes may be granted by the Head of my Department or by his representatives. It is understood that copying or publication of this thesis for financial gain shall not be allowed without my written permission.

Department of HISTORY

The University of British Columbia
2075 Wesbrook Place
Vancouver, Canada
V6T 1W5

Date 12 April 1979

ABSTRACT

of "

Men, Money, Machines
Studies Comparing Colliery Operations and Factors of Production
in British Columbia's Coal Industry to 1891.

by
Daniel T. Gallacher

Coal mining in nineteenth century British Columbia was confined almost exclusively to the tidewater coal measures of Vancouver Island where it was expanded rapidly from 1871 to 1891. This dissertation's purposes are to describe the coal industry's rise, account for its fast growth in the seventies and eighties, and assess the coal trade's general impact upon the region's economy.

The approach is thematic, focusing in turn upon coal lands, capital, management, labour, technology, markets, production, and productivity. Standard research, organization, and interpretation methods for economic history are followed, including thorough descriptive use of statistical data.

Comparisons are intensive and far-reaching, resulting in a close-knit framework upon which important conclusions are based. No effort has been made, however, to offer extensive biographical information on the coal trade's leading personalities.

These studies confirm the coal industry's rapid expansion, and determine that all factors of production can explain that phenomenon

with a high degree of certainty, though market demand and management technique do so more readily than other agents. It is shown that management methods and styles evolved quickly, the most effective being the owner-manager type as practiced by Robert Dunsmuir, the industry's most successful proprietor. Risk capital was drawn from various sources, including mainly British direct investments, local savings, partnerships (often involving foreign investors), and ploughed-back profits. Entrepreneurs and promoters were active in attempting to develop coal properties from 1864 on, though only those highly experienced in mining and management succeeded.

Chronic worker shortages, coupled with the physical problems associated with coal mining in mountainous terrain, forced coal operators to opt early for labour saving technology imported almost exclusively from Britain. The introduction of large numbers of Oriental colliers by Dunsmuir after 1870, (who were willing to work at half the wages whites would), slowed the technological advance of the industry, but not annual rates of production increases. Considerable friction between white workers and management resulted from the latter's initiatives with Oriental labour, while the owners' policy of severely restricting wage-rates caused further serious labour problems, including a high number of work stoppages. Mine safety, job security, and general working conditions also were contentious issues.

B.C.'s early collieries relied heavily upon the California market which often was unsteady, but which accounted for approximately seventy-five percent of all sales during the years 1849-91. Domestic

users were mainly shipping companies, light industry, and households. Much of the local market was handled at the pithead. The major coal companies streamlined their channels of distribution by opening their own sales offices in Victoria and San Francisco, and in the case of Dunsmuir, by also building a collier fleet and a railway of his own.

The coal industry had a major influence upon southern Vancouver Island's economy, but not a large impact upon the remainder of the province. No determined attempts were made by coal proprietors or other capitalists to create secondary industries linked to coal production, though colliery owners did invest in land, transport, and retail-wholesale ventures designed either to service their mining activities or to diversify their personal holdings. Such moves occurred later-on, however, as the main thrust of their initial efforts was to establish and maintain the coal trade with California.

CONTENTS

TABLES	vi
ILLUSTRATIONS	viii
ACKNOWLEDGEMENTS	x
ABBREVIATIONS USED	xi
INTRODUCTION	xiii
Chapter 1 <i>MINES and MINERALS</i>	1
2 <i>SERVANTS: COMPANY and CIVIL</i>	42
3 <i>RESIDENT MANAGERS</i>	84
4 <i>PROMOTERS and SPECULATORS</i>	134
5 <i>OWNER-MANAGERS</i>	169
6 <i>MINERS</i>	196
7 <i>MACHINES</i>	235
8 <i>MARKETS and SALES</i>	263
9 <i>CONCLUSIONS</i>	300
BIBLIOGRAPHY	309
VITA	

TABLES

Table	Title	Page
1-1	Average Analysis of Various Fuels	7
1-2	Hydrogen and Oxygen in Various Fuels	7
1-3	Estimate of World Coal Reserves (1913)	8
1-4	Estimate of World Coal Reserves (1974)	9
1-5	Ultimate Analysis of Some Vancouver Island Coals	14
2-1	Columbia District Profit Balance (selected years)	44
2-2	Bore-hole Results of John Muir and Party (1850)	51
2-3	Coal Shafts and Pits at Beaver Harbour (1852)	58
2-4	Comparative Coal Prices (1862)	74
2-5	Coal Imports by Source at San Francisco	75
2-6	Nanaimo Coal Co. Exports (1852-62)	75
2-7	Coal Production on Vancouver Island (1849-62)	77
3-1	VCMLC Coal Production and Sales, 1863-69	101
3-2	VCMLC Coal Production and Sales, 1874-91	117
4-1	East Wellington Colliery Statistics, 1883-91	161
5-1	Composition of Douglas, Newcastle, and Wellington Seams.	175
5-2	Results of HMS <i>Boxer</i> Trials on Van. Is. Coals, 1870	176
5-3	Dunsmuir, Diggle Coal Production and Sales, 1874-83	179
5-4	R. Dunsmuir & Sons Coal Production and Sales, 1884-89	186

Table	Title	Page
5-5	Wellington Colliery Production and Sales, 1888-91	188
5-6	Union Colliery Production and Sales, 1888-91	190
6-1	HBC Colliery Statistics, 1849-62	204
6-2	BC Collieries: Workforce by Employee Groups, 1874-90	213
6-3	B.C. Collieries: Major Accident Statistics, 1877-90	218
6-4	B.C. Collieries: Wage Rate and Payroll Statistics, 1874-91	228
6-5	B.C. Collieries: Labour Productivity Statistics, 1874-91	229
7-1	B.C. Collieries: Plant Value Statistics, 1874-91	256
7-2	B.C. Collieries: Large Steam Machines in Operations and Machine Productivity, 1874-91	259
8-1	Prices of Nanaimo and Other Coal at San Francisco	275
8-2	Nanaimo Coal Co.: Coal Production and Sales, 1849-62	277
8-3	Coal Entering at San Francisco, 1862-76	283
8-4	B.C. Coal Exports, 1874-91	285
8-5	Exports as Percent of Own Colliery Output and of the Provincial Total	287
8-6	VCMLC Coal Sales, 1863-69	289
8-7	Vessels Loading Coal at Nanaimo, March 1863	290
8-8	Coal Imports by Source at San Francisco, 1887-89	294
8-9	B.C. Coal Sold for Home Consumption, 1862-91	296

LIST OF ILLUSTRATIONS

Figure	Title	Page
1-1	British Columbia: Coal Formations, 1970's (map)	3
1-2	British Columbia: Annual Coal Production, 1860-1960	4
1-3	Vancouver Island: Early Coal Finds (map)	11
1-4	Nanaimo Coal Mined to Present (map)	16
1-5	Major Seams Nanaimo series	17
1-6	East Wellington mine: cross-section	17
1-7	Comox Coal Mined to Present (map)	19
2-1	HBC Coal Mining Hierarchy, 1849	48
2-2	Vancouver Island: Earliest Coal Pits (map)	57
2-3	HBC Coal Mining Hierarchy, 1853	66
2-4	HBC Coal Output, 1849-62	76
3-1	VCMLC Land Purchase, 1862 (map)	88
3-2	VCMLC Corporate Hierarchy, 1862-89	93
3-3	VCMLC Coal Production, 1863-91	119
4-1	British Columbia: Early Coal Licence Locations (map)	145
5-1	Dunsmuir, Diggle Co. Hierarchy, 1874	185
5-2	R. Dunsmuir & Sons Hierarchy, 1884	185
5-3	Dunsmuir's Collieries' Output, 1871-91	189
6-1	Adult Whites: Percent of Colliery Labour, 1874-90	214
6-2	Colliery Accidents: Percent of Workforce Injured	219

Figure	Title	Page
6-3	Coal Output Rate per Injury, 1877-90	220
6-4	Colliery Payrolls, 1874-90	230
6-5	Payroll Cost per Ton of Output, 1874-90	231
6-6	Coal Output per Employee, 1874-91	232
7-1	B.C. Collieries: No. of Steam Machines	252
7-2	B.C. Collieries: Declared Plant Values	257
7-3	Coal Output per Steam Machine	260
8-1 B	B.C. Coal: Channels of Distribution, 1859-91	265
8-2	B.C. Coal Exports, 1874-91	286
8-3	Exports as Percent of Coal Output	288

ACKNOWLEDGEMENTS

I am indebted to my supervisor, Professor John Norris, whose insights, advice, and insistence upon high standards developed within me a totally new approach to economic history. I also am grateful to the director of the British Columbia Provincial Museum, R. Yorke Edwards, who consistently supported my research, and to the assistant director, William Barkley, who granted me a much needed study leave.

I thank my associates in the modern history division for their patience and interest, though none more so than Ms. Terry Hanna, who, in addition to being a splendid typist, never missed a deadline.

The staffs of the Provincial Archives of both British Columbia and Manitoba (including the Hudson's Bay Company Archives in Winnipeg) were most helpful, and thanks is due, too, to the Public Archives of Canada. Dr. Alex Fraser Buckham, his wife Dora, and William Johnstone brought forth a remarkable collection of documents and other materials now located mainly in the Provincial Archives of British Columbia. Keith Ralston greatly assisted my research by suggesting highly important lines of inquiry. Provincial government agencies like the Department of Mines, the Graphics Reproductions Service of the Environment Ministry, and the Central Statistics Bureau responded immediately and generously to my requests for technical assistance.

There are many others to whom I owe heartfelt thanks, particularly my wife, Joan, without whose forbearance and support these past years the preparation of this dissertation would not have been possible.

Whatever errors or omissions exist are solely my own.

ABBREVIATIONS USED

AR	<i>Annual Report</i>
BCCSB	British Columbia Central Statistics Bureau (Victoria, 1979)
BCHQ	<i>British Columbia Historical Quarterly</i>
BCPMmh	British Columbia Provincial Museum, modern history division
BSC	Baynes Sound Co.
BSCMC	Baynes Sound Coal Mining Co.
BU	A.F. Buckham collection (PABC MSS)
CAJ	<i>Canadian Army Journal</i>
CCLW	Chief Commissioner of Lands and Works (B.C.)
CHR	<i>Canadian Historical Review</i>
CIMM	Canadian Institute of Mining and Metallurgy
CPR	Canadian Pacific Railway
DCB	<i>Dictionary of Canadian Biography</i>
DDC	Dunsmuir, Diggle Ltd. correspondence
EHR	<i>Economic History Review</i>
E & N RR	Esquimalt and Nanaimo Railway
GSC	Geological Survey of Canada
HBC	Hudson's Bay Company
HBCA (PAM)	Hudson's Bay Company Archives (Provincial Archives of Manitoba)
HBRs	Hudson's Bay Record Society
HMS	Her Majesty's Ship
HOC	House of Commons
JRSS	<i>Journal of the Royal Society of Scotland</i>
NCC	Nanaimo Coal Co.

n.d.	no date
NP	C.S. Nicol papers (PABC MSS)
n.p.	no page
NPACC	North Pacific Anthracite Coal Co.
NVCMCLC	New Vancouver Coal Mining and Land Co.
PABC	Provincial Archives of British Columbia
md	map division
MSS	Manuscripts division
vf	vertical files
PAC	Public Archives of Canada
QCCMC	Queen Charlotte Coal Mining Co.
QP	Queen's [King's] Printer
RN	Royal Navy
SBC	Statutes of British Columbia
SPBC	Sessional Papers of British Columbia
UBC	University of British Columbia
VCMLC	Vancouver Coal Mining and Land Co.

INTRODUCTION

British Columbia has been a coal producer since 1849 when the Hudson's Bay Company began mining the Susquash coal measures on northern Vancouver Island. Within twenty years of start-up, the province's coal trade was attracting scores of local and foreign investors eager to enter the new industry and profit from what then appeared to be a fast-growing California market. Yet only a few coal entrepreneurs succeeded in erecting working collieries, and only two firms - the Vancouver Coal Mining and Land Co. and R. Dunsmuir & Sons - rose to a level of prominence. The main purpose of this study is to account for the rapid expansion of the province's coal industry between 1871-91. During that period annual coal output rose from 34,866 tons to 1,029,097 - an increase of approximately 3,000 percent.¹ It is argued in the pages to follow that although all factors of production can explain with a high degree of certainty the industry's fast growth in that period, market demand and managerial technique most readily account for its progress.

Essentially, this dissertation is a combined study making two kinds of comparisons: coal company performances to one another, and the relative influence of production agents - coal lands, capital, labour, technology, markets, management - upon both output and each other. It begins by describing the geology and minerology of those coal measures.

¹ Annual value of all coal sales for the same period climbed from \$493,836 to \$3,087,291. British Columbia, Economic Council Research Dep't, "Statistics of Industry in B.C. 1871 to 1934", Table M2, unpub. report, Victoria (1935). Fully three quarters of the province's aggregate coal production from 1849-91 was exported to California.

worked to 1891. Subsequent themes explored are the reasons why coal mining was begun on Vancouver Island, the various types of labour and technology used, the pursuit, development, and maintenance of markets, the sources and employment of capital, and, finally, the specific causes of production and productivity increases over time.

While this dissertation's boundaries are carefully set to exclude all matters not directly related to the coal industry, it has considerable relevance for the wider study of Canada's economy. Those interested in finding further evidence to support the "staple theory" of Canadian history will have much in this thesis to consider, as will those who seek to confirm the argument that British Columbia's economy has been what one scholar has termed "primarily [a case of] extraction and processing of a few natural resources".² In another vein, I had hoped that my research would have brought-forth important evidence either to support or deny the view that investments in staples - in this instance B.C.'s coal industry - by Canadian and foreign capitalists drained funds that otherwise could have been used to develop a significant manufacturing sector. I did not uncover such proof, mainly, I believe, because British Columbians of the time did not place a high priority on secondary industry. Their emphasis instead was on quickly improving

2 Ronald A. Shearer. "The Economy of British Columbia", *Trade Liberalization and a Regional Economy: Studies of the Impact of Free Trade on British Columbia*, Toronto (1971), p. 3. Equally emphatic upon the importance to B.C. of staple products, (i.e. marketable commodities with "a large natural resource content"), is R.E. Caves and R.H. Holton, *The Canadian Economy. Prospect and Retrospect*, Cambridge, Mass. (1959), pp. 30-9 and 218-22. Note, too, J.E. Peters and R.A. Shearer, "The Structure of British Columbia's External Trade, 1939 and 1963", *B.C. Studies* 8:34-46 (1970). Chapters 2, 8 and 9 of this thesis all touch further on this theme.

the region's balance of trade by increasing exports of raw materials on one hand, and on rapidly enlarging the population through immigration both to offset chronic labour shortages and to build a bigger domestic market for native products on the other.³ There is some confirmation here, however, of the argument recently put forth by Donald Paterson that British direct investments in Canadian mining ventures were aimed at purchasing well-established mines rather than at exploring and developing unproven claims. This view is borne-out by the coal industry's experience, especially in the cases of the Vancouver Coal Mining and Land Company, (which was among the oldest of British direct investments in Canada), and the majority of speculative coal mining ventures in B.C.'s coastal areas, (which failed largely because of their promoters' failure to raise sufficient development and working capital).⁴

Although various coal personalities are examined in some detail, no attempt has been made to offer a definitive biography of any figure.

3 Leading the current debate in this field is R.T. Naylor who argues forcefully the Canadian capitalism after Confederation was dominated by merchants and financiers whose investments overwhelmingly favoured commercial rather than industrial (i.e. manufacturing) activities which in turn perpetuated Canada's reliance upon staples wherein capital needs are more for land, transport, and services than for technology. *The History of Canadian Business, 1867-1914*, Toronto (1975), 2 vols. (See bibliography for other works by Naylor). Full discussion on B.C. coal entrepreneurs is found in chapters 2-5 below. Brief note is made later in this thesis of those who have published either in support of or in opposition to Naylor's view.

4 Donald Paterson, *British Direct Investment in Canada 1890-1914. Estimates and Determinants*, Toronto (1976). See mainly chaps. 3 and 4 for treatment of this theme. For a clear indication of American (and some Canadian) direct investment in B.C. mining see F.W. Howay *et al*, *British Columbia and the United States*, Toronto (1942), chap. 11; W.J. Trimble, *The Mining Advance into the Inland Empire*, Madison (1914), pp. 11-2, 58-9, 246-7 is useful as background.

Instead, it is their attitudes, aims, and actions as pertaining to the coal trade that are described and analyzed, for to do otherwise would carry this thesis far beyond its main purpose. I have made my focus both narrow and sharp as these comparative studies are in an area very weak in historiography. It is hoped, therefore, that among its effects, this dissertation will lay a strong foundation upon which further scholarly histories on British Columbia's coal industry can proceed.

Since these studies are written as much from the museum curator's point of view as that of an economic historian, there is considerable emphasis given to the physical features of coal mining, though every effort has been made to avoid unnecessary detail. The technical descriptions add credibility to the arguments, and possibly make for more interesting reading. There are some terms that bear watching: Management, for example, has both specific and general meanings. In the precise sense of the term it denotes senior colliery and other coal officials appointed directly by the owners to carry-out the latter's policies. Hence it is the executive level of the industry. When used in the general sense, however, management encompasses administrators (owners, mainly), managers, and supervisors (who were in charge of actual operations). Technology is another term commonly found in these pages that requires definition. Here it should be taken to mean machinery (modern for its time) that was installed with the aim either of decreasing management's reliance on hand labour, or of increasing productivity, or both. In practice, such machinery tended to be large steampowered equipment that became part of the collieries' fixed assets. Finally, the terms production agents and factors of production are synonymous.

MINES and MINERALS

COAL IN BRITISH COLUMBIA In terms of total value to date, coal is among British Columbia's highest ranking minerals. The base metals copper, zinc, and lead each have brought more income to the province, though the historically significant precious metals, gold and silver, rate far below coal on the scale of total value mined. With regard to current production, coal is second only to copper as the province's most valuable mineral while a combination of factors, including coal's importance as a prime energy source and the continued existence of vast reserves of coal in British Columbia, likely will make coal the province's leading mineral sometime before the year 2000.¹ In fact coal held the lead annually from 1884 to 1905 and might well have continued to do so had it not been for the roads made by petroleum and natural gas and even nuclear power into markets at one time held exclusively by coal.

The rise of the coal industry to such importance in British Columbia's economy is a story of many separate parts. From its origins on Vancouver Island in 1849 to the early 1880's the coal industry was located exclusively on the coast and characterized chiefly by innovations, fast-rising production, and rapidly expanding markets. Between 1885-95 there was a marked shift towards consolidating colliery operations,

1 British Columbia, Department of Mines and Petroleum Resources, *Annual Report*, 1976, Victoria, B.C. Queen's Printer, pp. A67-9. Total values as of Jan 1976 (latest available figures) are: Cu \$2,908,691,281; Zn \$1,689,523,810; Pb \$1,489,809,560; Coal \$1,033,135,354; Au \$681,556,815; Ag \$455,201,762.

particularly by the larger firms whose main emphasis then was being laid upon efficiency and modernization. After 1898, when the east Kootenay coalfields came into production, increasing attention was paid to metallurgical uses for B.C. coal, though the Island deposits continued to be mined primarily as sources of thermal coal. With the discovery of petroleum in California in 1905 and oil's subsequent impact on the shipping, railroad, industrial, and domestic markets traditionally dominated by British Columbia coal, both the Island and the Kootenay collieries were forced to cut-back on production. Brief surges in coal output occurred during World War I and in the latter years of the Depression, though these upswings did little to arrest the industry's generally sharp decline. Mining ceased altogether on the Island in 1968, but the Kootenay collieries, resurgent in 1970 with Japanese orders for coking coal, began a dramatic climb to new heights.² Today a variety of B.C. coal measures are being either surveyed or worked, the most significant of which are the "Crowsnest Coalfield" (Kootenays) for the Japanese steel industry, the "Hat Creek Coalfield" (Cariboo) for an upcoming thermal electric plant, the "Peace River Coalfield" for probable use in both industry and transport, and the "Groundhog Coal Deposits" (Skeena) for similar purposes. There is no current mining on Vancouver Island, though explorations both in newly discovered formation and in those fields not fully exhausted are being conducted by Weldwood Canada

² British Columbia, Coal Task Force, *Coal in British Columbia: A Technical Appraisal*, Victoria, Q.P. Feb. 1976, pp. 17-21.

Fig.1-1 BRITISH COLUMBIA: COAL FORMATIONS, 1970's

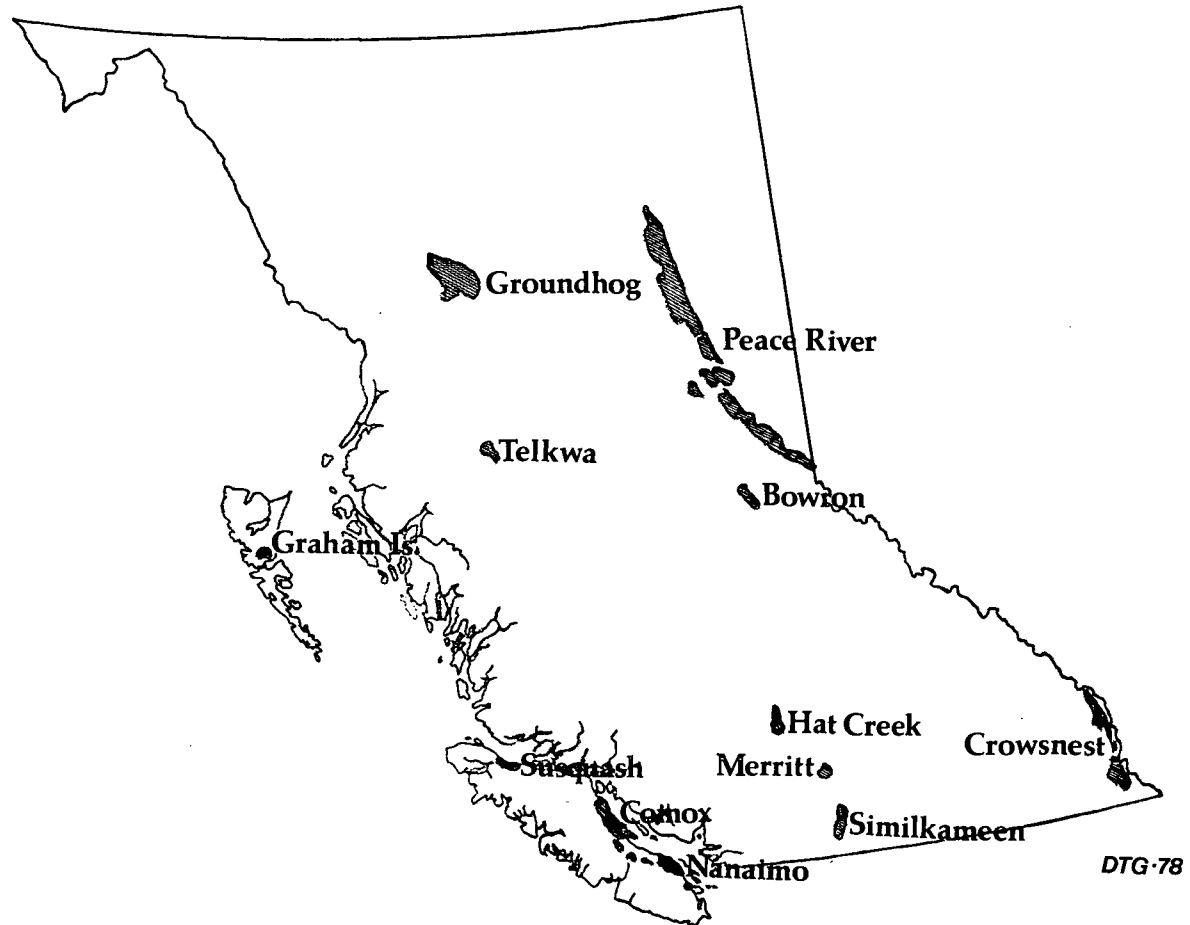
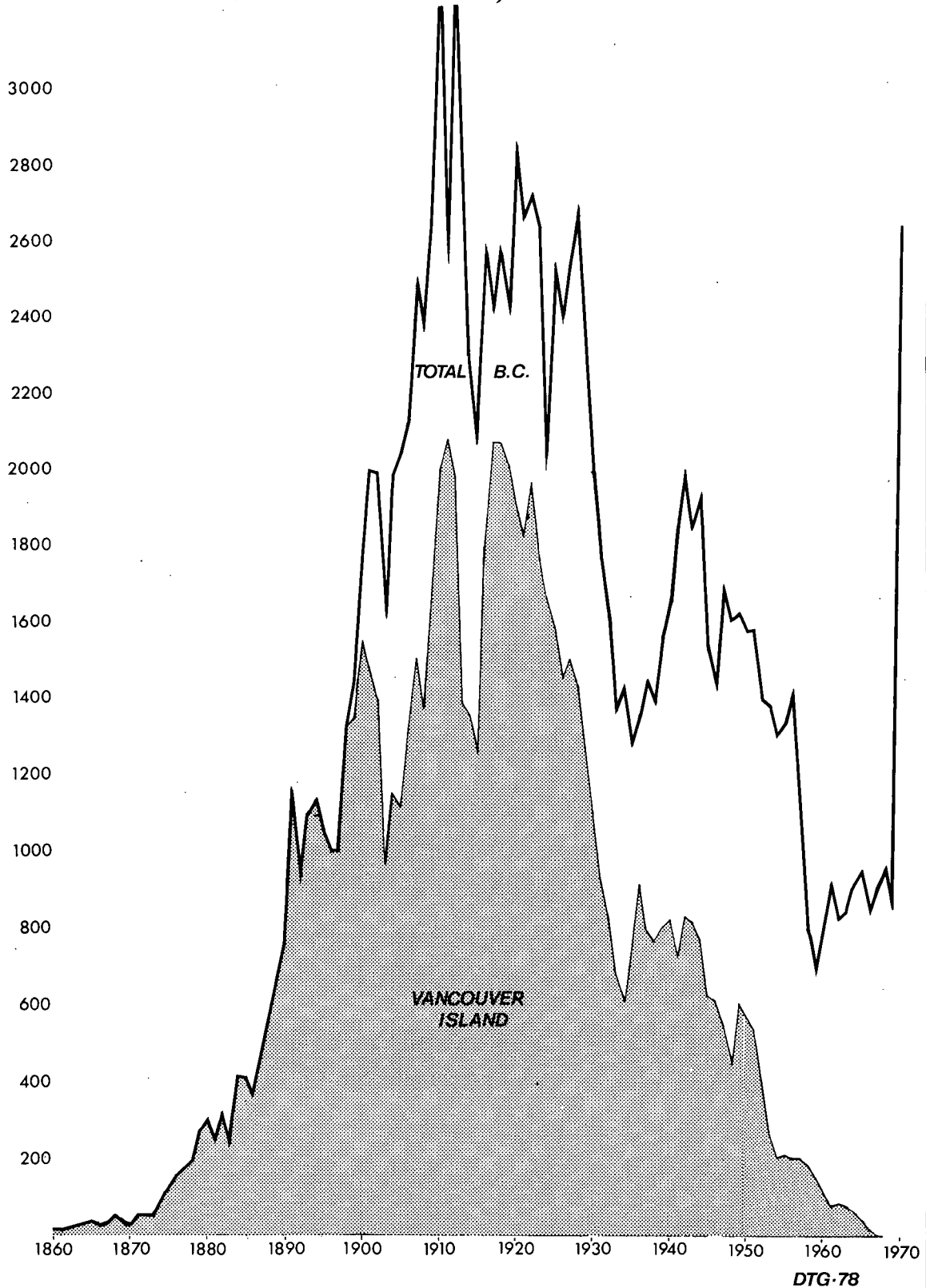


Fig. 1-2 BRITISH COLUMBIA: ANNUAL COAL PRODUCTION, 1860-1970
(thousands of short tons)



Ltd., present holder of the coal rights once held by the last of the large coal companies, Canadian Collieries (Dunsmuir) Ltd.³

I

MINEROLOGY OF COAL I found research of the coal industry confusing without first having a fair understanding of its technical side, and thus have made an effort to describe for the reader important but not generally appreciated physical characteristics of coal mining. Writers of coal histories in British Columbia have tended to ignore such features, thinking, perhaps, that extensive technical details are bound to be either irrelevant or boring or both. While that danger can exist, there is also a serious risk to one's understanding if the subject is pursued at too high a plane. In the case of Vancouver Island's coal industry, both the geology and minerology of the deposits vitally affect the nature, extent, value, and ultimately, the workability of coal lands. To have little or no grasp of the physical parts, (and the same applies to coal mining technology), is to greatly lessen one's appreciation of the problems owners and miners faced in developing the industry as well as the scale of their accomplishment. Indeed, few of the world's coalfields are as dangerous and as difficult to mine as are those of Vancouver Island.

A A raw mineral resource, coal varies widely as to its properties, origins, classifications, and sources. One authority has described it as:

³ *Ibid.*, pp. 79-83 and B.C. Mines AR, 1975, pp. A 16-18, 21-22.
See Fig. 1-1.

. . . an organically derived rock, largely composed of fossil pieces of branches, tree trunks, leaves, spores, and pollen together with charcoal and clays that at some time were present in a swamp or peat bog. The organic constituents can still be recognized microscopically and even without this aid they cause the coal to be banded.

The thin, jet-black, vitreous glass-like bands of coal are a variety called *vitrian*, which are the fossil remains of wood tissue.

The dull, matte-black, irregular-shaped areas are *fusion* or charcoal believed to have formed in forest or peat fires millions of years ago.

The lead-grey areas of coal are *durain* derived from spores, pollen leaves, and plant debris.⁴

Chemically, coals are compounds that vary considerably in their molecular structures. All coals, however, are made-up of carbon, hydrogen, and oxygen and almost all coals contain both nitrogen and sulfur in one amount or another. Also present are ash-producing materials, including water and impurities like dirt which are deposited climatically during periods of peat formation.⁵ It is the relative percentages of these elements that determine the quality of a coal. As one suspects, the higher the percentage of carbon, the better the coal. Another way of seeing this point is to know that coal advances in rank as it ages: As active elements, both hydrogen and oxygen react easily with other substances. Hydrogen, for instance, combines with carbon to become methane (CH_4) which in turn escapes into the surrounding air. Hydrogen further combines with oxygen to form water which evaporates out.

4 From a copy panel in a geology exhibit (1978), B.C. Ministry of Mines' headquarters, Victoria, B.C.

5 Otto Stutzer, *Geology of Coal* (trans. A.C. Noe), Univ. of Chicago Press (1940), pp. 3-4 and C.O. Dunbar, *Historical Geology*, New York (1960), pp. 224-42.

Oxygen escapes, too, as a component of carbon dioxide (CO_2).⁶ All this has the double effect over time of decreasing the mass of the coal deposit while increasing both the relative amount of carbon and the actual quality of the coal - a fact illustrated by the tables below:

Table 1-1. Average Analyses of Various Fuels⁷

Fuel	carbon	hydrogen	oxygen	nitrogen
Wood Fibres	50%	6%	43%	1%
Peat	59	6	33	2
Brown-coal (lignite)	69	5.5	33	0.8
Bituminous coal	82	5	13	0.8
Anthracite coal	95	2.5	2.5	trace

Table 1-2. Hydrogen and Oxygen in Various Fuels⁸
(calculated on the basis of carbon as unity)

Fuel	carbon	hydrogen	oxygen & nitrogen
Wood Fibres	100	12	88
Peat	100	10.2	59.2
Brown-coal	100	8	37.4
Bituminous coal	100	6	16.8
Anthracite coal	100	2.6	8.6

Sulfur is also a significant element found in most coals. If the content is high then the sulfur is regarded as an impurity, primarily due to the acidic gases formed by sulfur combining with other elements during the coal-burning or coke manufacturing processes. The percentage

⁶ Stutzer, *op. cit.*, pp. 4-6.

⁷ *Ibid.*, p. 6.

⁸ *Loc. cit.*

of sulfur in a given coal sample is directly influenced by the amount of sulfur present in the original vegetation and in the conditions under which the plants decayed.⁹ Further on in this chapter it is explained why Vancouver Island's coal measures were particularly heavy in sulfur content, a circumstance that severely limited its industrial applications.

OCCURANCE OF COAL Coal is a worldwide phenomenon having its main occurrence in the northern hemisphere where it is in plentiful supply. Indeed, it is interesting to note how much greater today's estimate of the world's reserves is than one made on the eve of World War I when Vancouver Island's collieries reached the peak of their production:

Table 1-3. Estimate of World Coal Reserves (1913)¹⁰
(millions of tons)

Region	Class A	Classes B & C	Class D	Totals
Asia	407,637	760,098	111,851	1,279,586
Europe	54,346	693,162	36,682	784,190
America	22,542	2,271,080	2,811,906	5,105,528
Africa	11,662	45,123	1,054	57,839
Oceania'	659	133,481	36,270	170,410
Totals	496,846	3,902,944	2,997,763	7,397,553

9 *Ibid.*, pp. 7-11.

10 McInnes, Wm. and others, eds., *The Coal Resources of the World*, Toronto (1913), vol. 1, p. xviii. Use of this source seemed appropriate as the 3 vol. world coal resources summary of 1913 was the first major international co-operative effort on the subject, and although it post-dates the thesis period by a generation, it is the most accurate and comprehensive survey approximating the time-period studied.

Table 1-4. Estimate of World Coal Reserves (1974)¹¹
(millions of short tons)

Region	Coking Reserves (%)	Recoverable Reserves	Total Resources
U.S.S.R.	22	150,000	6,300,000
U.S.A.	33	200,000	3,200,000
China	40	90,000	1,100,000
Europe	21	140,000	670,000
Australia	35	27,000	220,000
Canada	35	6,000	120,000
Others	-	39,000	240,000
Total World	31	652,000	11,856,000

Canada in 1913 was estimated to have reserves of 1,234,769 million tons, 16.7 percent of the world's total. It was claimed that British Columbia held 52,205 million tons or .007 percent of the world's probable coal reserves. Vancouver Island's share was believed to be 4,807 million tons, less than one-tenth of the provincial total and only .0006 percent of the world's deposits. Yet to that date more than 30,000,000 metric tons of coal had been raised on the Island and while this area's portion of even the Canadian total seemed tiny, obviously it was a significant and valuable coalfield for the time.¹²

¹¹ Most of the increase from the 1913 estimates stems from discoveries in Russia and China. Canadian reserve estimates have fallen from 1.2 trillion to 120 billion tons, however, and only 5% of this amount is seen now to be recoverable. British Columbia is believed today to have 2.3 billion tons of "measured" (or proven) reserves, and of this about 750 million tons can be mined with present-day techniques. B.C. Coal Task Force (1976) *Coal in B.C.*, pp. 73-79.

¹² D.B. Dowling, "The Coal Fields and Coal Resources of Canada" *Coal Resources of the World*, ed. W. McInnes et al, 1913, vol. 2, pp. 439-42 and pp. 491-508; C.H. Clapp, "Coal Fields of Vancouver Island" and "The Coal Fields of Queen Charlotte Islands", pp. 509-15. in *ibid.*

GEOLOGY AND MINEROLOGY OF VANCOUVER ISLAND COAL . The coal-bearing lands of Vancouver Island are found in the Nanaimo series, a group of sedimentary rocks of Upper Cretaceous age underlying the eastern shore of Vancouver Island and the nearby Gulf Islands.¹³ The Nanaimo series is approximately 1,800 square miles in size, and is comprised of five main basins:¹⁴ Quatsino Sound (49 sq. mi.), Susquash (164 sq. mi.), Comox (789 sq. mi.), Nanaimo (513 sq. mi.), and Cowichan (256 sq. mi.).¹⁴ Of these only the Nanaimo and Comox basins have been significant coal-producing regions.

The Nanaimo coalfield extends over a fifty-square-mile area located at the north end of the Nanaimo basin which, in turn, lies along the southern half of the Gulf of Georgia's western side. The basin itself is a roughly shaped ellipse eighty miles long by an average of nine miles wide. Its northern border reaches Nanoose Bay and its southern face touches Orcas Island in present-day Washington State. The Comox coalfield lies under a ninety-square-mile area in a broad strip seven miles along the Island's east coast with the town of Cumberland approximately at its centre point.¹⁵

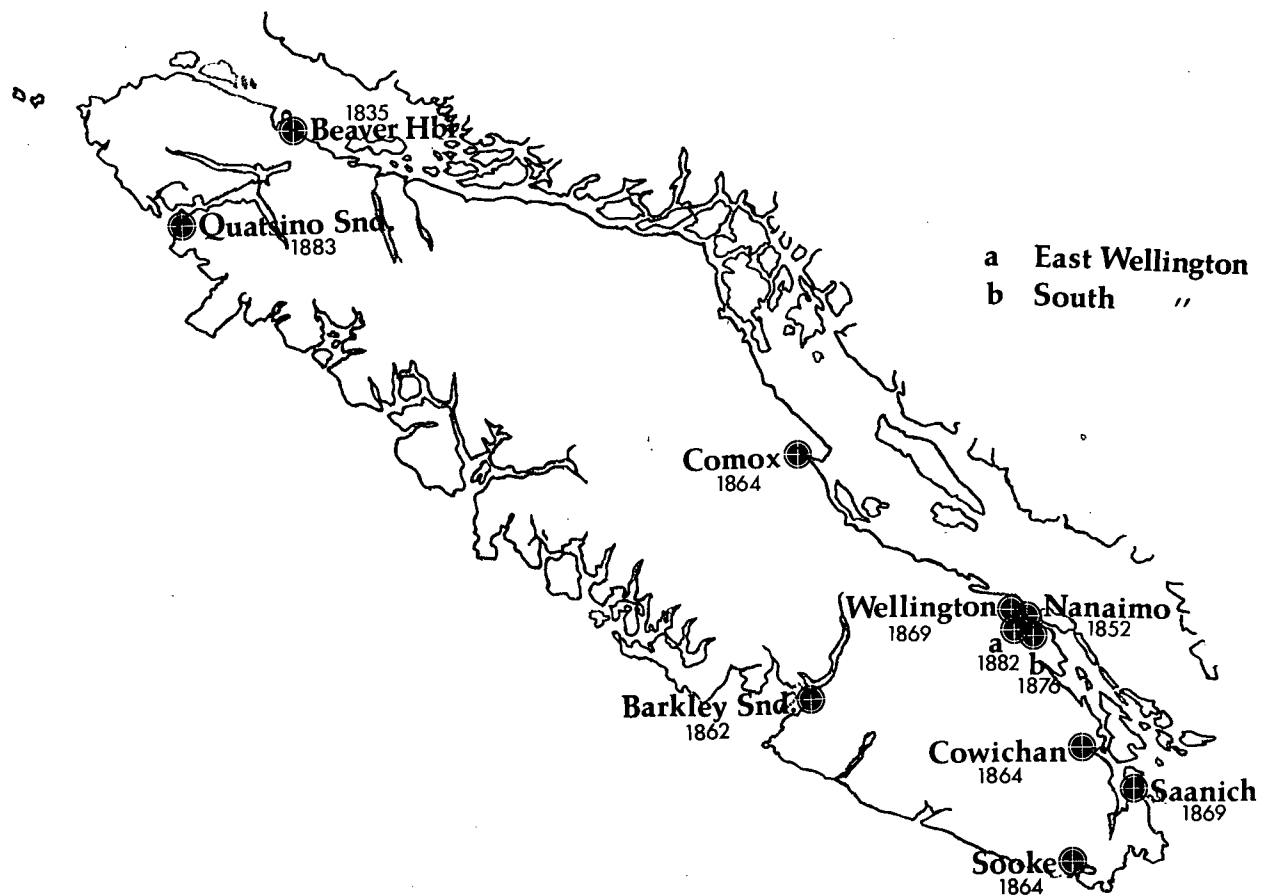
The Nanaimo basin is underlaid by a "basement" of metamorphosed volcanic rock interspersed with sedimentary and intrusive igneous rocks.

13 J.D. MacKenzie "Coal Resources of Southern Vancouver Island", unpub. ms. issued by the Geological Survey of Canada; Ottawa, 1 Jun 1923 (copy in Modern History division, Br. Col. Prov. Museum, herein-after BCPMmh), pp. 2-6.

14 Clapp, "Coal Fields of Vancouver Island", *Coal Resources of the World*, p. 509. See Fig. 1-3.

15 *Ibid.*, pp. 509-11

Fig. 1-3 VANCOUVER ISLAND: EARLY COAL FINDS



DTG-78

This basement, comprised chiefly of lava-type material, took form about 200 million years ago. The intrusion of granite, upheaved during the late Jurassic and lower Cretaceous ages, having the effect of uplifting the area now occupied by Vancouver Island. At approximately the same time, the mainland Coast Range was formed by similar upheavals while the Strait of Georgia area deepened. Generally, on the eve of the Upper Cretaceous, the southern coastal area of the region we call British Columbia had a land profile characterized by sharp peaks and deep troughs in close proximity to the sea, broken only by a coastal lowland on the Island mountain's southeastern face and by numerous minor peaks known commonly today as the Gulf Islands.

A prolonged period of rapid erosion followed during which both the lowland and depression were covered by sedimentary materials. Meanwhile the depression was sinking steadily, thereby allowing more and more of the sea to enter the area. Indeed, so pronounced were these sea and earth movements that the vast bulk of sedimentary deposits - up to 7,600 feet thick in the northern area - were rocks, soils, plants, and animals mainly of a marine nature. From time to time sinking stopped, and sand bridges formed to block the sea. Periods of relative stability occurred during such times, allowing for the growth and decay of plant life in swamp-like settings. Under these conditions coal deposits ultimately formed, but in seams that often would be unworkable millions of years later because the combinations of erosion and sea action had not created a uniform coal-building stratum. Consequently, coal beds tended to form quickly; they also tended to be shallow in depth, narrow in width, and short in length. When sinking again occurred, the sand bridges broke

apart, which in turn brought the sea in to overwhelm the basins, causing conditions for yet another period of sedimentary build-up to begin.

According to the geological literature, this cycle happened no less than five times during the Cretaceous age, and there exist five major coal measures as proof.¹⁶

All this also had the effect of creating many small coal beds at varying intervals within the basins. To make matters worse for future miners, the very presence of such vast quantities of sea water, and the sulfur-depositing bacteria therein, determined from the onset that Vancouver Island's coal would be bituminous of mid-grade quality. In fact, only the best of it ranks as a "B2" coal which translates as burning with a luminous flame, as having a carbon content of 75-90%, as yielding from 12-26% volatile matter, as being generally suitable for coking, and as offering 7,700-8,800 calories per gram (or 14,000 -

16 The most noteworthy geological studies to date are: James Richardson, "Coalfields of the East Coast of Vancouver Island", Geological Survey of Canada (hereinafter GSC) *Report of Progress*, 1871-72, pp. 73-97 and Richardson's "Coal Fields of Nanaimo, Comox, Cowichen (sic), Burrard Inlet and Sooke, British Columbia", GSC *Report of Progress*, 1876-77, pp. 160-92; C.H. Clapp "The Geology of The Nanaimo Coal District", *Transactions of the Canadian Institute of Mining and Metallurgy* (hereinafter CIMM), vol. 15, 1912, pp. 334-53; J.D. MacKenzie, "The Coal Measures of Cumberland and Vicinity, Vancouver Island", *ibid.*, vol. 25, 1922, pp. 382-411; C. Graham, "Coal Mining in Comox District, Vancouver Island", *op. cit.*, pp. 412-20; A.F. Buckham, "The Nanaimo Coal Field", *Transactions CIMM*, vol. 50, 1947, pp. 460-72; A.R.C. James, "The Coal Fields of Vancouver Island", unpub. report prepared for B.C. Dept of Mines, Victoria, 1969 (copy in BCPMmh); J.E. Muller and M.E. Atchison, *Geology, History, and Potential of Vancouver Island Coal Deposits*, Ottawa, GSC, 1971; also Clapp (1913) and MacKenzie (1923) as cited in fn. 12 and 13 above.

16,000 B.T.U. per pound).¹⁷ A comparison of coal samples taken from various Island mines is shown below:

Table 1-5. Ultimate Analysis of Some Vancouver Island Coals¹⁸

	Wellington	Comox	Douglas	Newcastle	Susquash
carbon	75.5%	72.6%	71.0%	67.7%	60.7%
hydrogen	5.1	4.5	4.9	4.7	4.7
nitrogen	1.2	1.0	1.2	1.2	1.2
oxygen	9.8	9.1	11.9	13.4	18.4
sulfur	0.5	0.9	0.9	1.3	1.9
ash	7.8	11.9	10.1	11.7	13.9

Had the geology of the Island coal measures rested on these factors alone, working the seams would have been difficult enough. But there occurred a further series of dislocations which falls under the general term of faulting. In the view of A.F. Buckham (1947), onetime chief geologist for Canadian Collieries, the presence of "numerous, strong faults" dominates the Nanaimo coal field, crossing the entire area. Additionally, the shapes of these faults vary dramatically from south to north. In the southern part, for example, the faulting has created sharp, clean breaks in the coal seams causing vertical displacements as much as 390 feet - workable seams end abruptly, only to be found hundreds of feet below. Further north in the field, faulting tends to take the form of "very sharp overturned folds" in which the seams remain intact, but offer exceptionally difficult conditions for both cutting

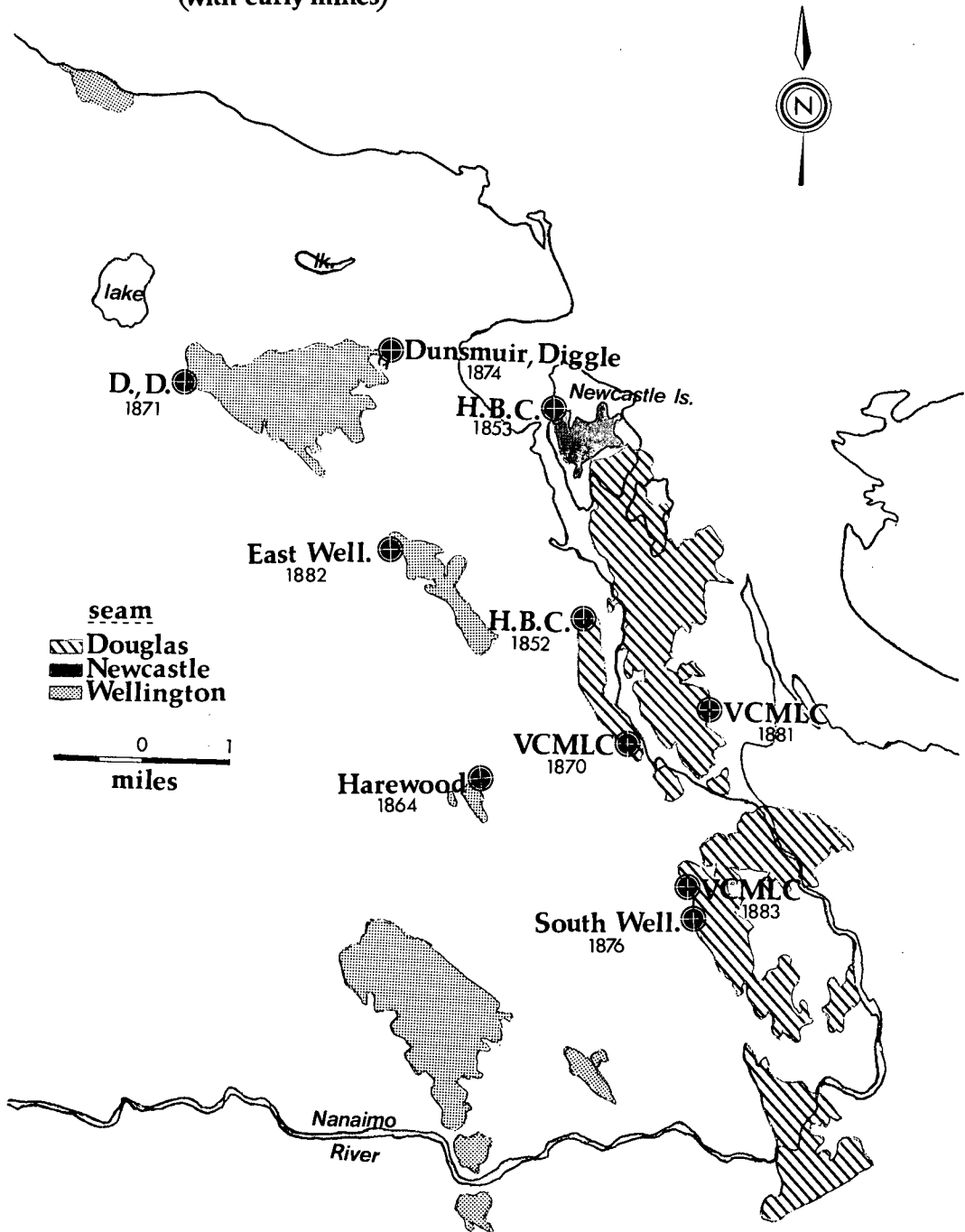
17 Reference to "B2" coal characteristics is found in "Preface" to *Coal Resources of the World*, 1913, vol. 1, pp. ix-xiii.

18 Clapp, "Coal Fields of Vancouver Island", *ibid.*, vol. 2, pp. 511-13.

and hauling the coal. According to Buckham, the faults were caused mainly by "thrusts" which can be described as essentially vertical movements of large-size basement rocks set in motion by stresses caused in mountain-building. The folding phenomenon is explained by zonal rather than point application of stress, inasmuch as the pressures are absorbed over distance by slippage between the rockbeds. Moreover, there were major economic consequences associated with this particular type of varied faulting, in that the places having distinct breaks had little slippage between the beds, thereby reducing substantially any shearing of the coal seams. Conversely, locations of sharp rolls were associated with both slippage and shearing, movements sure to prevent any uniform build-up of coal deposits. Equally important, rolls and the rocks they contain often had considerable unrelieved stress which in turn could be extremely hazardous once the adjacent constraining rock (or coal) was cleared away. Such dangers manifested themselves as "blowouts", of which more is said later in this study. Buckham also referred to "broad, open folds" that covered the entire area. Unlike the faulting which was vertical in nature, the folding was horizontal, creating variation in a third dimension, but like the faulting, folding had the same mountainous origins.¹⁹ Thus the Nanaimo coalfield can be described generally as having been both limited in scope and complex in its geology. And as one would expect, the more accessible and uniform seams were the first to be worked.

¹⁹ Buckham, "Nanaimo Coal Field", pp. 463-69. See Figs. 1-4 to 1-6.

Fig.1-4 NANAIMO COAL MINED TO PRESENT
(with early mines)



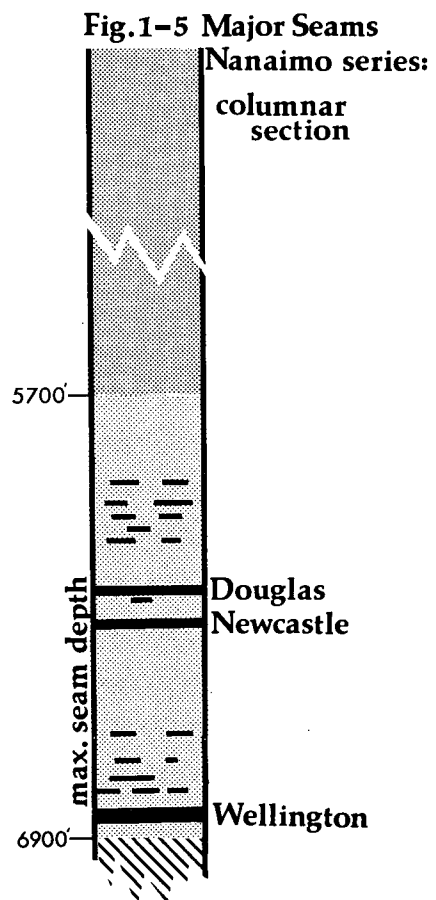
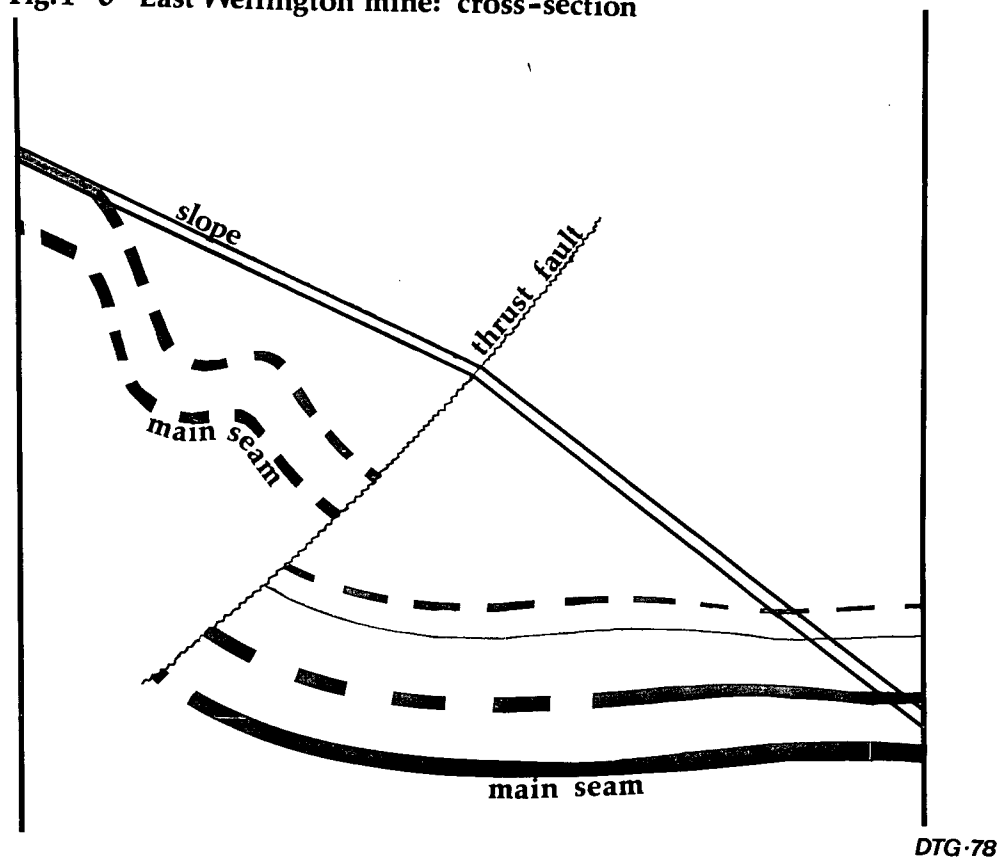


Fig.1-6 East Wellington mine: cross-section



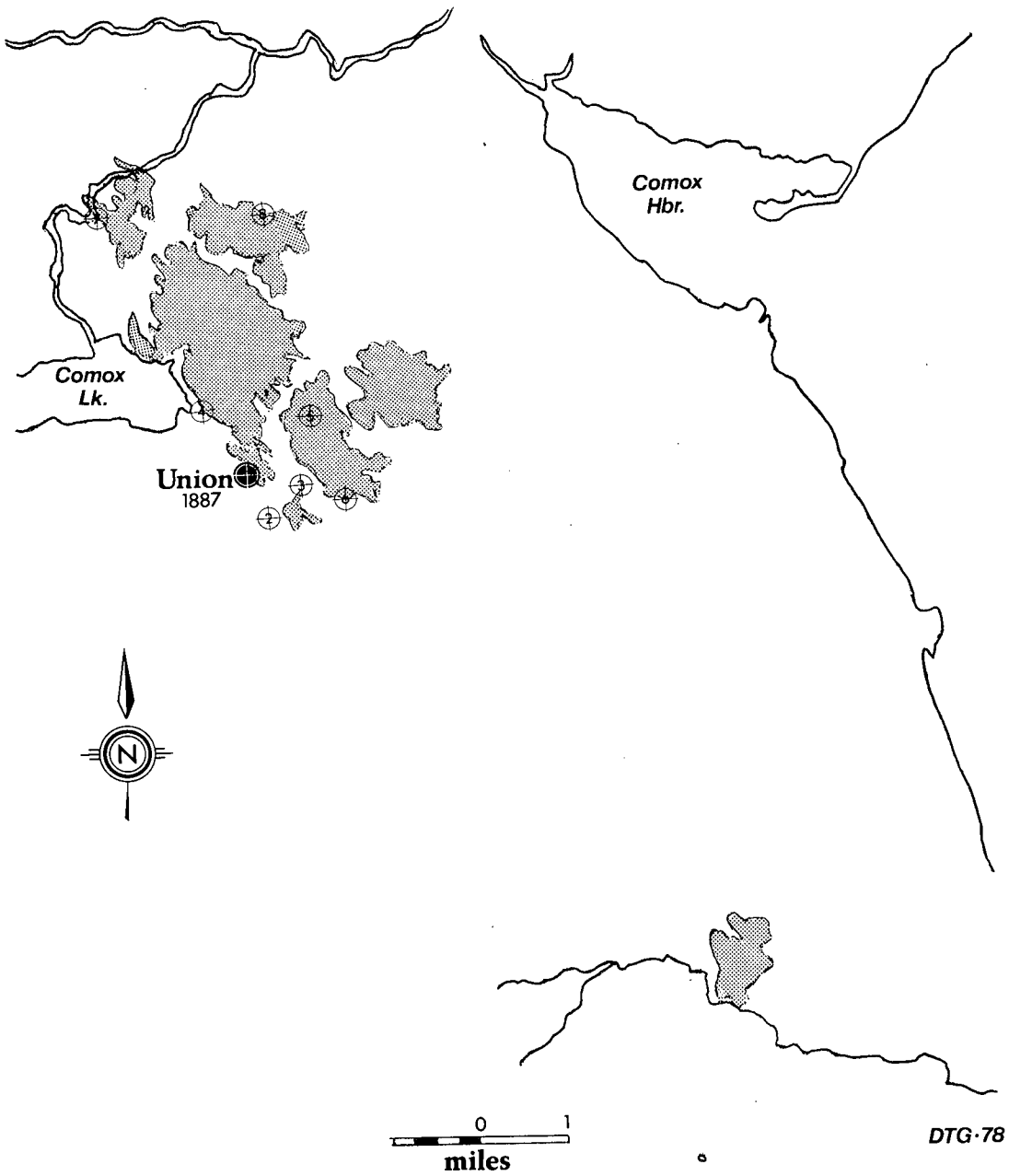
The Comox formation had coal measures of more regular uniformity than Nanaimo's. There were five major seams laying at varying depths down to 1,085 feet in what government geologist, J.D. MacKenzie (1922), called a "massive, homogeneous white and light grey sandstone deposit".²⁰ There are some significant flaws in the field, however, for as C.H. Clapp (1913) revealed, the "basement" was very uneven, causing the lowest seam especially to be cut by "knobs of the metamorphic volcanics". Additionally, several small folds and a few faults existed, along with "many small, sharp rolls, pinches, and swells in the coal seams". Otherwise the coal deposits are generally uniform, dipping about ten degrees in a "simple monocline" to the northeast. The seams themselves vary in thickness from a few inches to twenty-five feet.²¹

Plainly, there were substantive differences between the Nanaimo and Comox coalfields. By all engineering standards - quality, extent, workability - the Comox formation was superior. Yet the Nanaimo field had its advantages, too, not the least of which were its location at tidewater and its closer proximity to Fort Victoria. Ironically, neither of these major coalfields were the first to be mined on Vancouver Island; that honour fell to the worst deposit of all, Susquash, the working of which is examined in the next chapter.

20 MacKenzie "Coal Measures of Cumberland", p. 384.

21 Clapp, "Coal Fields of Vancouver Island", *Coal Resources of the World*, p. 510. See Fig. 1-7 for area of Comox coalfield mined to present.

Fig. 1-7 COMOX COAL MINED TO PRESENT



II

IMPORTANCE OF COAL LANDS For colliery operations no factor of production is more vital than the coal lands available to developers. Generally "land" is interpreted by economists as resources supplied by nature, not by man. Air, water, timber, and wildlife are thus included as are mineral deposits.²² For this study, land is seen mainly as the coal measures *per se*, though notice is taken of assets such as streams, trees, and rocks located on colliery property utilized to facilitate mining and transport. During the period in question, coal companies preferred to own the surface areas overburdening the coal seams they hoped to work, rather than merely acquire mining rights to someone else's property. In some cases, however, such lands were either under title to settlers or held by speculators, forcing coal promoters and colliery owners to bargain for access to the coal. Since the region was sparsely populated and land usually cheap, coal companies normally had little difficulty in acquiring the rights they sought. Moreover, as later chapters reveal, successive colonial administrations and provincial governments further eased the way for coal developers with legislation and regulations (designed to promote coal mining) that gave ready access to coal lands on Crown property.²³

As discussed in the first section, Vancouver Island's coal measures varied widely in their quantity and quality. By 1869 all

²² H.S. Sloan and A.J. Zurcher, *A Dictionary of Economics*, New York (1964), p. 192.

²³ See chaps. 2-5.

significant seams had been discovered, although not all had been put into production. Those then being mined - Douglas, Newcastle, Wellington - all lay in the Nanaimo-Departure Bay area. Yet there the similarities ended since these seams differed markedly in size, shape, and value. The Wellington seam was generally less accessible, but considerably better in quality and somewhat greater in extent than the others combined; the Douglas seam was shallower, broader, thicker (and therefore superior) to the Newcastle.²⁴ As one would expect, these variations in physical characteristics had important cost and policy implications for management. More vital yet for owners was the fact that coal measures are both a retreating and a diminishing asset. Over time the coal-face moves deeper into the earth while the amount of coal remaining in the field reduces in size. If in time the colliery proprietor did not materially and significantly add to his coal land holdings, then the actual value of his mines would fall as more coal was extracted. Paradoxically, he could be profiting (from sales), and losing (from declining potential), simultaneously.* Ironically, this state of affairs would occur even if coal prices rose or his productivity increased. In short, owners periodically had to increase their coal land holdings to survive, though not necessarily

24 A.F. Buckham, "The Nanaimo Coal Field", *CIMM Transactions*, 50:460-72 (1947). See also section I of this chapter for details of these seams.

* Historically, collieries always have extracted the most easily gained coal deposits first - partly because it is more economical to do so, partly because it is illogical to reach for coal that lies beyond that which is closest at hand.

to profit. Consequently, for the operator committed to remaining in the industry, no factor of production was more vital than land.

COAL MINING FRONTIER TO 1891 From the available evidence, it is certain that no less than forty-six coal claims were registered in the area of British Columbia between 1848-89.²⁵ While this is a small number compared to claims made for placer gold, one must bear in mind that a commitment to mine coal was a much greater undertaking than the kinds of activity needed to lift gold from creekbeds. Few minerals have less value in relation to their mass than coal, whereas gold is close to the other extreme. Indeed, it is not farfetched to say that the annual earnings of one lucky goldminer easily could outstrip those of a colliery owner employing one hundred men. Such comparisons can be misleading, however, for while there are many parallels between the two types of mining, the differences far outweigh any similarities. Perhaps the most striking difference in the case of B.C. was the speed with which their respective frontiers advanced. Coal was discovered in 1835 and mined for the ten years preceding the Fraser River gold rush of 1858. By 1860, the gold frontier reached the Cariboo, pressing both north into the Cassiar District and east into the Kootenays by the early 1870's. With the exception of a brief attempt at mining on the Queen Charlotte Islands in the mid-Sixties, B.C.'s coal industry remained on the south coast, chiefly at Nanaimo. Only in the 1880's did the

²⁵ See chap. 4 for details on the lesser known claims to 1889. See also Figs. 1-3 and 4-1 for geographical locations.

coal frontier move into the province's interior when claims were established near Lillooet, Kamloops, and the Crow's Nest Pass.

An easy explanation of why coal mining activity spread so slowly throughout British Columbia rests on the assumption that gold rushes consumed by far the largest portion of available resources, thereby interrupting and forestalling growth in other sectors like coal.²⁶ Undoubtedly this was true for awhile, but as will be argued in this thesis, such effects were brief, because coal mining, on balance, rose steadily even through the years 1858-64, the period of greatest gold fever. A more realistic assessment for the relative slowness of coal development surely is found in the nature of the coal trade itself. Among its chief needs were large fixed capital investment, large, skilled workforces, large-scale transport facilities, and large markets - all of which took considerable time and money to create. In other words, it is arguable that the relative slowness of the coal frontier's advance was attributable to several causes, though none more critical than the large amounts of capital and other resources required to actually begin full-scale operations. Even the inexperienced HBC officials soon realized coal mining would spread slowly due to the commitment needed.

The Susquash coalfield -- more familiarly known today as either the Beaver Harbour deposit or the Fort Rupert mines - was composed of thin and parted seams occurring in "grey siliceous sandstone,

26 The best general study of the gold rushes' impact is M.A. Ormsby, *British Columbia: A History*, Toronto (1958), pp. 134-63. See, too, P.A. Phillips, "Confederation and the Economy of British Columbia", W.G. Shelton, ed., *British Columbia and Confederation*, Victoria (1967), pp. 43-66.

with several thick interbeds of shale".²⁷ During the period of coal formation, the Susquash basin experienced less mountain-building and more sea-flooding than the areas of southern Vancouver Island; consequently the northern coal measures tended to have a high water and low carbon content which, of course, made for a poorer quality coal. Recognition of its limited value came soon after mining began in 1849, (and a 1912 scientific assessment grading it as "B3", meaning lignite or sub-bituminous, must have come as little surprise).²⁸ Yet for more than a decade after its discovery the Susquash coalfield was believed by the Hudson's Bay Company and the Royal Navy to be a valuable and timely find, one that both were anxious and determined to control for their own purposes.

III

STRATEGIC FACTORS AND NAVAL GOALS The Royal Navy's interest in the Susquash deposit stemmed as much from its desire to prevent the rise of a bilateral coal trade between the HBC and the Americans as from any need to fuel its own ships. The Company's interest in turn was based upon two considerations: First, by using coal mined from Vancouver Island, the HBC would no longer need either to import fuel for forging or to continue expensive experiments at charcoal-making. Second, by developing the deposit and selling the coal to whomever would purchase it, the HBC would expect to create another profitable commodity trade

27 Clapp, "Coal Fields of Vancouver, Island", p. 510.

28 *Ibid.*, pp. 511-12.

for its Columbia District. As events proved, the Company ultimately had its way, mainly because it worked itself into a position to convince the government of the day that it should, while the Admiralty found itself with little room in the argument to manoeuvre: all navies were far behind their merchant cousins in converting to steamships, and the trend in international commerce was towards more free trade, not less, even in strategic materials like coal.

The increase in the number of commercial steam vessels during the first half of the nineteenth century was a major stimulus to world trade. In 1825 Britain possessed 168 steamships, ten years later it had 538, and by 1855 the total had risen to 2,310.²⁹ In contrast, the Royal Navy by 1850 had in commission only 76 steamers, most of which were small auxiliary vessels used in towing and hauling duties.³⁰ Yet in this circumstance it was no different from other navies. Until mid-century the British Admiralty was given no cause to believe its naval supremacy on the world's oceans would be upset by changes in maritime technology since warship design and construction methods had not materially advanced for more than two centuries. The world's navies were still comprised almost totally of ships built of wood, powered by sail, steered by rudder, and armed with muzzle-loading cannon.³¹

29 J. Croil, *Steam Navigation and its Relation to the Commerce of Canada and the United States*, Toronto (1898), p. 41.

30 C.J. Bartlett, *Great Britain and Sea Power, 1815-53*, Oxford, (1963), App. II & III. Also of note is Chap. 5, "Steampower and National Defence", pp. 196-248.

31 A.J. Marder, *The Anatomy of British Seapower; a history of British Naval Policy in the pre-dreadnought era, 1880-1905*, Hamden, (1940), pp. 3-9.

Moreover, admirals and successive British governments had convinced themselves that as long as other nations continued to show no signs of developing fleets to rival their own, no new warship construction programmes were needed, and the falling trend in naval estimates from 1815 onward reflected that view.³² Undoubtedly much money was saved by allowing the Royal Navy to languish in such fashion, but among the consequences was an almost total lack of experimentation with steampower, an innovation taken much more seriously in the commercial sector.

Merchant shipping entered the steam age in three steps: First, as one writer has it, there was a time of "practical experiment" from 1775-1820 in which steam-powered vessels advanced from small, wooden, inland-waterway boats to moderately large coasters driven by paddle wheels connected below decks to a walking beam engine. Second came the "paddle wheel era" between 1820-45 that witnessed innumerable minor refinements, mainly to hull and paddlewheel design. Then, too, steamships were growing both in size and complexity and were being used in a wider variety of roles, including that of coal carriers. Third among the steps was the introduction of "screw-driven" ships, an innovation

32 The matter of naval expenditures between 1815-65 has been a subject of debate for decades, and although it is a fascinating issue for historians to ponder, it goes well beyond the scope of this thesis. Those interested in pursuing the subject further might begin by consulting the Hamilton Committee on Navy Estimates, *Report*, Gt. Br. HOC 182 (1859) XIV, pp. 703-999 and the Handly Committee on Administration, *Report*, Gt. Br. HOC 438 (1861) V, pp. 1-187. Also useful are B. Brodie, *Seapower in the Machine Age, 1814-1940*, Princeton (1941), Chaps. 2, 5, and especially 7 in pp. 105-26; H.W. Richmond, *Statesmen and Seapower*, Oxford (1947); two studies by Gerald S. Graham, *Seapower and British North America, 1783-1820*, Oxford (1941), and *Politics of Naval Superiority, Studies in British Maritime Ascendancy*, Cambridge (1965). See also Marder, *Anatomy of British Seapower*, 1940, and Bartlett, *Great Britain and Sea Power*, 1963.

made possible after 1843 when the first triple-expansion compound engines, coupled by shafts to stern-mounted propellers, were made available for use at sea.³³ Despite a resurgence of the sailing ship as a bulk cargo carrier on world trade routes in the latter half of the century, development and utilization of steamships for ocean commerce continued without break.³⁴ One by one the major trade routes were conquered by steamers. India was reached in the 1830's, a regular trans-Atlantic service was started in 1832; steamships had become common on both coasts of the Americas in the 1840's, the Orient was well-served by steam vessels later

33 "Steps" mentioned in text are described by P.W. Brock and Basil Greenhill, *Steam and Sail: In Britain and North America*, Newton Abbot, (1973), pp. 9-23. Reference to steam coal carriers is made in R. Finch, *Coals from Newcastle, the Story of the North East Coal Trade in the Days of Sail*, Lavenham (1973) in which it is claimed that the "first successful sea-going, iron-built, screw-propeller collier" was launched in 1852. Two years later 36 steampowered iron-hulled colliers were employed in the London coal trade. (pp. 167-70). Facts on "screw-driven" ships and triple-expansion compound engines are to be found in D.A. Wells "Recent Economic Changes" (B. Rand, *Economic History Since 1763*, pp. 305-08); Marder, *Anatomy of British Seapower*, pp. 7-9; Brock and Greenhill, *Steam and Sail*, pp. 20-23; Croil, *Steam Navigation*, pp. 166-69; H.P. Spratt, "The Marine Steam Engine" and A.M. Robb, "Ship Building", *A History of Technology*, vol. 5, Oxford (1958), pp. 141-56, 350-90. Triple expansion engines could deliver 150 lbs. per sq. in. by passing a given quantity of steam successively through a series of progressively smaller cylinders.

34 For details and interpretations on the use of sailing vessels in commodity trade during the latter half of the nineteenth century see G.S. Graham, "The Ascendancy of the Sailing Ship, 1850-85", *Econ. Hist. Rev.*, 9:74-88 (1956) also worth noting are Douglass C. North, "Ocean Freight Rates and Economic Development, 1750-1913", *Journal of Econ. Hist.*, 18:537-55 (1958) and K. Maywald, "The Construction Costs and the Value of the British Merchant Fleet, 1850-1938", *Scottish Jour. of Pol. Econ.*, 3:44-66 (1956). Of interest, too, is H.A. Innis, "Unused Capacity as a Factor in Canadian Economic History", *Cndn. Jour. of Econ. and Pol. Sci.*, 2:1-15, (1936).

in that decade, and by the mid-1850's steamers were making scheduled runs from Britain to Australia and New Zealand.³⁵

It bears stressing that the rapid rise in the use of steamships for overseas trade was part of a much larger economic trend, and that such details as given here are offered only as background to both the HBC's and the Admiralty's interest in Vancouver Island coal. What was occurring in the widest sense was a revolution in world commerce, brought on to a large degree by Britain's own move towards freer trade that had begun as early as the 1820's; and which was given major impetus by the successive repeals of the Corn Laws and the Navigation Acts in the 1840's.³⁶ The number of merchant ships was rising rapidly, steam vessels being only a part of the general increase. Still, it was obvious that steamships had special needs of their own, particularly in regard to fuel which had to be made available at many points along each of the main trade routes.

Providing for coal to be stored throughout the world soon became a highly profitable venture for both the suppliers and the British nation which then was the leading producer of coal. In 1850, for instance, it had raised 60.5 million tons, 74.8% of the world's

35 H. Morpe-Bartlett, *A History of the Merchant Navy*, London (1937), pp. 222-52.

36 The literature on Britain's shift towards free-trade is extensive; one might start by reading C.R. Fay, *Huskisson and his Age*, London (1951), and A.H. Imlah, *Economic Elements in the Pax Britannica*, New York (1958).

total.³⁷ Much of the coal was used by railroads and manufacturers which naturally gave the nation an enormous advantage in the industrial sector, but so high a level of coal production usually meant an oversupply. Domestic heating absorbed some of the excess coal, as did local shipping, but not all. It did not take long, therefore, for British shippers to begin ballasting outbound ships with coal for sale to coaling depots being erected overseas. In doing, the shippers created a highly profitable backhaul trade as well as ensuring adequate fuel supplies for their own steamships.³⁸ The Royal Navy was drawn into these events by government actions designed to ensure there were sufficient numbers of strategically-located, British-controlled coaling stations in each ocean. According to one historian, the "strategic-economic triangle" of the mercantile era, (whose three sides were colonies, commercial protection, and naval hegemony), had been distorted by free trade, forcing a restructuring of both colonial and naval policy. From the 1840's onward, colonies were valued generally more as entry-points for trade than as the closed markets they once were, and their harbours as well as their coal depots needed greater naval protection. This shift in colonial trade patterns forced the Admiralty to alter the direction of foreign activities from guarding sea lanes to protecting coastlines -

37 Sam H. Schurr and others, *Energy in the American Economy, 1850-1975; an economic study of its history and prospects*, Baltimore (1960), p. 97. According to this source, American coal production was almost totally absorbed by home markets during the years to 1890; "net exports were insignificant" the authors claim.

38 Brodie, *Steampower in the Machine Age*, pp. 115-16.

a task much better suited to steamships than sailing vessels.³⁹ Consequently, the Royal Navy in the latter half of the nineteenth century enjoyed a technical revolution of its own, for the emphasis in new warship construction was now on steel hulls, steam engines, screw-propellers, and breech-loading guns. Thanks to the growing network of commercial coaling stations, the navy had the further advantage in most (but not all) regions of being close to abundant supplies of inexpensive British coal.⁴⁰ In this context it is easy to see why new discoveries of coal in the more remote British colonies would be of special interest to naval officers.

Word of the Hudson's Bay Company's coal discovery on Vancouver Island eventually reached the headquarters of the Royal Navy's Pacific Squadron then located at Valparaiso, Chile. The squadron's commander-in-chief, Rear Admiral Sir George Seymour, planned to have the Island coal tested for its suitability as fuel for his own growing fleet of steamers, and in 1846 he instructed Commander G.T. Gordon, master of

39 Paul M. Kennedy, *The Rise and Fall of British Naval Mastery*, London (1976). This work is an excellent synthesis of the debate on the subject. Chap. 6 (pp. 149-76), "Pax Britannica, 1815-59" is especially noteworthy, and is the basis for the above comments on "strategic triangles". Kennedy claims British seapower, at its height between 1815-59, was "an immense, virtually unchallenged influence". This naval power, coupled with Britain's pre-eminence as an industrial nation, allowed her to dominate world trade. Another source worth noting on this theme is R. Tames, *The Transport Revolution in the 19th Century*, vol. 2, (1971) pp. 1-2 which claims Britain enjoyed much of her trading success due to a lack of rivals. European nations tended to be concerned with rebuilding their home economies while the Americans were distracted by westward expansion.

40 Kennedy, *op. cit.* The problem of defending coaling stations after the Russian war scares of 1878 and 1885 is outlined in G. Clarke, "Coaling Stations" *Encyclopaedia Britannica*, 10th ed., 1902, vol. 27, pp. 122-24, and Lord Brassey, *The Naval Annual*, 1886, Portsmouth (1886), pp. 96-100.

the *Cormorant*, to investigate the deposit and burn the coal in his ship's boilers during an upcoming voyage to the Island.⁴¹ Gordon reported upon his return that the Beaver Harbour coal was both "abundant" and of high quality, whereupon Seymour then urged the Admiralty to prevail upon the government to reserve the Island's coal measures for "the public interest", a step he believed could best be taken by having the Crown determine how and by whom the coal would be exploited.⁴² An earlier analysis of the coal as made for the HBC by the Museum of Practical Geology in London appeared to confirm the view held by Gordon and other ship's captains, in saying that the Island coal was "suitable for steam propulsion".⁴³ By now the navy was determined to prevent a commercial squandering of the resource, and the Admiralty was supported in its argument by a statement from Samuel Cunard in 1848 who also demanded the coal be reserved for the Crown.⁴⁴ One officer of the Pacific Squadron had gone so far as to "claim" the site in the Queen's name, though both the Company and the Admiralty subsequently agreed he had had no legal right to do so.⁴⁵

While the naval officers continued to build their case, the Hudson's Bay company was negotiating with the Colonial Office for a

41 Seymour to Gordon, 14 Jan. 1846 - cited in Barry M. Gough, *The Royal Navy and the Northwest Coast of North America, 1810-1914*, Vancouver (1971), p. 100.

42 Gough, *loc. cit.*

43 *Loc. cit.*

44 Cunard to H.G. Ward of the Admiralty, 3 Jan 1848 (cited in Gough, *ibid.* pp. 100-01).

45 *Ibid.*, pp. 101-02.

royal grant of Vancouver Island which would include exclusive trade rights on all resources including coal. The government and the Company eventually agreed on terms granting in part coal mining rights to the HBC.⁴⁶ For the Royal Navy this arrangement became a double blow since the admirals had failed to prevent the Company from exploiting the deposits solely for the latter's own commercial ends. While the cost of the coal once mining started reached what Rear Admiral Phipps Hornby in 1850 called an "exorbitant price of 50 shillings per ton".⁴⁷ For the moment, however, Moresby and his officers could take solace in the fact that their coal needs were being supplied at a much lower rate through the backhaul system of ballasting ships with British coal.⁴⁸ But it seemed that for the time being at least the Company had gained the upper hand in the conflict over who should benefit most from exploitation of Vancouver Island's coal deposits.

BUSINESS ASPECTS AND COMMERCIAL OBJECTIVES. Coal exploitation on Vancouver Island by the Hudson's Bay Company for commercial purposes was a main activity in a series of economic experiments conducted after 1821 by the officers of the Company's Columbia District. In that year the HBC

46 Details on the terms agreed to by the HBC and the Colonial Office re: establishing Vancouver Island as a company colony in 1849 are found in E.E. Rich, *The Hudson's Bay Company, 1670-1870*, London, Hudson's Bay Record Society (hereinafter HBRS) (1959), vol. 2, pp. 749-86.

47 Hornby to R Adm. Fairfax Moresby, 12 Feb. 1851 (cited in Gough, *Royal Navy*, p. 103).

48 Gough, *ibid.*, p. 102, and Cmdr. C.R. Johnson to Hornby 21 Jun. 1850 in "Correspondence, Johnson to Hornby, 1850", Colonial Papers, Provincial Archives of British Columbia (hereinafter PABC).

had absorbed its main rival, the Northwest Company, which meant that the fur-trading regions west of the Rocky Mountains became part of the Hudson's Bay Company's exclusive trading area. For two decades, the HBC strengthened its trading apparatus in the Pacific Northwest by establishing several forts along the coast and in the interior; it further consolidated its hold on the region by increasing the numbers of officers and men. By the mid-Forties the costs of maintaining the Columbia District had grown large, chiefly because so much of the goods needed to sustain operations had to be imported from Britain. Considerable effort was made to provision the District with locally-produced crops and livestock, while additional relief came through the exploitation of the District's abundant sea and timber resources. Still, such initiatives by the Company's servants filled only part of their needs; trade goods in the forms of hardware and textiles, for example, were almost exclusively imported, as were scores of items vital for operations, including equipments needed in blacksmithing, coopering, boatbuilding, carpentry, and other trades. Another product in short supply was coal, the fuel preferred in forging and domestic heating, though very little could be earmarked for the latter.⁴⁹

To overcome the problem of short coal supply, District officials channeled their efforts in three directions: Company servants were instructed to investigate every report of coal deposits received from the field, work was commended to produce charcoal from local woods,

⁴⁹ The best accounts of HBC activities in the Columbia District are Rich, *Hudson's Bay Company*, 1959 and Ormsby, *British Columbia: A History*, pp. 50-133.

and pressure was put upon HBC headquarters in London for more shipments of British coal to Vancouver Island. The Columbia District's chief factor, Drr. John McLoughlin, made at least one plea in 1840 to London for a larger quota of the British product, but officials at headquarters did not give-in easily on the issue.⁵⁰ In a reply dated 8 September, 1841, London said it was sending forty tons "as requested", with a possibility of more to come, though they expected the District would renew its attempts to "make good charcoal".⁵¹ Nor did HBC headquarters let the matter rest there. On 21 December, 1842, McLoughlin received word that Governor George Simpson had arranged with Russian Alaska to have a charcoal expert from Sitka visit Fort Vancouver. McLoughlin was further informed that charcoal was the only fuel used at Sitka, that English coal simply "occupied too much space" over and above the amount used as ships' ballast, and that there were adequate resources at Fort Vancouver to produce charcoal at a "very moderate cost".⁵² McLoughlin must have been exasperated at receiving such advice, because two months earlier he had written London saying the Russian, (who had since come and gone), had failed due to the general unsuitability of local wood-types. Furthermore, the chief factor claimed the costs of attempting to make charcoal had proved to be as great as importing coal.⁵³ By

50 McLoughlin to Governor and Committee in London, 20 Nov. 1840 - cited in E.E. Rich, ed. *McLoughlin Letters, 1839-44*, HBRS, vol. VI, (1943) pp. 22-3.

51 Gov. and Cmttee to McLoughlin, 8 Sep 1841, *ibid.*, fn. p. 22.

52 Gov. and Cmttee to McLoughlin, 21 Dec 1842, *ibid.*, pp. 302-03.

53 McLoughlin to Gov. and Cmttee, 31 Oct 1842, *ibid.*, pp. 94-5.

and large this response quieted London on the matter of charcoal production, but it did little to allieviate the Columbia District's growing coal supply problem.

With charcoal out of the question, and without a promise of relief forthcoming from London, McLoughlin and his colleagues focused their attention on the possibility of finding and developing a domestic coal supply. Up to 1846 the District had been encouraged by the discovery of coal outcrops in two locations - Cowlitz near the Columbia River estuary and Beaver Harbour (Susquash) on northern Vancouver Island. As early as May 1833 William Fraser Tolmie had surveyed the Cowlitz River, sending back reports to Fort Vancouver that initially caused some excitement. Within weeks, however, Tolmie conceded there was nothing more in the area than small creekbed deposits, none of which were worth the trouble to mine.⁵⁴ Two years later at Fort McLoughlin, Tolmie heard Indians speak of a "mountain of coal" on the northeastern shore of Vancouver Island. He pursued the matter by writing to McLoughlin in Fort Vancouver who in turn ordered the Company's newly arrived steamer, S.S. *Beaver*, to visit the area in question and report back to him its findings.⁵⁵ Within weeks, Duncan Finlayson, chief trader in-charge of the mission, informed McLoughlin that a "coal mine" existed at 50° 30' N 126° 35' W on Vancouver Island. According to Finlayson, the ship's company had examined the coal "as time and means would permit", and he said the mine "stretched along the beach "for some distance". Moreover, the

54 R.G. Large, ed. *The Journals of William Fraser Tolmie: Physician and Fur Trader*, Vancouver (1963), pp. 186-88.

55 From "My Father: William Fraser Tolmie", an address by Dr. S.F. Tolmie to the B.C. Hist. Society, Nov 1934 - cited in *ibid.*, pp. 394-95.

ship's engineer "pronounced [the coal] to be of a very good quality". Equally encouraging in the chief trader's view, was the sailor's discovery of a three-quarter-mile-long creekbed composed of "pure coal". Spot digging to depths of two feet had produced sufficient coal and sandstone for analysis, and Finlayson already had shipped these materials to England for study. From this enthusiastic description, the chief trader went on to suggest that a fort would have to be erected nearby to protect any miners, though he suggested, too, that such thoughts might be premature, insofar as the local natives insisted the coal was theirs' and that only they should mine it. Apparently this prospect troubled Finlayson as he believed the Indians would prove "indolent" and non-productive.⁵⁶

During the next eight years various tests were made with the coal from Beaver Harbour, each of which seemed to contradict Finlayson's original assessment. James Douglas claimed in 1839 that 100 tons of surface coal purchased from the Indians at Beaver Harbour recently had been used at Fort Vancouver by a blacksmith who found it "slatey" and "incombustible".⁵⁷ The *Beaver's* engineer was also critical of the Island coal, saying it "will not answer for steam".⁵⁸ Douglas remained convinced, however, that the coalfield was valuable: on one

⁵⁶ Finlayson to McLoughlin, 29 Sep 1836 - cited in E.E. Rich, *McLoughlin Letters, 1825-38*, HBRS, vol. IV (1941), pp. 334-34.

⁵⁷ Douglas to McLoughlin, 14 Oct 1839 in *McLoughlin Letters, 1839-44*, p. 215.

⁵⁸ McLoughlin to Robert C. Wyllie at Fort Vancouver, 6 Jan 1845 - cited in E.E. Rich, ed., *McLoughlin Letters, 1844-46*, HBRS, vol. VII (1944), p. 258.

occasion he wrote that quality coal surely lay below the surface, and would be valuable if good economic reasons for mining it occurred; at another time he stated "the [surface] coal is good", though the underground beds "are bound to be better".⁵⁹ Possibly Douglas was being overly-optimistic, believing his instincts more than the experts' negative reports; more likely he was attempting to place the best face possible on the matter if only to convince potential customers that Vancouver Island was the location from which to buy coal.

The Hudson's Bay Company still hoped to persuade the Royal Navy that despite its high price, Vancouver Island coal could go far towards meeting the Pacific Squadron's fuel requirements. The Company's goal seemed to be as much a matter of perseverance as anything, and James Douglas, whose relations with the squadron's officers generally were excellent in all other regards, expected the admirals soon would come to accept the Company's position.⁶⁰ Meanwhile the HBC was attempting to lure another important customer, the Pacific Mail Steamship Company, formed at New York in 1848 by William H. Aspinwall for the purposes of carrying mail, passengers, and light cargoes between Panama and Oregon on behalf of the United States Navy Department. Aspinwall had purchased three 1,000-ton sidepaddlers which he planned to fuel with Welsh coal carried from Britain as ships' ballast around Cape Horn to various coal

⁵⁹ Douglas to McLoughlin, 14 Oct 1839, *op. cit.* and Douglas to Capt. John Sheppard, 28 May 1849 - cited in W. Sage, *Sir James Douglas and British Columbia*, Toronto (1930), p. 137.

⁶⁰ For details on Douglas' relations generally with the Royal Navy see Sage, *Sir James Douglas*, pp. 120-234 *passim*.

depots located on the west coasts of the Americas.⁶¹ When learning of Vancouver Island's coalfields, Aspinwall wrote directly to George Simpson, governor of the HBC at Lachine, inquiring as to what terms would be available to the PMSC should the latter decide to contract for a reliable supply of the Island coal.⁶² From their correspondence it is obvious that Simpson was eager to secure and develop a west coast coal trade by co-operating with Aspinwall.⁶³ A further indication of Simpson's enthusiasm was his letter to Fort Vancouver's board of Management on 13 October, 1848 in which he urged the Columbia District traders to have the Indians at Beaver Harbour quickly gather between 500 and 1,000 tons of coal for an upcoming sale.⁶⁴

In the meantime, Aspinwall asked his own Pacific coast agent, Alfred Robinson of San Francisco, to keep him fully informed of all developments respecting the Hudson's Bay Company's new mining venture, including how well suited the coal was for producing steam.⁶⁵ By 24 September, 1849, the District's officers were able to inform Simpson that they had 750 tons ready for sale or shipment at the governor's earlier stipulated price of 20 shillings per ton - only forty percent of

61 John H. Kemble, "Coal From the Northwest Coast, 1848-50", *B.C. Hist. Quarterly* (hereinafter *BCHQ*) 2:123-30 (1938).

62 Aspinwall to Simpson, 30 Aug 1848 (from letters published in Kemble, *ibid.*).

63 For an overview of Simpson's efforts on behalf of the Columbia District, see Ormsby, *British Columbia*, pp. 53-89.

64 Simpson to Ft. Vancouver management, 13 Oct 1848 in Kemble, pp. 125-26.

65 Aspinwall to Robinson, 15 May 1850, *ibid.*, p. 129.

the price Admiral Moresby claimed it would cost the Royal Navy.⁶⁶ Still, Aspinwall was not yet ready to sign a contract, for as he mentioned on 15 May, 1850 to his agent, Robinson, he found it "strange" that the HBC could not provide even 2,000 tons when it was fair to expect that upwards of 5,000 tons should by now be available. Nor was Aspinwall reassured by letters from Simpson claiming technical though resolvable difficulties in amassing a sizeable coal supply at San Francisco for the PMSC.⁶⁷ Towards midsummer, Aspinwall openly showed his concern in a letter to Robinson by stating he was anxious to receive a report comparing Vancouver Island coal to a Welsh variety.⁶⁸ On 28 September Aspinwall backed-out of the HBC arrangement when he instructed his agent to sell all "on hand supplies" of the Island coal, even without "bothering to take the balance", since the comparative reports were "altogether unsatisfactory".⁶⁹ Aspinwall then shifted his attention to Australian coal entering the San Francisco market, though in this instance, too, he was determined to wait for a careful analysis of the new product.⁷⁰ Thus did Aspinwall prove himself the proverbial shrewd Yankee trader, and with both his support and the navy's interest gone, the HBC soon realized that by attempting to entice customers with promises of dependable coal supplies before it had stockpiled sufficient inventories to make good its

66 Ft. Van. mgt. to Simpson, 24 Sep 1849, *Kemble, p. 128*.

67 Aspinwall to Robinson, *op. cit.*

68 Aspinwall to Robinson, 13 Jun 1850, *ibid.*, p. 130.

69 Aspinwall to Robinson, 28 Sep 1850, *loc. cit.*

70 *Loc. cit.*

assurances, the Company had overplayed its hand. As a result, the HBC was now forced to develop the Susquash coalfield solely from its own resources with no guarantee of future sales - hardly an auspicious beginning for a new commodity trade.

Both Aspinwall and the admirals had been wise in their reluctance to trust the Hudson's Bay Company. The Company's self-serving policies regarding profit and monopoly are well-known to serious students of Canadian history, and the activities outlined above reflect this image. Familiar, too, is the Company's reputation for lobbying hard with government whenever it perceived its commercial position or privileges were threatened. Its reaction to pressures for settlement in its exclusive trading areas was to arrogate unto itself the role of colonizer; its response to finding marketable resources (such as coal) in its territories was to cajole government into giving the HBC exclusive developer's rights.⁷¹ Above all, the Company was determined to have its general position remain secure and profitable, even if on occasion it meant defiance of powerful institutions such as the Admiralty, or in ignoring the wider public interest as the HBC was doing when it presumed that the Company should share with the Crown equal control over strategic natural resources. The Hudson's Bay Company's handling of its affairs with respect to Vancouver Island from 1846-49 reflected

71. The best-known treatment of HBC commercial and colonizing policies is J.S. Galbraith, *The Hudson's Bay Company as an Imperial Factor, 1821-1869*, Toronto (1957); for details closest to the subject of this thesis, see chap. 14 of that study entitled, "Company control of Vancouver Island".

each of these points in turn. And for its trouble, it found itself committed to, among other things; developing without outside financial assistance the unproven coal measures at Beaver Harbour.

SERVANTS: COMPANY AND CIVIL

INTRODUCTION Most striking of all changes in British Columbia's coal industry to 1870 was the rapid evolution in both management structures and the methods used to conduct operations. The Hudson's Bay Company subordinated colliery operations to the fur trade, forcing its coal-masters and miners to work within a rigid local bureaucracy. Its successor, the Vancouver Coal Mining and Land Company, directed its own affairs by attempting to combine the aims of absentee owners with the actions of a resident manager. During the late sixties, coal promoters and speculators offered a third approach in that they hoped to compensate for their own ignorance in industrial matters by hiring teams of practical miners to survey and hopefully extract coal from their newly purchased lands. Finally there was the owner-manager system as introduced and worked to great advantage by Robert Dunsmuir.

Each of these management methods was accompanied by its own kind of financing. The HBC drew its coal mining funds directly from the Columbia District's annual budget. As a corporate entity, the VCMLC generated its start-up capital through contributing partners and provided working capital through cash appropriations which the resident manager was empowered to spend with considerable discretion.¹ Speculative ventures, conducted mainly by local merchants, professionals,

¹ The VCMLC was a joint-stock company which soon was forced to expand its financial base by issuing shares and selling bonds. In time, serious administrative and policy problems occurred over the issue of split management. See chap. 3 for details and interpretation.

and civil servants, were financed through modest savings and some borrowings. Invariably the speculators believed that a rich strike of coal would both justify the expense of surveying and provide sufficient collateral for any further borrowing needed to begin production. Few of these speculative ventures went beyond the surveying stage and fewer survived for more than two years. Dunsmuir found the required start-up capital for his coal mines by attracting outside partners who were willing to let him own half the operation and to manage it completely. For operating funds, Dunsmuir used most of the profits he made in coal sales, thereby avoiding the need to either sell additional shares or borrow money in financial markets. Since a full understanding of the coal industry to 1891 depends largely upon knowing the details and comparative merits of each of these approaches, this chapter and the next three in turn are concerned chiefly with capitalization and colliery management, factors of production equally important to the coal lands themselves. The first case examined, the Hudson's Bay Company's experience with coal mining, is especially interesting for it shows how easily colliery operations and coal sales were alternately expanded and constrained by the bureaucratic mind.

WORKINGS OF THE COLUMBIA DISTRICT. After 1821 (when it assumed control over all trade in the British territories of the Pacific northwest), the Hudson's Bay Company's overriding purpose for the Columbia District was to make it profitable and thus add to the general wealth of the Company. Assessing the profitability of this and all other districts was accomplished by the simple method of comparing the costs of outfitting the operation

against the value of its exports which then was expressed either as a "gain" or a "loss".² It was natural, therefore, that the governors in London should expect each district to strive for self-sufficiency wherever possible since supplying anything but trade goods over so vast a distance could only harm the Company's overall profit balance. For a while it appeared that the Columbia District was proving to be an excellent acquisition. Its gain in 1828 was £31,739, and as district officials were continually expanding the Indian trade, it was generally accepted that the district would prove consistantly more profitable.³ Yet as the table below reveals, profits soon declined, causing London to press for more emphasis upon both exports and self-sufficiency.

Table 2-1. Columbia District Profit Balance (selected years)⁴

Year	Gain	Loss
1828	£ 31,739	-
1833	20,000	-
1839	10,000	-
1841	1,474	-
1842	-	£ 4,003
1843	-	3,136
1848	6,914	-

To offset this downward trend, district officers experimented with a variety of measures designed to increase exports. Several

2 Harold A. Innis' *The Fur Trade in Canada*, New Haven (1930), still the best introduction to the trading and financial activities of the HBC; see pp. 332-37 of this source for more details on commerce in the Columbia District.

3 *Ibid.*, p. 335.

4 *Loc. cit.*

substantial farms were established, including four in and about Fort Victoria under title to the Puget Sound Agricultural Company, subsidiary to the HBC. A wide variety of livestock and crops were raised annually, much of which was exported to Russian American Company posts in Alaska. Hawaii became a market for Columbia District lumber and fish, and included in the traditional fur shipments to England were locally produced hides and wool. As for supplying its own domestic needs, the district operated grist mills, sawmills, tanneries, fisheries, and, of course, farms with considerable success.⁵ Still, it was plain by the early Forties that costs had overtaken profits, and in this light it is easy to understand why both John McLoughlin and James Douglas, senior officers of the district, were anxious to exploit the newly discovered coalfields of Vancouver Island. And it further reveals why on one hand they hoped to have outsiders pay (however indirectly) the costs of developing those mines; while on the other, why the HBC was prepared to charge such "exorbitant" prices for Island coal.⁶

COLUMBIA DISTRICT HIERARCHY Notwithstanding their failure to secure sufficient sales to offset start-up and production costs for coal, the officials at Fort Victoria convinced London of the need to begin mining

5 J.W. McKay, "The Fur Trading System", *The Year Book of British Columbia, 1897 to 1901*, ed. R.E. Gosnell, Victoria, B.C., K.P., (1901), pp. 21-25. This is probably Joseph W. McKay, onetime chief trader and builder of Fort Nanaimo. According to James Douglas the Columbia District exports for 1848 were: £10,000 to Alaska, £8,000 to Hawaii, and £60,000 to Britain - a total of £78,000 which compared very favourably to imports of £30,000. James Douglas to Capt. Sheppard, R.N., 28 May 1849; cited in Walter N. Sage, *Sir James Douglas and British Columbia*, Toronto (1930), p. 138.

6 See pp. 37-41 above.

at Beaver Harbour. Douglas, for example, argued a case of the Company producing coal for a naval depot which, if erected, would in turn provide protection for the colony that Sir John Pelley believed soon must be established. Moreover, in Douglas' view, royalties from coal sales would help pay the civil list salaries.⁷ Meanwhile, arrangements were made by the governor and council to recruit a small party of Scottish coal miners under contract to the HBC for three years. John Muir, an Ayrshire coalmaster then living in Manchester, signed-on as "oversman" on 9 November, 1848. Within three weeks a group composed of Muir, his wife Anne, their four sons (Andrew, Robert, John, Michael), their nephews Archibald Muir and John McGregor, and their widowed daughter Marion Turner with her two infant children proceeded to Gravesend, England where they boarded the barque *Harpooner* bound for Vancouver Island.⁸ Prior to their arrival, thirty-seven company men, mostly labourers, were sent north from Fort Victoria to Beaver Harbour where, under the direction of chief trader Charles Beardmore, they constructed a typical HBC trading post named Fort Rupert.⁹ The Muir party was greeted upon their arrival on 27 September, 1849 by Captain William McNeill and Thomas Blenkinsop,

7 J. Douglas to Governor and Committee, 5 Dec 1848. Hudson's Bay Company Archives (Provincial Archives of Manitoba) A11/72 "Fort Victoria Correspondence" folios 59d & 60d - hereinafter HBCA (PAM).

8 Private Diary of Andrew Muir, 9 Nov 1848 - 5 Aug 1850, PABC MS division, and Patricia M. Johnson, "Fort Rupert", *The Beaver*, 302:4:4-15 (1972). Pelly was governor of the HBC.

9 For details on HBC fort styles, construction, and routines see McKay, "Fur Trading System", 1901, pp. 22-23.

respectively manager and chief clerk of Fort Rupert, who revealed to the newcomers the primitive means by which the miners were expected to extract coal.¹⁰

Until Muir's arrival, coal production had been left to local natives who restricted their efforts to gathering and piling coal along the beach. Very little use was made of tools by the Indians, and no serious attempts to follow the outcropping seams with underground digging had been made. Transferring coal to the small number of vessels that occasionally stopped at Beaver Harbour to take on coal was achieved by sending coal-laden Indian canoes to the ships where coal was hauled onboard in buckets.¹¹ John Muir sought a better extraction method, moving at once to survey inland for evidence of the main seams as promised by the shoreline outcrops.¹² He soon realized, however, that the district's management structure and procedures were as great an obstacle to coal mining as was the absence of adequate equipment or the lack of workable seams.

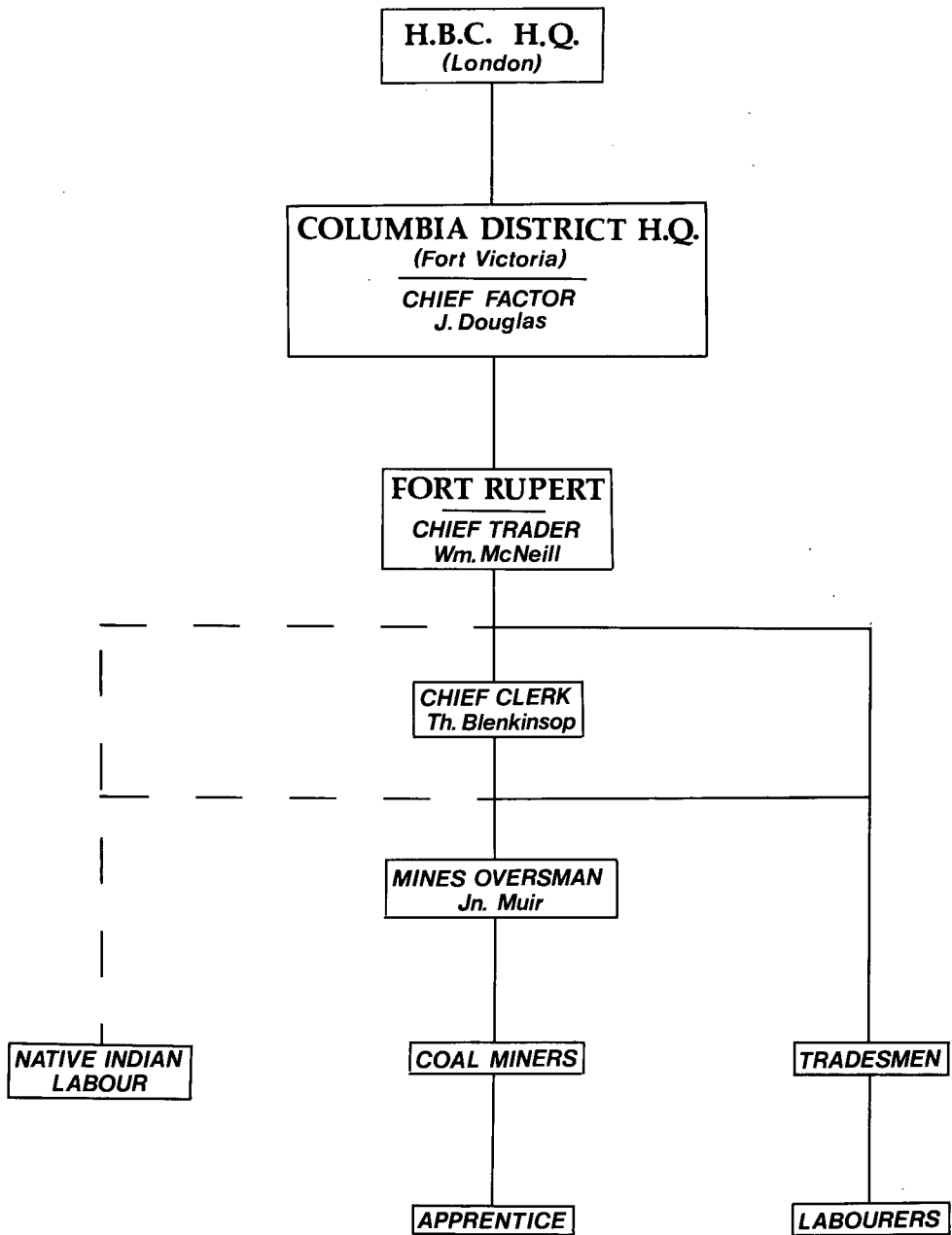
Despite their unique qualifications, Muir and his men found themselves very close to the bottom in long and complex politico-commercial hierarchy. Like all major HBC departments, the Columbia District was commanded by a chief factor assisted by chief traders, men who were concerned primarily with administration, finance, and general

¹⁰ Andrew Muir diary, *passim*.

¹¹ H.H. Bancroft, *History of British Columbia 1792-1887*, San Francisco, (1887), pp. 190-91. Bancroft claimed his informant on Fort Rupert mining operations was Michael Muir.

¹² Andrew Muir diary, *passim*.

Fig. 2-1 H.B.C. COAL MINING HIERARCHY, 1849



DTG-78

discipline. Next in line came the clerks - chiefs and otherwise - who ran a variety of lesser establishments, including trading posts, flying posts, depots, trading parties, and the transport service. Reporting to one clerk or another were a number of interpreters, mechanics, guides, steersmen, bowmen, middlemen, and apprentices.¹³ It was at this lowest level that Muir and his miners found themselves, a circumstance that gave them little say in forming the Company's coal mining policies when they should have been among the first to be consulted.

II

OPERATIONS AT FORT RUPERT Despite a serious lack of mining equipment, the Muirs began their survey with enthusiasm. A test-hole two feet deep was hand-drilled into promising sandstone deposits as far inland as natural obstacles would permit, but the initial results were poor, tending to make the oversman suspicious that the coalfield was composed of narrow seams widely separated by sandstone layers. Muir continued with the survey, saying little at that time of his doubts. Soon, however, the miners were obliged to bore deeper in spite of the difficulty of having to do so by hand. In his October report to the District's board of management, Muir requested a "double-powered wrench" and a set of fifty fathom boring rods be shipped-out from Mr. Cowan at the Portland Iron Works of Ayrshire.¹⁴ Three months later the oversman asked for much more equipment, including a "high performance engine winch cylinder with 2 boilers,

13 See Figure 2-1; see also McKay, "Fur Trading System", p. 22

14 Muir to Board of Mgt., 2 Oct. 49, HBCA (PAM) A11/72 fo 153.

2 wheels 5½' diameter for pithead frame, 8" pumps with 4 working barrels (to 60 fathoms), 4 clamp seats, 8 clamps, 8 buckets, 2 flat ropes, a 4 fathom chain" - and an engineer to be sent with the engine - all of which he expected was available from MacDonald, Engineer, Johnstone, Renfrewshire, Scotland".¹⁵ Plainly, Muir had plans for both a deep pit and a substantial upperworks, the materials for which he believed would best be supplied by firms well-known to him. James Douglas forwarded this request, noting the engine (rated at forty horsepower) "would draw coals from 40 fathoms", and thus worth a projected outlay of £330 as well as the engineer's £1 weekly salary.¹⁶

Table 2-2 shows the miners did not penetrate very far beneath the surface in their early months of operation, though Muir claimed that he remained "optimistic", believing the "metals" would improve with depth, and that the "grey freestone" should prove to be the roof of the major seam.¹⁷

15 Muir to Board of Mgt., 28 Jan 50, HBCA (PAM) A11/72 fo 197.

16 Minute by Douglas to *loc. cit.*

17 Andrew Muir diary, *passim*, and Eden Colville to Pelly, 6 Feb 1850, cited in E.E. Rich, ed. *London Correspondence Inward from Eden Colville, 1849-1852*, London (1956), HBRS vol. 19, p. 5. Colville, acting governor of Rupert's Land in Simpson's absence, visited Fort Rupert in Oct. 1849 to inspect the coal mines.

Table 2-2. Bore-hole Results of John Muir and Party¹⁸
(Fort Rupert, 6 January 1850)

Material	Thickness
gravel	6'
sand & quick mud	9'
freestone	12'
"fakes" with 5 seams of coal varying from 1 to 4½ inches	6'
"fake" with fireclay	1'
blue till	3' 6"
grey freestone	4'
Total depth reached	41' 6"

In addition to their survey, the miners took to digging a pit mine near coal outcrops located a half mile from the fort.¹⁹ Within days they were running into trouble with flooding and harrassment by local Indians who had been claiming all along that the coal was theirs' alone to mine. Up to this point the natives had stockpiled and covered-over approximately 1,100 tons of coal. The HBC had not interfered with these activities, and indeed had encouraged them, allowing the Indians to be the sole suppliers for those few ships that came to Beaver Harbour for coal. Nor did the Company argue with the captains who, in the strictest sense, were violating the HBC trade monopoly by paying the natives four shillings per ton plus "a few trinkets" and "presents" for the chiefs.²⁰ With the erection of Fort Rupert and the subsequent arrival of white

18 Colvile, *loc. cit.*

19 *Loc. cit.* See Fig. 2-2 and Table 2-3 below.

20 Bancroft, *British Columbia*, pp. 190-91.

miners, it did not take long for the Indians to realize that the Company was encroaching on their coal claim, and as a result began to harass the miners. Making matters worse, at least four Kwakiutl tribes had converged upon the fort, settling there, which in turn attracted Haida raiding parties.²¹ Repeated appeals by the miners for men to guard the surface while they worked below in the pit largely were ignored by the other Company servants. Moreover, the fort's officers refused Muir's requests for additional labour which he claimed was needed to speed digging, secure the pit-sides, and thus allow the miners to concentrate solely on extracting coal.²²

~~Such matters were serious, for~~ the growing inability of miners and traders to resolve their mutual differences led eventually to what Douglas called "great disorder" culminating in work stoppages and insubordination followed by arrests, imprisonments, and desertions.²³ Both Company and civil officials at Fort Victoria acted quickly to regain control, (apparently as much to impress the Indians as to restore

21 Wilson Duff, *The Indian History of British Columbia*, Victoria (1964), p. 54. This source is excellent as an overview of native society at the time of contact with Europeans; also of note is Tom McFeat, ed., *Indians of the North Pacific Coast*, Toronto (1966). Although mention is made about Indian activity in the coal trade, authors tend to omit details. For the purposes of this study the writer had focused mainly upon contemporary views, all of which are listed in the bibliography. A good example is Cmdr. C.R. Johnson to RAdm. P. Hornby, 21 Jun 1850 in "Correspondence, Johnson to Hornby, 1850", Colonial Papers, PABC MSS, which states the HBC paid the Indians one shirt for every ton of coal piled on the beach.

22 Andrew Muir diary, especially entries for October, 1849.

23 Douglas to A. Barclay (HBC Sec'y), 17 Aug 1850, HBCA (PAM) A11/72 fo 295-96. See pp. 59-61 below for a description and the immediate outcome of these events.

discipline), but this in itself did little to improve coal production. Douglas duly informed London of the recent troubles at Fort Rupert, adding that while the Indians were "more and more productive", the loss of most miners had made it impossible to conduct proper coal operations, and consequently more trained men were needed.²⁴ John Muir had remained loyal, but was refusing to mine without helpers. London's response, based upon the governor and committee being "much concerned", (presumably about their agreement with Aspinwall), was to forward immediately all the materials requested earlier by the oversman and to assure the District that the latter should "call without delay" for anything else it needed.²⁵ Furthermore, HBC headquarters said it was despatching another party of miners which had been selected with "great care".²⁶

Before this news reached Vancouver Island, Douglas had reassessed the whole coal mining venture, concluding the coal trade was not in the Company's best interests. In his year-end summary of District activities, the chief trader devoted several pages to coal mining. Douglas has made mention of John Muir's employment in surveying other reported discoveries, none of which looked promising. Disappointing, too, had

24 *Loc. cit.*

25 HBC Sec'y to Douglas, 15 Nov 1850, "London Correspondence Outward", HBCA (PAM) A6/29 fo 9d. HBC H.Q. "suspected" the attraction of California had motivated the miners' behaviour, and while Douglas might "induce more coal production" by raising wages, H.Q. insisted the miners' agreement did not entitle them to the extra 2/6 per day they demanded. (*ibid.*).

26 HBC Sec'y to Douglas, 6 Dec 1850, HBCA (PAM) A6/29 fo 23d.

been the summer season's output. Apparently, 800 Indians had produced only 1,700 tons at Beaver Harbour, an average of 2.25 tons per man over a five month period. Douglas stressed, however, that "the industry and perseverance [the Indians] exhibited in that pursuit [was] truly wonderful and has astonished every person who has visited the spot". Still, he saw little overall cause for optimism, summing-up his view with:

There are no doubt extensive beds of coal on this Island, but they are far below the surface, and cannot be reached without going to a great expense in mining. The surface beds at Fort Rupert will never give a large yield, and contain a great proportion of slate. If worked by White labourers, the expense would far exceed the returns It is now clear that reports reaching England [are] highly exaggerated as to the worth and extent of the coalfield [I] am now convinced that the expense of mining is too great since the coal is too deep. [It is] the worst possible time [the] price of labour is extremely high in the North Pacific [and the] expense of procuring tools and equipment is [very much] higher than [in] England Therefore [I] recommend a joint stock company be formed to extract [the Vancouver Island] coal.²⁷

Having despatched large quantities of equipment and a second group of miners to Fort Rupert, HBC headquarters had no intention of abandoning the venture. Moreover, London believed it still had a commitment to supply Aspinwall with the coal he had asked for, and thus instructed Douglas not to "wastetime" surveying for coal on the southern parts of the Island but to continue the search at Beaver Harbour "since the main seam of coal is bound to be found at Fort Rupert".²⁸ Perhaps this now groundless view was merely the Columbia District's early enthusiasms returning to haunt its officers, but it nonetheless was a

27 Douglas to Barclay, 22 Dec 1850, HBCA (PAM) A11/72 fo 362-63d.

28 HBC Sec'y to Douglas, 16 Apr 1851, HBCA (PAM) A6/29 fo 56.

clear directive to resume full operation. In May the *Tory* arrived at Fort Victoria with the steam engine and other machinery. John Muir agreed to re-open the coal pits and install the upperworks on condition that his kinfolk be re-hired to assist him at wages Douglas considered to be "extravagant".²⁹ Consequently, resumption of coal mining was delayed until June when Hunter, the recently arrived engineer, and eight "Orkneymen" led by Boyd Gilmour, began clearing the pit.³⁰ Within weeks of his landing, Gilmour openly criticized Muir's earlier efforts, claiming coal would be found instead at Susquash, seven miles to the southeast of Fort Rupert.³¹ Since there was no possibility of discovering a rich seam in the Susquash coalfield, Gilmour's party did no more than sink a series of all but barren holes. The oversman at first attempted to excuse their failure by arguing faulty and insufficient equipment, but

29 Douglas' "Journal", 21 May and 3 Jun 1851, HBCA (PAM) A11/73 fo 50d-51. John Muir, it was noted had leased Capt. Grant's sawmill at Sooke (a site of earlier coal surveys by Muir) for £70 per year. (fo 51).

30 *Loc. cit.* On 4 Aug Douglas informed Barclay that Hunter and others had "surrounded the mine shaft with stockades"; built "good dwelling houses" for the miners, and expected to resume operations by 31 July. *Ibid.*, fo 55. The reference to "Orkneymen" is unique; all other sources cite the miners either as "Scots" or "Ayrshiremen".

31 Douglas' "Journal", 3 Sep 1851. Here it was also noted that Thos. Blenkinsop, chief clerk at Fort Rupert, had reported the new party of miners were "far superior to the previous body of men", and that Gilmour had recruited 20 Indians to assist him at Susquash. *Ibid.*, fo 59 & 62.

he soon was forced to admit "not the least prospect of finding coals".³²

In a private correspondence, he said the Hudson's Bay Company would not like his latest report of no coal as the Company had been "led blindfolded into so much expense" - undoubtedly a criticism meant for his predecessors.³³

32 Boyd Gilmour's "Journals, Reports, and Letters" - entries for 21 Aug, 29 Aug, 12 Sep 1851, HBCA (PAM) A11/73 fo 15-16; "Report" c Jan 1852, *ibid.*, fo 19-20. Also, Gilmour to Board of Mgt 3 Mar 1852, *ibid.*, fo 33. Gilmour further complained in January that "little equipment was left from Muir's time", that "all else [was] gone", and that he was misinformed in London as to this state of affairs. Having earlier filled Muir's long list of demands, HBC H.Q. undoubtedly believed the new group of miners would be well-equipped. Presumably some of the worn-out machinery had been discarded, but in light of repeated Company accusations of coal pilferage by local natives, it is entirely possible that many of the even more valuable iron goods were stolen by Indians. See for example, Douglas to G. Meredith, PMSSC agent, 15 July 1850 in which it was claimed that Indian thefts had reduced coal inventories by 300 tons, HBCA (PAM) A11/72 fo 280, and HBC Sec'y to Douglas 1 Jan 1851: a warning to "watch more carefully weight of Indian coal", *ibid.*, A6/29 fo 28d. John Muir also had a low regard for native integrity, saying the Indians "could do nothing in a pit". *Ibid.*, A11/72 fo 340. Contrast these views on native worth to Douglas' as found on pp. 54 above.

33 Gilmour to D. Lansdale (engineer, Edinburgh), 2 Mar 1852, HBCA (PAM) A11/73 fo 31.

Fig.2-2 VANCOUVER ISLAND: EARLIEST COAL PITS
(locations & sequence approximate)

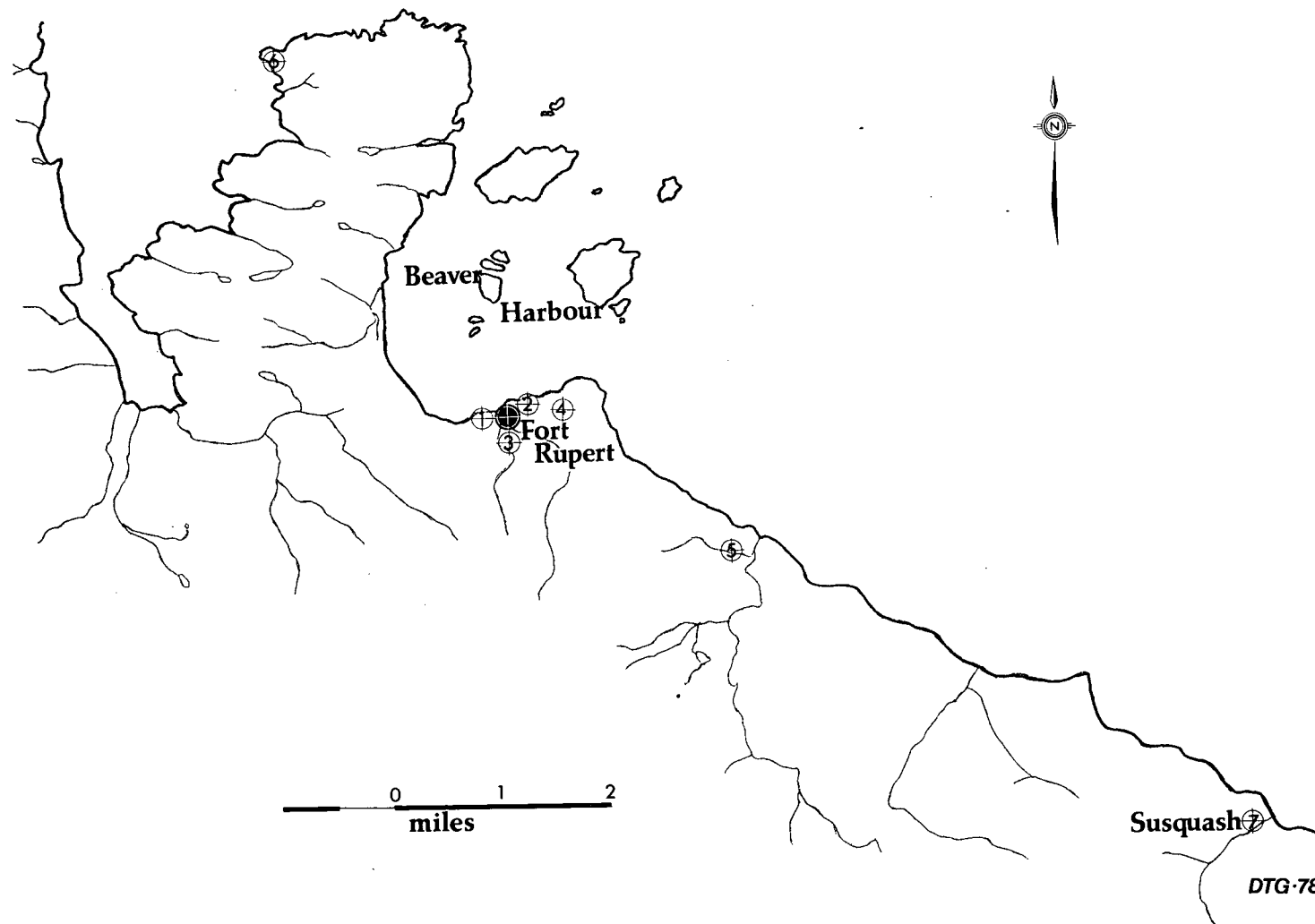


Table 2-3. Coal Shafts and Pits at Beaver Harbour (1852)³⁴

Type	Location	Depth
shaft (Muir)	half mile from Fort Rupert	90 feet
shaft (Gilmour)	near Muir shaft	120 "
" "	rear of Fort Rupert	285 "
" "	4 miles N.W. of fort	180 "
" "	2 miles S.W. of fort	240 "
" "	10 miles S.E. along coast from fort	283 "
" "	" "	285 "
pit (Gilmour)	near Fort Rupert	102 "
" "	on shore near fort	180 "

FAILURE: REASONS AND IMPLICATIONS Clearly the vain attempts by both mining groups to find a major workable seam in the Susquash deposit was the primary cause of the Company's failure to create a viable coal mine in the area of Beaver Harbour. No matter how many miners nor how much money the HBC was prepared to commit to the venture - one estimate has it at £25,000 - the coal simply did not exist in sufficient quantities to justify further coal mining activity at the level the HBC then could manage. Still, the Company had committed itself to developing a coal trade, and the arrival of the Gilmour party of twenty-five "practical men" for a time offered new hope. But as has been seen, the efforts of the second workforce merely served to confirm the insufficiency of the Susquash coalfield. In the months to January, 1851 only 12,822 tons.

34 Bancroft, *British Columbia*, p. 195. Although much of what Bancroft wrote has been proven inaccurate, his works nonetheless contain extensive accounts of economic activities and thus contain clues for more research. This table (as well as Fig. 2-2), for instance, form an interpolation from his description of the HBC's Susquash operation. Additional clues are to be found in "Robert Dunsmuir", PABC's "Vertical Files" (hereinafter PABCvf) and in Colville to Gov. & Cttee., 21 Jul 1852, *Colville's Letters*, p. 145. See, too, W. Kaye Lamb, ed., "Four Letters relating to the Cruise of the *Thetis*, 1852-53", *BCHQ* 6:189-206 (1942).

of coal were exported from Fort Rupert, an amount so small that it made for royalties of only \$1,489.50 - hardly enough for the governor's salary, far less an entire civil service.³⁵

Because the Susquash coalfield eventually was made to produce profitably for a few years in a later decade thanks to the use of higher coal mining technology, a second cause of the HBC's failure must be laid upon its paucity of skilled labour and power machinery.³⁶ By the mid-nineteenth century, British collieries of any consequence employed at least 150 miners supported by a wide array of steampowered machinery, including drills, pumps, and winches. At Beaver Harbour no such apparatus existed, and the white miners, working mainly with hand tools, produced only marginally better results than the Indians who gathered coal from visible outcrops. A fully operational British colliery of the time could produce 6,000 tons of coal per month; Fort Rupert could not match that amount in a year.³⁷

Ineffective management at all levels was the third major reason the venture failed. To begin with, senior company and civil officials normally were cut off by distance and poor communications from the mining

35 McKay, "Fur Trading System", p. 23 for estimate of expenditure; Douglas to Barclay, 29 Jan 1851, HBCA (PAM) A11/73 fo 38 for estimate of royalties.

36 See chap.4 for remarks on later Susquash coalfield activity.

37 For discussion on British colliery size and operation see Sidney Pollard, *The Genesis of Modern Management*, London (1965), pp. 9-24; for details on production see J.U. Nef, *British Coal Industry*, London (1932), and A.J. Taylor, "Labour Productivity and Technological Innovation in the British Coal Industry, 1850-1914", *EHR* 1:48-66 (1961).

operation, and when they did travel to Fort Rupert for inspections, it usually was in response to trouble. In 1850, for example, Governor Richard Blanchard made two visits, the last mainly to strengthen the hand of the local magistrate, Dr. J.S. Helmcken, in the latter's attempts to bring peace between the fur traders, the miners, and the Indians, all of whom had borne some responsibility for a recent breakdown in law and order at the fort.³⁸ During the previous winter and spring, McNeill had expected the miners to share in labouring work to maintain the establishment, an attitude that the Muir party believed violated the terms of their contract. When McNeill left for a voyage to the Queen Charlottes in April, his lieutenant, Thomas Blenkinsop, mishandled various incidents of insubordination by placing two miners in irons.³⁹ Eventually Blenkinsop was censured by even Sir John Pelly, governor of the HBC, for this action, but at the time it merely served to infuriate the miners. A wave of desertions by miners, labourers, and sailors from the *Norman Morrison* for California then occurred with disastrous consequences since three of the fleeing sailors were murdered by Indians.⁴⁰ Eventually Blanchard brought peace to the fort, but little enthusiasm to carry on mining then existed at any level. The most important lesson learned by

38 Richard Blanchard to Lord Grey, 9 Apr 1850 in "Vancouver Island Despatches to the Secretary of State, 1849-51", Colonial Papers, PABC. Also, A.N. Mouat, "Notes on the *Norman Morrison*", BCHQ 3:203-14 (1939), and G. Akrigg, *British Columbia Chronicle, 1847-1871*, Vancouver (1977), p. 29.

39 Andrew Muir diary, entries for May 1850.

40 Pelly to Douglas (private), 25 Oct 1850, cited in W. Kaye Lamb, "The Governorship of Richard Blanchard", BCHQ 14:1-40 (1950), and *op. cit.* for the miners' reaction.

Company servants from this labour strife was that fur trading and coal mining were distinctly separate activities, a point sharply driven home by Pelly himself who reminded Douglas of the miners' "special status" and their need to be treated with more respect.⁴¹ As will be seen, a wide range of reforms were initiated by Douglas in the financing, administration, and management of mining activities after the Company's coal operation was transferred to Nanaimo. Meanwhile, however, the HBC's reputation as a coal supplier continued to suffer.

ORIGINS OF THE NANAIMO COAL COMPANY Reports of a coal discovery on the Island's east coast approximately seventy miles north of Fort Victoria reached senior Company servants as early as 1849. Joseph McKay, chief trader at Victoria, investigated the site in May 1850, passing his findings to Douglas who chose not to exploit the new find as the HBC's main effort was still being directed towards making the Beaver Harbour coalfield a success.⁴² Again the Indians were allowed initially to exploit the new-found deposits, extracting and piling about 200 tons by mid-September.⁴³ Later that month Boyd Gilmour and ten miners were

41 Kaye Lamb, "Governorship of Blanchard". Pelly's 25 Oct 1850 correspondence to Douglas stated outright that Muir should have been in-charge of the miners, not the traders. See also Dorothy Blakey Smith, ed., *The Reminiscences of Doctor John Sebastian Helmcken*, Vancouver (1975), pp. 105-08 for further details and impressions of the clash between the miners and the Fort Rupert management.

42 T.A. Rickard, "A History of Coal Mining in British Columbia", *The Miner* 15:6:30-34 (1942); also B.A. McKelvie, "The Founding of Nanaimo", *BCHQ* 8:169-88 (1944).

43 Bancroft, *British Columbia*, p. 195. Bancroft claimed he obtained his facts on Nanaimo's early production from personal interviews with McKay.

sent to the new location (now known as Nanaimo) where they began at once to dig a pit on the harbour's northwest corner.⁴⁴ Production rose quickly, reaching 120 tons per week from a seven foot thick measure which they called the "Douglas Seam". Once spring came, Gilmour's group was replaced by another party of miners (led by John Muir) who moved south from Fort Rupert. Within a short time, coal mining at Nanaimo was proceeding in four separate pits, but with very low production due to the small numbers of men and machines.⁴⁵

As months passed, it became obvious to Douglas that the Nanaimo find held greater promise than the Susquash deposits, and to confirm this impression, he made an extensive inspection of the Nanaimo operations in early August 1852.⁴⁶ Upon his return to Victoria, Douglas wrote to McKay, instructing the chief trader to "formally take possession of the coal beds" for the HBC.⁴⁷ McKay responded immediately, beginning what was to become a three-year task of supervising the erection and initial operations

44 This was a temporary duty for Gilmour. He returned to Fort Rupert after a short time, and did not become part of Nanaimo's permanent establishment until Dec 1852. Douglas' "Journal" HBCA (PAM) A11/73 fo 296.

45 Bancroft, *op. cit.*, p. 196. Also, Kaye Lamb, "Cruise of the *Thetis*", pp. 199-200.

46 Douglas to A. Barclay, 23 Jun 1852, Van. Is. Colonial Correspondence "Letter Book", PABC MSS. Douglas became not an infrequent visitor to Nanaimo, staying usually for several days. Often during these stopovers, his enthusiasm for the new industry led him to join surveying parties and work crews. And upon seeing him depart for Fort Victoria, McKay knew correspondence filled with suggestions, urgings, and instructions was sure to follow. See Sage, *Sir James Douglas*, for detailed accounts of these visits.

47 Douglas to McKay, 24 Aug 1852, "Nanaimo Correspondence; James Douglas - Joseph McKay, August 1852 - September 1853", PABC MSS.

of British Columbia's first genuine colliery, the Nanaimo Coal Company, a subsidiary of the HBC. With McKay's reports forming an increasingly clear picture of the new coalfield's huge potential, Douglas' own excitement mounted, causing him to claim that first winter that their efforts were "crowned with success", adding he felt "the greatest possible anxiety to see this important discovery turned to good account".⁴⁸ His plan was to sell "as much as possible" for ten dollars per ton at the pithead, though he also stressed the District was eager to have more than American clients. He further said a "substantial San Francisco mercantile house" had offered to lease the mines and finance their development" by means of a Joint Stock Association".⁴⁹ Various California buyers apparently had offered to purchase all the coal that could be raised, but the chief factor wanted London's guidance before signing any contracts. He mentioned Nanaimo coal currently was selling in San Francisco at \$15-\$16 per ton, but believed this price would rise when the coal's quality became better known. His other main concern was to increase the size of the workforce, saying the "boundless supply" of coal meant "miners are much wanted" and then quoted Muir as wanting 30-40 coal mining families at Nanaimo.⁵⁰

48 Douglas to Barclay, 3 Dec 1852, HBCA (PAM) A11/73 fo 642.

49 *Ibid.*, fo 643. Worth noting is the chief factor's sundry requisition at the time for the miners. For provisions: 200 bbl mess pork, 200 bbl sound flour, 50 firkins Irish butter, 30 cwt raisens for puddings - clearly foodstuffs for a strength- and energy-giving diet. For tools: 100 3½ lb. miner's picks, 40 coal mells ("a kind of hammer"), 6 doz. "round-mouthed" shovels. *Ibid.*, fo 648. See chap. 7 for range and descriptions of miner's tools.

50 From Muir to Douglas, 6 Dec 1852, HBCA (PAM) A11/73 fo 650.

COLLIERY MANAGEMENT REFORMS Among the policies Douglas laid down from the outset for Nanaimo was an insistence that coal mining be handled as much as possible as a separate commercial and industrial activity. The Nanaimo Coal Company was given its own accountant, budget, and instructions for conducting both operations and sales.⁵¹ John Muir, whom Douglas had prevailed upon to return from recent retirement, was assured by the chief factor that as "oversman" (or supervisor), Muir would have complete control over all mining matters, even to the extent that any dealings the Company might have with the miners would have to be cleared first through Muir.⁵² Reluctantly, Muir agreed to sign a two-year contract and soon found himself in direct conflict with Gilmour, oversman for a second contingent, who claimed the former was incompetent. Gilmour eventually assumed command of all miners, but he never exhibited the same qualities of leadership or loyalty the original oversman had shown. By 1855 Gilmour had returned to Scotland, and his duties were assumed by George Robinson, leader of a recently arrived party of miners recruited by the HBC at the Brierly Hill Colliery in Staffordshire, England. Robinson was given the new title of

51 See all Douglas - McKay letters in "Nanaimo Correspondence, 1852-53" for a general view of policy formation re: the Nanaimo Coal Co., and see especially Douglas to McKay, 5 Jul 1853 where Douglas stressed that the chief trader maintain separate ledgers for the coal company. Earlier Douglas received instructions from HBC HQ to this effect. HBC Secy to Douglas 14 Jan 1853, HBCA (PAM) A6/30 fo 57d.

52 Douglas to McKay, 26 Aug 1852.

Nanaimo Coal Company manager which he kept until the mines were sold in 1862.⁵³

From the beginning, operational control of the Nanaimo Coal Company was shared by James Douglas who administered appropriations and sales, Joseph McKay (and later Charles Stewart) who developed Fort Nanaimo and managed the port, and the oversmen who supervised actual mining operations.⁵⁴ Of these men, McKay had the most difficult task during the initial years of operations. His appeals to Douglas for supplies usually had little effect since the chief factor insisted upon self-sufficiency and more attention towards surveys and production.⁵⁵ With so few miners available, McKay was forced to rely heavily upon native labour, a circumstance that increased inter-tribal friction and made life for the white population hazardous.⁵⁶ At the same time, Douglas expected

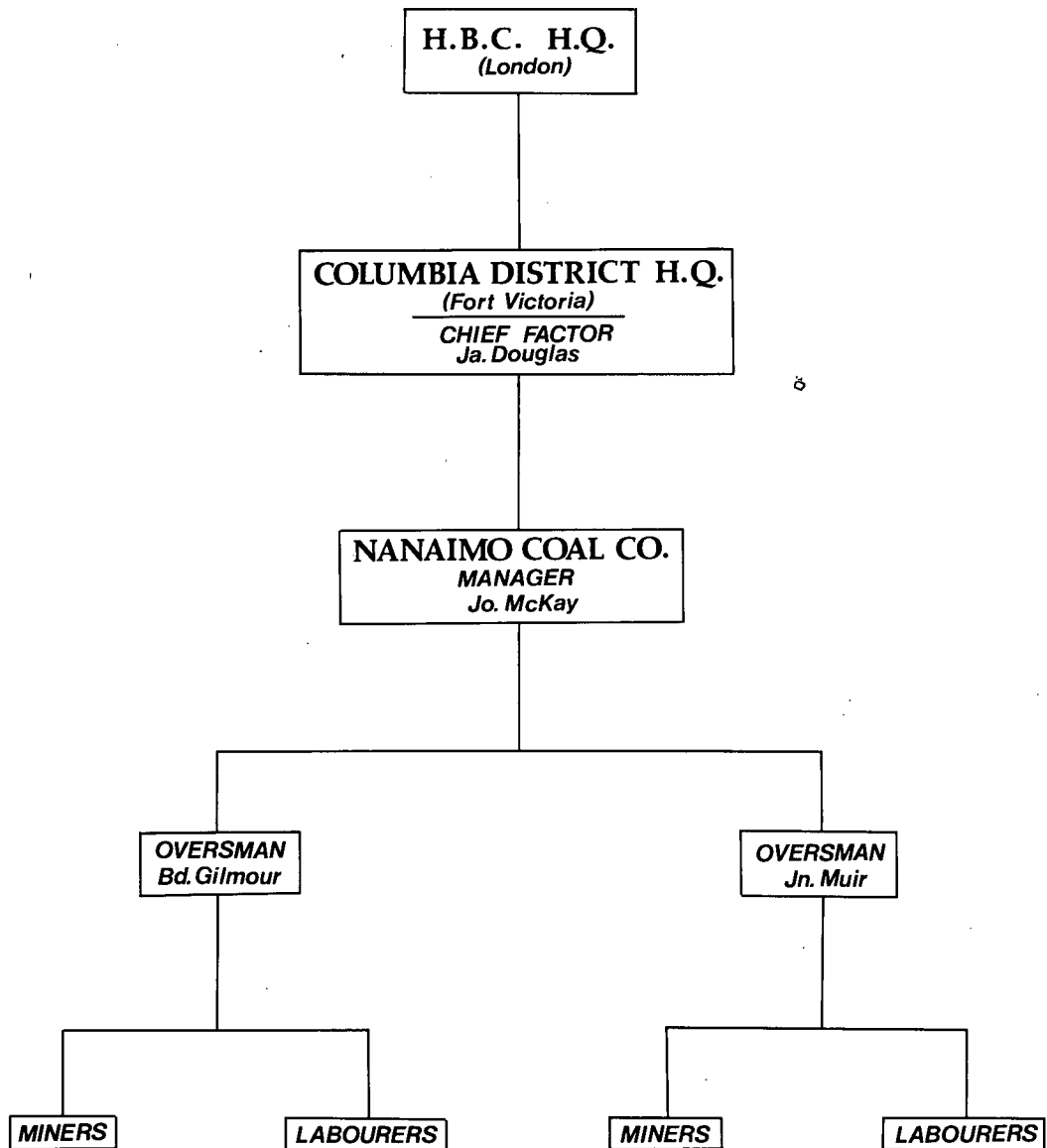
53 More facts on Gilmour may be found in James Audain, *From Coalmine to Castle, The Story of the Dunsmuirs of Vancouver Island*, New York (1955), pp. 7-12. Robinson's appointment is discussed briefly in B. Goult, "First and Last Days of the *Princess Royal*", *BCHQ* 3:15-24 (1939).

54 See Fig. 2-3 for Douglas' revised management structure.

55 Again see "Nanaimo Correspondence" for a full account of events at Nanaimo during the start-up period.

56 *Ibid.*, The Indian issue remained complex, ranging from the HBC's legitimate concern that natives employed in industrial activities like coal mining, construction and even farming would be unavailable for the fur trade, to the need for maintaining a high level of law and order without undue interference in tribal matters. E.E. Rich's two volume study *The History of the Hudson's Bay Company 1670-1870*, HBRS (1959), emphasizes these issues throughout the work, and is well worth consulting on the matter of Company-Indian relations. According to all biographers of Douglas, the chief factor was particularly sensitive to native needs and their treatment at the hands of the Whites, Company servants or otherwise. Rich, Sage, Ormsby, and Derek Pethick (see Bibliography) all give this feature considerable attention.

Fig. 2-3 H.B.C. COAL MINING HIERARCHY, 1853



DTG-78

McKay to adhere strictly to instructions regarding payments by captains of visiting ships, particularly the Americans.⁵⁷ Nor was Douglas sympathetic to McKay's complaints of technical difficulties such as machinery breakdowns or flooding.⁵⁸ Yet this seemingly tough approach by the chief factor did force the Nanaimo Coal Company management to come to terms with its difficulties, and, by 1856, the mining operation had evolved into a modest but viable colliery capable of sustained production. For Douglas it was well that it had, for he was becoming increasingly distracted by events on the Mainland, several of which could have considerable impact upon future coal production.

RECRUITING POLICY AND EMPLOYMENT PRACTICES By mid-decade the main workforce was comprised chiefly of White miners drawn from the Ayrshiremen who had worked earlier at Fort Rupert and the Staffordshire miners who arrived in November, 1854. Through time, miners in the first group had achieved some minor improvements to the terms of their original agreements, most of which were incorporated into the contracts of the English miners. These newcomers each signed an indenture binding him to the Hudson's Bay Company as a "working collier or labourer" for a term of five years from the time of arrival on Vancouver Island. As Company servants, all were obliged to work their passage, build their families' homes, and pay one pound per annum rent for one acre of land on which to erect their dwellings. Once at work, their indenture assured them a ten hour day during which

57 Douglas to McKay, 12 Sep 1853.

58 McKay's letters almost always contained reports of technical problems, usually with a request for understanding, sympathy, and assistance.

they would either construct upperworks, sink shafts and pits, cut stone, or mine coal. If engaged as miners, they were expected to produce forty-five long tons of "clean round coal" per month for which they would be paid an annual wage of seventy-eight pounds sterling. For every additional ton extracted, the miners would receive six shillings, ten pence.⁵⁹ Those men not mining, but working at other tasks in the colliery, were to receive comparable compensation as determined by the "overseers" (oversmen). Another shilling per day was earned in lieu of rations, and before departing England the men were given a fifteen-pound-sterling repayable travel advance. Should a miner die in the Company's service, his family would be returned to England, passage and rations provided. A fifty-pound-sterling penalty clause for either party - Company or servant - also was written into the contract, as was a clause - generous for the time - stating "all tools and implements necessary for labour" would be provided at the HBC's expense.⁶⁰ While such terms were not markedly different from those afforded other Companymen on Vancouver Island, they nonetheless helped define more clearly the essential differences between the work of coal miners and that of labourers or traders.

Despite the administrative value in making this distinction, and the real benefits that fell to the miners as a result, living conditions at Fort Nanaimo were primitive and at times hazardous.

⁵⁹ "Indenture" of Edwin Gough to the HBC, 1 May 1854, PABC MSS. The wage rate of 1852 was £50 per year plus board and room for producing 30 tons per month. 2s 6d was paid for every additional ton raised. As oversman, Muir received £100 per year. Douglas' "Journal" All/73 fo 291d.

⁶⁰ "Indenture", *op. cit.*

California, by comparison, seemed to offer much more, including greater economic opportunity and a better climate. Such circumstances had its effects, for in September 1855 eight men struck, leaving immediately for Fort Victoria with an ultimate destination of San Francisco in mind.⁶¹ Ostensibly their complaint had been low wages, but more likely they had tired of being both bound to the Company and isolated on Vancouver Island. Douglas intercepted and severely reprimanded them for breach of contract, using threats of imprisonment that forced all to return to the coal mines.⁶² Trouble flared again during the summer of 1856, culminating in scattered desertions to recently opened American coal mines at nearby Bellingham Bay and the sending of a six man delegation to Fort Victoria on the anniversary of the 1855 strike to confront Douglas with demands for more wages and better working conditions.⁶³ The miners' delegation returned to Nanaimo with what Captain Charles Stewart (McKay's replacement) termed "some concessions", and apart from another two-man desertion the following January, the labour situation at the mines settled-down until 1858 when the Mainland gold-rush began and another series of desertions followed.⁶⁴

61 "Nanaimo Journal": August 1855-March 1857 - Capt. Chas. E. Stewart", PABC MSS. For details on the 1855 strike see entries for 11 Sep-6 Oct. See also chaps. 5 & 6 of this thesis for some longer term implications.

62 *Ibid.*, 6 Oct 1855.

63 *Ibid.*, 11 Sep 1856.

64 *Ibid.*, 22 Sep 1856 and 27 Jan 1857.

MARKETS, PRODUCTION, AND SALES While the District's room to manoeuvre in labour relations was limited largely by structural constraints inherent in the Company's recruiting and employment practices, local officials did enjoy considerable freedom in the spheres of management and marketing. The most significant reform achieved at the administrative level had been to separate coal mining operations and sales from other branches of trade. As for sales, Douglas initially pursued an aggressive approach to building markets, emphasizing the need to service both visiting ships and the growing California market. By early 1853, he engaged a group of ex-HBC servants, (who earlier had become resident commission merchants in San Francisco), to act as the Company's agents for coal sales in that city. Led by Thomas Lowe, the agents managed to sell an impressive first consignment of 4,500 long tons, though only at sixteen dollars per ton and not the forty that Douglas had hoped for.⁶⁵ Lowe explained the market was "glutted", and in an attempt to head-off any retreat by the HBC, he quoted an issue of *Prices Current* which stated experiments conducted with the Island's first coal shipment had proven "very satisfactory". Lowe was further worried during a deep recession that hit California in 1855, realizing at that time that his surest source of income would be dealing in HBC coal as long as he and his associates could keep the supply flowing.

65 The chief factor's high expectations were based upon recent California quotes of \$21 per ton with coal prices at San Francisco "gradually rising". Douglas to Barclay, 15 Jun 1853, HBCA (PAM) A11/74 fo 13. Douglas was disappointed that year when forced to reduce the pithead price from \$12 to \$11. Douglas to Barclay, 21 Sep 1853, *op. cit.*, fo 18. Still a weekly production increase from 70 to 110 tons was encouraging. *Loc. cit.* By November weekly output had grown a further 10 tons while "good demand was keeping [Island coal] prices high" at San Francisco. *Ibid.*, fo 22.

Douglas, meanwhile, was showing preference for local sales to naval and merchant ships, chiefly because transport costs were negligible and profits thereby greater. Lowe viewed this attitude as short-sighted, complaining that so timid an approach would never result in a large-scale San Francisco market for Vancouver Island coal.⁶⁶

In view of the HBC's difficulties in stockpiling sufficient coal to meet the Royal Navy's demand for fuel during 1854-56, it is hard to imagine how Douglas or any of his subordinates could have made the Nanaimo Coal Company more active in the southern market at that time. The first coal shipment out of Nanaimo had occurred in September 1852 when the *Cadboro* sailed with 480 tons gathered by Indians and loaded in barrels.⁶⁷ By the end of 1853, only 2,000 tons had been shipped-out of Nanaimo, and half of this amount was produced by native labour working without picks or shovels.⁶⁸ Production the following year was also very low, despite the influx of more White miners, and when Douglas received

66 "Thomas Lowe" Letters Outward, 1852-59" PABC MSS, *passim*; also J.M.S. Careless, "The Lowe Brothers, 1852-70: A Study in Business Relations on the North Pacific Coast", *B.C. Studies* 2:1-18 (1969).

67 McKay to Douglas, 16 Sep 1852. Apparently the cost of loaded coal at Nanaimo in 1852 was \$10 per ton for mention was made by the chief trader in this letter that the *Honolulu Packet* recently purchased 32 tons for \$320. The HBC initiated a backhaul trade of its own at this time due to Lowe's suggestion of ballasting the *Mary Dare* for its return voyage with "sufficient quantities of molasses, bar iron, nails, etc. which will sell at a profit". Douglas' "Journal" 11 Oct 1852, HBCA (PAM) A11/73 fo 293.

68 Bancroft, *British Columbia*, p. 199. Bancroft also stated that in May 1853 a ton of coal at Nanaimo cost \$11 per ton, at San Francisco the same product was selling for \$28 per ton while Bellingham Bay coal cost \$23 per ton in that city. Also worth noting on the subject of Douglas' 1853 visit is Sage, *Sir James Douglas*, p. 173.

a request for 1,000 tons to be ready for a navy squadron due at Vancouver Island in July 1855, he personally visited Nanaimo in June to ensure McKay and Robinson were having the workforce stockpile accordingly.⁶⁹ By November nine miners working round-the-clock in three shifts were extracting up to thirty tons of coal daily from Number One mine, and an equal amount could be loaded onboard visiting ships in a single day.⁷⁰ Still, technical problems like flooding and mechanical breakdowns were common, precluding any hope for the time being that this level of production could be sustained, far less increased.⁷¹ Equally worrisome for management was the low level of colliery morale. Just prior to the strike in September, Douglas visited Nanaimo and agreed to Robinson's urging that the miners be paid by the ton since the annual wage system held little inducement, causing "idleness" instead. New rates of 4 shillings 2 pence per ton plus 1 shilling 4 pence per day in lieu of rations were set - but not to be effective before year's end. Further prodding by the oversman secured for the miners a concession of free tools and medical services. Douglas kept to his word about salary changes despite the strike and

69 D.C. Davidson, "The War Scare of 1854: The Pacific Coast and the Crimean War", *BCHQ* 5:243-54 (1941). In February 1855 the Pacific Squadron commander, RAdm. H.W. Bruce, had written Douglas from Valparaiso asking that provisions, hospital facilities, and coal be made available for a visit by navy ships in July. For details on naval events and policies in the 1850's see "Correspondence Relating to the Establishment of a Naval Base at Esquimalt", *BCHQ* 6:277-96 (1942); F.V. Longstaff and W. Kaye Lamb, "The Royal Navy on the Northwest Coast, 1813-1850", *BCHQ* 9:1-24, 113-128 (1945); Gough, *The Royal Navy . . . North America* (1971), pp. 84-149.

70 Bancroft, *British Columbia*, p. 200.

71 See "Nanaimo Correspondence" and "Nanaimo Journal", *passim*.

a fall-off in production from 30-40 tons daily in early September to only 24 tons by mid-October.⁷²

The wage reform of 1856 was welcomed by all, and within the year most of the Nanaimo Coal Company's technical and labour problems associated with start-up had been overcome. Production climbed steadily until it reached nearly 20,000 tons per year in 1862.⁷³ Considerable progress was made, too, in reducing costs to the consumer. The average price charged for coal in 1853 was eleven dollars per ton at Nanaimo, twenty-eight dollars per ton at San Francisco.⁷⁴ But by 1861, on-hand supplies were large enough and production high enough for the Nanaimo Coal Company to sell its coal at the pithead for seven dollars per ton and in San Francisco at an average of twenty dollars per ton, prices that allowed the Company to remain competitive while managing to turn a reasonable profit.⁷⁵ A year later Vancouver Island coal had become fully

72 Douglas to W.J. Smith (HBC Sec'y), 24 Jul 1855, HBCA (PAM) A11/75 fo 664-67.

73 B.C. Min. of Mines, *Annual Report*, 1975, p. A 87. Actual figure listed for 1862 production is 18,409 tons for a value of \$72,472. The value of gold exported from the Mainland in 1861 was estimated at \$2,666,188. B.C. Min. of Mines, *Report*, 1875. See Fig. 2-4 below.

74 See fn 69 above for reference to sources describing negotiations re: local coal sales. Attempts to trace the San Francisco prices of Nanaimo coal for the 1850's have been frustrating insofar as no two sources appear to agree. Moreover, the California market fluctuated widely in that decade (see chap. 8 of this study), making it difficult even to detect trends. Finally, prices are quoted in either British or American currency depending upon the source, and without a full knowledge of exchange rates, the overall picture becomes approximate at best.

75 The HBC did not admit to having benefited from its coal operations, however, for in its demands for compensation from the government at the time it was forced to relinquish control of the Island colony, the Company claimed it was owed £131,455, much of which had been spent in developing the coal mines. E.E. Rich, *Hudson's Bay Company*, pp. 777-78.

competitive in the California market, despite an American "drawback" duty of twenty percent on all foreign fuel.⁷⁶

Table 2-4. Comparative Coal Prices (1862).⁷⁷

Source	Pithead	Victoria	San Francisco
Nanaimo	\$6 to \$7	\$11	\$12 to \$15
Chile	-	-	\$12 to \$15
England	-	-	\$12 to \$20
Australia	-	-	\$12 to \$13

With an annual coal consumption of 168,000 tons by 1860, San Francisco had become the most important coal market in the eastern Pacific, and all suppliers were eager to gain as strong a foothold as possible.⁷⁸ By 1862, the Hudson's Bay Company finally appeared to achieve the breakthrough it had hoped for when returns for the first quarter of the year showed the Nanaimo Coal Company product had climbed from sixth to third place in sales.

⁷⁶ *British Colonist*, Victoria, 23 May 1859, p. 1. This newspaper article also mentioned that the American tariff had caused 10,000 tons of coal to be left unsold at Nanaimo.

⁷⁷ Mathew Macfie, *Vancouver Island and British Columbia*, London, (1865), p. 144.

⁷⁸ *Ibid.*, pp. 141-50.

Table 2-5. Coal Imports by Source at San Francisco⁷⁹

Source	1 Jan - 16 Dec 1861	1 Jan - 15 Mar 1862
New York (anthracite)	26,291 tons	5,176 tons
England	24,895 tons	5,036 tons
Bellingham Bay	16,183 tons	2,535 tons
Australia	12,304 tons	3,942 tons
Chile	12,254 tons	-
Vancouver Island	5,204 tons	4,235 tons

When projected for a full year, the first quarter sales of Island coal to San Francisco in 1862 amounts to approximately 16,940 tons. But such was not the case as only 7,860 tons or 42.2% of the Nanaimo Coal Company's total output for 1862 reached California. The large first quarter sales simply mean that the San Francisco market was seasonal.

Table 2-6. Nanaimo Coal Co. Exports (1852-62)⁸⁰

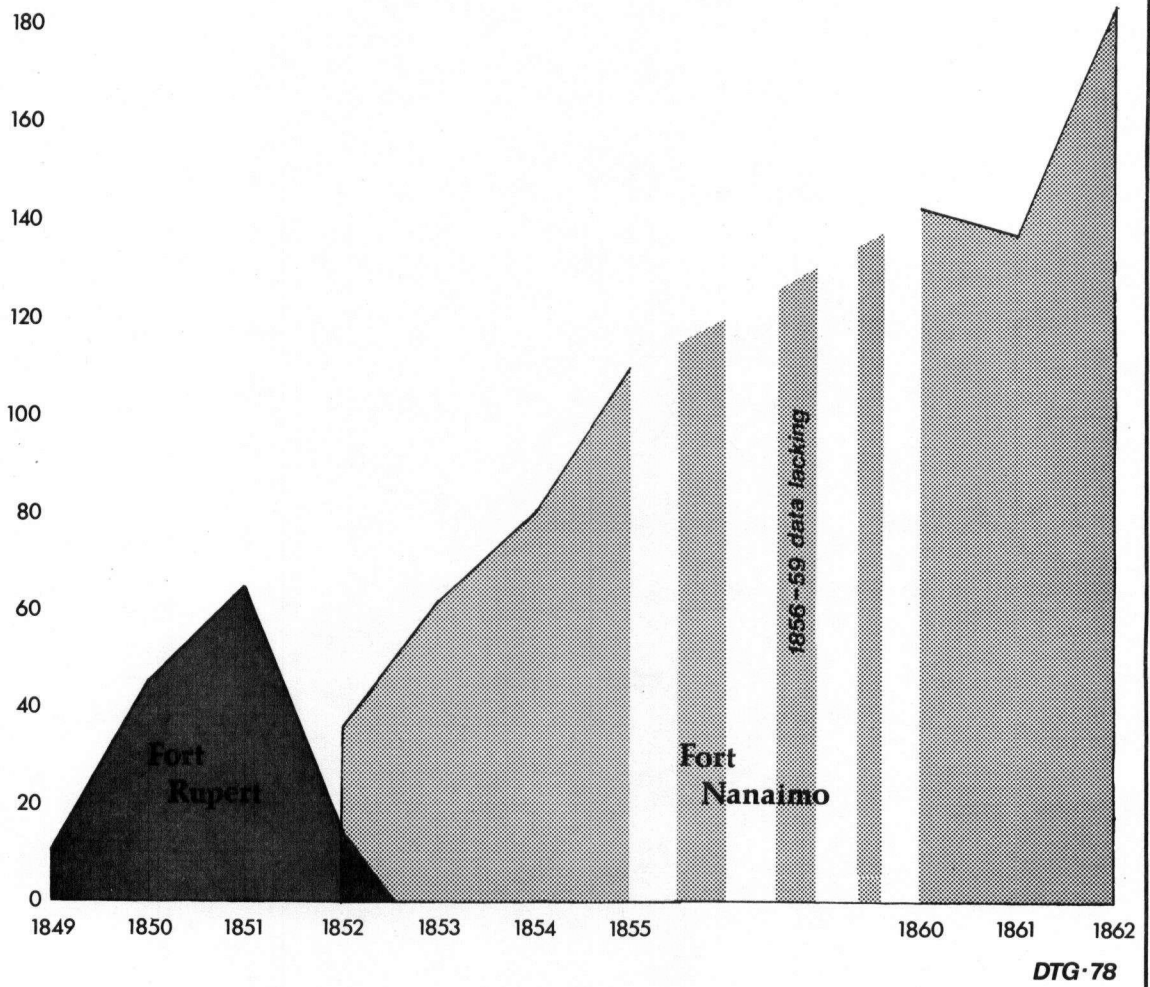
Period	Coal Exported
Oct 1852-- Nov 1859	25,398 tons
Dec 1859 - Dec 1862	48,128 tons
Total	73,526 tons

Yet it is obvious from the figures in Tables 2-6 and 2-7 that the rate of production by 1860 was increasing rapidly, and that despite the seasonal nature of foreign sales, exports were becoming more and more important. Domestic sales also moved ahead, buoyed by

⁷⁹ Macfie, *op. cit.*, p. 143

⁸⁰ Macfie, *op. cit.*, p. 146.

Fig. 2-4 H.B.C. COAL OUTPUT, 1849-62
(hundreds of long tons)



larger purchases made by Victoria merchants for the local market and by the Royal Navy at Esquimalt where a small coal depot was being constructed. Withingashort period, however, export sales surged ahead of domestic sales, remaining there until 1912 when the local market became the more valuable of the two.⁸¹

Table 2-7. Coal Production on Vancouver Island (1849-62)⁸²

Period		Coal Produced	Value
1849 - 59		37,985 tons	\$149,548
1860 - 62		46,879 tons	182,556
Totals		84,864	\$332,1044

III

END OF THE HBC'S COAL MONOPOLY Few issues in British Columbia's early history are as significant or as complex as the changeover from Company control to Crown rule.⁸³ Among the most important long-term effects of this shift was the displacement of Indian trade by extractive industries as the region's main economic base. The HBC had been experimenting with coal, lumber, fishing, and farming before its monopoly was finally broken in 1859, but not with sufficient speed to satisfy its critics who

81 B.C. Minister of Mines, AR, 1912.

82 *Ibid.*, 1975, p. A 87.

83 The historiography on this subject is extensive; the more important recent studies are: Innis, *The Fur Trade* (1930); Sage, *Sir James Douglas* (1930); J.S. Galbraith, *Hudson's Bay Company as an Imperial Factor* (1957); Ormsby, *British Columbia: A History* (1958); Rich, *Hudson's Bay Company* (1959).

believed the Company's politico-commercial hegemony was an anachronism, an obstacle to full economic development rather than a primary means of opening the country.⁸⁴

Merging the Northwest Company and the Hudson's Bay Company in 1821 under the name and trading charter of the latter made the HBC dominant in the Pacific northwest. In May, 1838 the Hudson's Bay Company was granted exclusive trade rights for twenty-one years in those continental territories not belonging either to British Provinces, the United States, or other European powers. The Oregon Boundary Settlement of 1846 removed the lands south of the forty-ninth parallel from this grant, but it also served to consolidate Company operations and control in the areas the HBC still occupied. Vancouver Island, however, had not been included in the original grant. Hence, after lengthy negotiations between the HBC and the Colonial Office, the Island became a Company Colony in 1849 on the understanding that the HBC would settle the Island with British immigrants and use proceeds from the exploitation of natural resources to build the colony. Despite objections from the HBC's critics, the British government saw an opportunity for colonizing the Island with little cost to itself and thereby accepted the Company's assurances of an orderly and rapid settlement. Coal lands and their potential development was an especially sensitive issue, for the Admiralty in particular was eager to

84 Those studies in fn 83, and for more on the general significance of this theme see P. Knaplund, "Letters from James Edward Fitzgerald to W.E. Gladstone concerning Vancouver Island and the Hudson's Bay Company, 1848-1850", *BCHQ* 13:1-22 (1949) and two studies by Barry Gough, "The Hudson's Bay Company and the Imperialism of Monopoly: A Review Article", *B.C. Studies* 18:70-78 (1973) and "The Character of the British Columbia Frontier", *B.C. Studies* 32:28-40 (1976).

have this resource reserved for the Crown.⁸⁵ Nonetheless, the colonial secretary, Lord Grey, believed the government had struck a good bargain when the Company agreed to keep for itself only one tenth of the profits on all coal sales, depositing the remaining ninety percent in a general colonization and improvement fund.⁸⁶ By 1856 agitation both in the colony and at home for removal of the grant had grown intense, and the colonial office made it plain to the Company that a renewal of its trade monopoly likely would be denied.⁸⁷ When gold discoveries on the Mainland brought on the mining rush of 1858, the HBC found itself hard-pressed to defend its exclusive trading rights, a circumstance made more difficult by the fact that several senior District officers - Douglas among them - held both by civil and Company positions which put them in conflicts of interest. Fortunately for these officials, coal mining was far enough out of the new mainstream of the colonial economy that operations in Nanaimo could proceed more or less routine, and thus not burden them further.

Douglas' original policy of levelling coal royalties for the Nanaimo Coal Company at 2s6d on each ton of coal loaded at the Pithead had prevented the rise of an illicit coal trade.⁸⁸ Additionally, the HBC owned just upwards of 6,000 acres of land at Nanaimo (with attendant

85 See discussion in chapter one of this thesis pp. 31-2.

86 Lord Grey to H. Labouchere, 19 Jan 1858, "Duke of York and Albany Papers", pp. 54-57, Public Archives of Canada MSS.

87 See fns 83 & 84 above.

88 Douglas to McKay, 24 Aug 1852.

coal rights) thanks to Douglas' foresight two years earlier in purchasing the land at ~~£~~1 per acre.⁸⁹ This initiative was criticized by his superiors at the time, but it soon proved a wise move, for a House of Commons Select Committee formed by Grey's successor in the colonial office, Henry Labouchere, to study the Company's record as a colonizing agent, had by now recommended the grant of Vancouver Island not be renewed.⁹⁰ In subsequent ~~acrimonious negotiations~~, the government's final offer of compensation to the HBC for the latter's effort on behalf of the colony amounted to ~~£~~46,524, of which only ~~£~~12,500 was allotted for coal prospecting and development - ~~ahsum~~ the Company reluctantly accepted in 1860, thus marking the end to its trade monopoly, and the beginning of the end for its coal mining activity.⁹¹

THE POSITION OF COAL MINING ON VANCOUVER ISLAND IN 1862 Although events were forcing the Hudson's Bay Company aside to make room for the new political economy that was emerging in the colonies of Vancouver Island and British Columbia, few could have faulted Douglas and his associates for the effort they had made over the years to create a coal industry.⁹² By 1862, the HBC's mining apparatus at Nanaimo, (which is described in detail in the following chapter), was comparable in size, sophistication, and productivity to those British collieries having a similar number of

89 Rich, *Hudson's Bay Company*, pp. 761-73; see, too, J.S. Galbraith, "The Hudson's Bay Company Under Fire, 1847-62" *CHR* 30:322-35 (1949).

90 Ormsby, *British Columbia*, p. 125 for a concise account of the Select Committee's recommendations. See also "Duke of York and Albany Papers", PAC MSS, for correspondence between Grey and Labouchere on the matter.

91 Figures supplied by Rich, *Hudson's Bay Co.*, pp. 777-78.

92 Constrained as they were by their loyalty to the HBC, these officials clearly had entrepreneurial instincts of their own. During 1852-53, for

working miners.⁹³ Much of the operation had been mechanized, and a large body of skilled miners were employed. Competition from the Cariboo gold mines for equipment and unskilled labour remained intense for the Nanaimo Coal Company, but as long as the coal industry continued to be monopolized by the HBC with its considerable resources, sufficient men, money, and machines normally were available whenever they were needed to maintain coal mining at an acceptable level of production.⁹⁴

Administration and management of the coal trade in 1862 tended to be more closely linked now that Douglas and several of his subordinates had left the Company's employ to devote themselves to civil matters,

example, Douglas, Pemberton, Tolmie, McKay, and McNeill formed a joint-stock sawmill company totally outside the HBC's charter. Shares were subscribed at £70 each; Douglas was made managing chairman, McKay named one of the managing committee. Ostensibly the company was established "in response to rising demand for sawn timber [in the Pacific]". Apparently HBC headquarters sanctioned this step, in that it approved the hiring of an engineer in London and assisted in locating a "good and servicable high pressure steam engine without unnecessary ornament". By Jan 1854 this venture was in trouble due to the "original capital [£1,800] inadequate". Despite a further investment of £1,600, the company folded without profit. Vancouver Island Steam Sawing Mill Co., "Various Documents", HBCA (PAM) F32/1.

Possibly this early failure in risking their personal savings caused these senior bureaucrats to avoid or ignore other investment opportunities as none appear to have done so during the remainder of their respective tenures with the HBC. Still, it is obvious that in their handling of the HBC coal mines, Douglas and McKay, at least, exhibited strong entrepreneurial abilities, even if the HBC was the chief beneficiary of their capitalist drives.

93 For an assessment of British Colliery efficiency, see Taylor, "Labour Productivity . . . British Coal Industry", pp. 48-51. See also Chap. 6 below for detailed examination of the workforces in B.C. collieries, 1850's-80's.

94 It is worth noting that the provincial minister of mines estimated there were 4,100 gold miners in B.C. during 1862, whereas the Nanaimo Coal Company never had more than 200 men handle all its operations. B.C. Min. of Mines, *Report*, 1875, p. 29. More emphasis to the matter of competition between gold mining and coal mining for capital, labour, and equipment is given in following chapters of this thesis.

with the result that industrial, and not bureaucratic or commercial, attitudes now dominated the coal mining operation. Virtually all levels of management in the Nanaimo Coal Company were filled with experienced miners who had proven themselves capable either as administrators, supervisors, engineers, surveyors, or salesmen. Indeed, many of these men would continue to dominate the province's coal industry for most of the remainder of the century. Yet except for a very small number amongst them, these miners had few thoughts of beginning collieries of their own, apparently preferring to continue as employees of the Nanaimo Coal Company and later, its successor the Vancouver Coal Mining and Land Company.

Markets and sales in 1862 were still heavily weighted in favour of exports for the obvious reason that only California could absorb the ever-growing supply of coal being produced at Nanaimo. Moreover, enough experience had been gained by the Hudson's Bay Company employees in the San Francisco coal market to make the Islanders confident that they would continue to export their product whether or not the HBC decided to sell its coal operation. Consequently, those involved in the new industry in 1862 generally were optimistic about the future of coal mining on Vancouver Island, and looked forward to ever-increasing sales, including more at home where demand was rising steadily though not dramatically.⁹⁵

As for the Hudson's Bay Company itself, the success it had achieved with coal mining was mixed in its effects. It is not possible for us to determine if the Company profited much by its coal mining

⁹⁵ For a clear impression of the relevance of the coal industry at this stage of its development to the trend of B.C.'s reliance upon staple products see R.E. Caves and R.H. Holton, *The Canadian Economy*, Cambridge, Mass (1959) pp. 30-9 and 218-20. See also R.A. Shearer, *Trade Liberalization and a Regional Economy*, Toronto (1971) pp. 3-42. Both argue the early B.C. economy was almost totally dominated by efforts to export natural resources and import finished goods.

venture; certainly in the initial years it lost money through inefficiency, waste, and the financial drain caused by colliery-building. Possibly sales between 1856-62 were sufficiently large to greatly offset the Company's original losses, but this is not likely.⁹⁶ While there were quickly gained side benefits to the HBC from its coal operations such as reaching self-sufficiency in fuel and ensuring it retained its monopoly in this trade, too, the Company's main objective of creating a new commodity trade could not be so readily achieved despite the fast-growing demand for coal. Such a view could explain both the HBC's willingness to divert large sums of money from other District activities and the caution with which Douglas came to approach foreign markets. In any case, the colonists were fortunate to have as a main legacy of the Company's rule a viable colliery which, if properly developed from that point on, could be used to help create an industrial economy for the region.

96 It is interesting from the available data to speculate just how profitable the HBC's coal mining venture was. As noted in Table 2-7, the B.C. Min. of Mines (1912) reported total value 1849-62 was \$332,104; according to E.E. Rich (fn. 75 above), the HBC claimed its costs for all colonial development were £131,455 (including coal); the gov't awarded £46,524 of which £12,500 was for coal. (*loc. cit.*). Now, arithmetic has it that the gov't's proportion for coal (27%), when applied to the HBC's original claim, meant the Company could argue it had expended about £35,000 in colliery development. Taking an exchange rate of £1 = \$5, HBC expenditures then would have totalled \$175,000 or just over half of its sales. When seen in terms of mean annual profit, however, we have only \$13,000 per year. Still, as will be seen in chap. 3, the HBC was able to realize a further £40,000 through sale of the colliery to the VCMLC. Hence, it is reasonable to say that while the HBC's coal operations were major financial drains in the early years, both overall and in their last years especially the mines were profitable.

Chapter Three

RESIDENT MANAGERS

INTRODUCTION In this second of four chapters aimed mainly at describing the administration and management of British Columbia's coal industry to 1891, emphasis is placed on the resident manager system as developed by the Vancouver Coal Mining and Land Company, purchaser of the Hudson's Bay Company's coal operation at Nanaimo. The HBC organization and approach to mining had left no room for entrepreneurial activity and very little scope for managerial initiative. Although formation of the Nanaimo Coal Company had removed many constraints on mining itself, matters of broad policy still were handled by fur trader-civil servants increasingly distracted by a wide range of circumstances and events. The new owners' approach did much to correct entrepreneurial deficiencies in the coal trade, but the functional and geographical splits between administrative and managerial elements of the VCMLC created obstacles that ultimately did much to prevent the company from dominating British Columbia's coal industry.

NANAIMO COAL COMPANY SALE With its exclusive trade monopoly revoked and many of its experienced servants departed either to full-time civil appointments or business ventures, the Hudson's Bay Company chose to retrench its Columbia District operation by divesting itself of its industrial, agricultural, and transportation subsidiaries while retaining its wholesale and retail trade activities. In the case of coal mining, several parties appeared eager to purchase all or part of the Nanaimo Coal Company's land and equipment, but only one concern appeared to have

resources sufficient for a firm offer. Acting on behalf of a group of English investors, James Nicol approached the HBC in London with a proposal to buy the Nanaimo Coal Company for £40,000.¹ As reported in the Island press, a new enterprise, the Vancouver Coal Mining and Land Company, (incorporated in London during August, 1862), had been formed expressly to purchase, operate, and develop the original HBC coal holdings at Nanaimo. Start-up capital was listed as £100,000 in ten thousand shares of £10 each, obtainable by deposits of £1 per share on application, £10/1 on allotment. Banking services for the new coal mining firm were to be shared by Roberts, Lubbock and Company of London and the Victoria based Bank of British Columbia and Vancouver Island. The directors appointed Dickson, Campbell & Company, commission merchants in Victoria, as business agents for local sales of stock, while Charles S. Nicol, brother of James and mines' manager of the Nanaimo Coal Company, was retained to head operations on the Island. Six directors were elected, including George Campbell, a partner in Dickson Campbell, the Hon. C.W. Wentworth Fitzwilliam, a British M.P., Joseph Fry and Prideau Selby of the Canada Agency Association, and James V. Irwin, F.R.G.S., London. The chair went to the Hon. Justice Richard Haliburton, one-time Conservative M.P. and current chairman of the Canadian Land and Emigration Company.²

1 "Article of Conveyance", HBC to VCMLC, 30 Sep 1862. Copy in A.E. Buckham Collection, series A, vol. 52, PABC. (Buckham Collection hereinafter referred to as BU). For more comprehensive accounts on the theme of HBC retrenchment see Rich, *Hudson's Bay Company*, pp. 749-86; Ormsby, *British Columbia*, pp. 153-95; Paul A. Phillips, "Confederation and the Economy of British Columbia" *British Columbia and Confederation*; J.M.S. Careless, "The Business Community in the Early Development of Victoria, British Columbia", *Canadian Business History*, D.S. Macmillan, ed., Toronto (1972), pp. 104-23.

2 "Notice of Incorporation", *Daily British Colonist*, Victoria, B.C., 2 Apr 1863, p. 2.

After several months of negotiation, James Nicol secured a contract transferring "all HBC lands in the Nanaimo District", including Newcastle, Cameron, and Douglas Islands. Involved were 6,193 acres, the amount of land purchased by James Douglas for the Nanaimo Coal Company from the Crown on 7 May, 1855 at a price of £6,193. Additionally, the VCMLC was given all mines, machinery, buildings, barges, horses, cattle, rights, easements, privileges, and title to the colliery. Held back were the shop and trade goods stored in the HBC warehouse, the coal and other minerals raised before the date of sale, and miscellaneous small items. Moreover, the previous owners were assured of full access to the property to remove what then remained as theirs'. Finally the VCMLC was not bound by any previous debts or liabilities incurred by the Nanaimo Coal Company, and had clear title to all "rents, issues, profits" for itself, its assigns, and its successors.³

Plainly, the HBC was not in a great hurry to unload its coal operation, and the VCMLC was willing to be patient if it meant striking a deal that would leave themselves as new owners with a fully operational colliery. Once the terms were agreed upon, an immediate payment of £25,000 was made with the remaining £15,000 taken as mortgage. For his own part, James Nicol received £1,000 cash and 400 shares valued at £10 each.⁴ On 28 August, 1863 a reconveyance of land was signed, giving to the VCMLC at a price of £100 a further forty-five acres comprised of unsold property in Colville Town proper plus a small parcel to the south.⁵

3 "Article of Conveyance", HBC to VCMLC, 30 Sep 1862.

4 *Loc. cit.* and "Reconveyance of Land", HBC to VCMLC, 28 Aug 1863. Copy in BU A52.

5 *Ibid.*, ("Reconveyance").

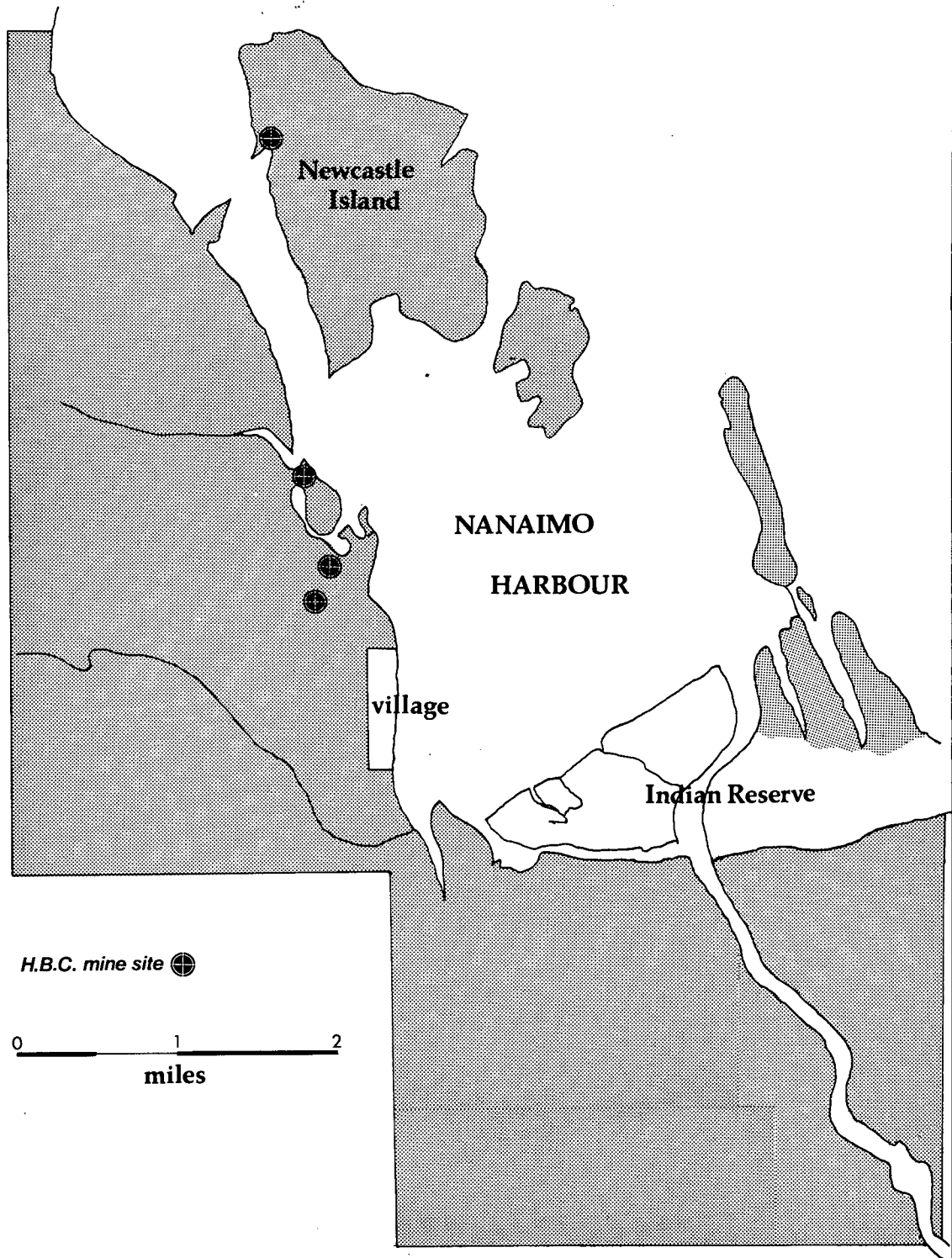
This transaction was followed by another reconveyance dated 28 September, 1867 which noted that while the mortgage interest was being paid regularly, £13,891/4/9 was still owing on the principle. For a lump payment of £13,891/4/9 on that amount, a further seventy acres - almost all the HBC's remaining property in the district - would be transferred to the new owners. This left a debt of £10,000 outstanding which was settled within a year.⁶ These transactions served to place the whole of Nanaimo under the ownership of the Vancouver Coal Mining and Land Company and meant in turn that the VCMLC had virtual hegemony on the harbour, thereby providing the new company with a significant advantage over speculators who within a short time were attempting to open coal lands behind the original HBC land tract, and who then were faced with a need to negotiate passage for their product across the VCMLC property in order to reach tidewater.⁷

INITIAL CORPORATE OBJECTIVES Since most of the supervisory and working personnel of the Vancouver Coal Company, (as it soon was commonly referred to), had been recruited from the ranks of the Nanaimo Coal Company, the

6 "Reconveyance of Land", HBC to VCMLC, 28 Sep 1867; also "Declaration", HBC to VCMLC, 13 Sep 1868. Copies in BU A52.

7 See figure 3-1 for a map of the VCMLC's original properties. The Harewood Coal Co. (see next chapter) approached Nicol in 1864 for permission to run an "aerial tramway" (see chap. 6) through VCMLC property. At least one shareholder believed such a concession would work to the VCMLC's advantage by raising the property's value. *The Mining Journal, Railway and Commercial Gazette*, London, 3 Jun 1865, p. 352. (Hereinafter *Mining Journal*). I am indebted to Keith Ralston (UBC, Vancouver) for identifying this source as one containing VCMLC directors' reports. Microfilmed copies of vols 31-55 (1861-85) are now in BCFMmh.

Fig. 3-1 VCMLC LAND PURCHASE, 1862



new owners expected few difficulties in maintaining production at current levels. Similarly, no one expected a radical change in sales policy. indicating no immediate market problems were likely either. What did concern both the owners and those on site, though, was the generally underdeveloped state of the colliery. From 1856-62 the Hudson's Bay Company had invested little to upgrade its coal operation, preferring instead to erect an apparatus that would extract the most easily gained coal for the lowest possible cost. Little attention had been given to the need for power machinery, coal sheds, or loading equipment, with the consequence that the VCMLC had among its first priorities a requirement to overhaul and strengthen existing facilities. At the same time, it needed, as a new corporate body, to establish an administrative structure and working organization.⁸

Principally, the Vancouver Coal Company was a concern designed to profit from the development and exploitation of Vancouver Island's natural resources. While its first goal was to maintain and improve the Nanaimo colliery, the VCMLC's longer-range objectives included investments in land holdings, agriculture, settlement of immigrants, and other commercial opportunities as they might arise. As the directors saw it, coal mining would be the basic industry upon which a wide range of economic activity ultimately would rest, and they were prepared to provide capital for land purchases before achieving significant returns from the mines. In other words, like the HBC, the Vancouver Coal Company was interested in exploiting much more than the Island's minerals, but unlike its

8 VCMLC "Prospectus", n.d., copy in HBCA (PAM) F33/1.

predecessor, the VCMLC opted for an industry rather than trading activities as its main economic base.⁹ Moreover, the colliery's new owners were not adverse to pouring large sums of risk capital into coal mining, a step the Hudson's Bay Company had avoided since the mid-fifties.

CORPORATE STRUCTURE AND ADMINISTRATION Organizing the Vancouver Coal Mining and Land Company was a task performed mainly by James Nicol on his own initiative. In addition to negotiating the purchase of the HBC operation, he had taken the responsibility for recruiting the capital, registering the VCMLC under the *Joint Stock Acts of 1856-57*, establishing a board of directors, preparing the office and banking services, and generally promoting investments during the start-up period. Having accomplished these, he then stepped aside, though he maintained some interest in the firm through minor holdings of stock. From this point, the Vancouver Coal Company was a partnership in which the members were issued shares of transferable stock up to the amount of their respective investments. The *Joint Stock Acts* had made limited liability an option, but apparently not one of concern to the partners who believed the venture showed every chance for success. A reasonable amount of fixed capital was already in place, and £100,000 was not an unusual sum to aim at when attempting an overseas colliery takeover. Nor did the legislation's "management and administration of companies" features cause problems for the partners easily met the registration and capital requirements,

⁹ *Loc. cit.*

and it is not likely that they dwelt much on the provisions for "winding-up".¹⁰

Once matters were settled in London with both the HBC and the Registrar of Companies, steps were taken immediately to establish a working structure. At the head were the six directors who had a London office led by a company secretary. This was the VCMLC's main administrative unit, a headquarters where general policy was formed, working capital raised, and major legal matters handled. Next in line was the resident manager at Nanaimo, Charles Nicol, who was given wide-ranging powers and responsibilities, certainly much more than had been the case with HBC bureaucracy. Nicol, for example, had full control over miners' contracts, he alone determined coal prices, he made all decisions as to improvements in the colliery, and it was left to him to deal directly with both commercial and governmental leaders on Vancouver Island. Nicol duly reported the results of his actions to the secretary at headquarters who normally noted Nicol's observations, filled his requests, filed his reports, and liaised upon his behalf with the directors. As will shortly be seen, London soon was eager to press its own initiatives on Nicol, but rarely to the point where the resident manager's position was undermined by the owners. In giving Nicol large powers and generous support, the directors avoided many of the administrative problems experienced by the Nanaimo Coal Company. But the resident manager still lacked authority to take major financial risks on his own initiative.

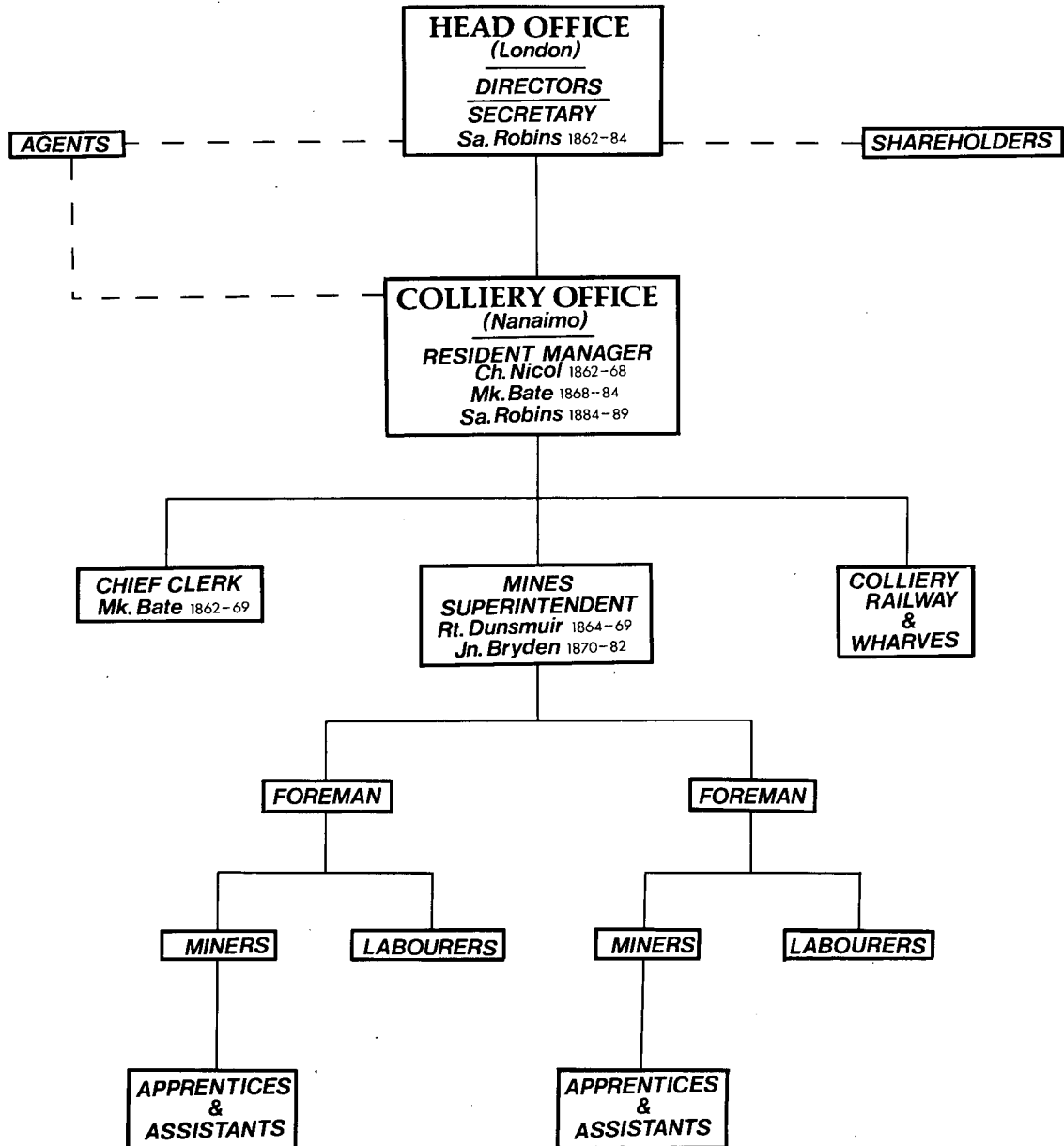
10 Gt. Br. House of Commons, *Joint Stock Acts of 1856-57*.

and this constraint tended to make the VCMLC slow to seize other commercial opportunities on Vancouver Island.

To assist him in operating the mines, Nicol formed an office with a small staff consisting of secretaries, clerks, and accountants who were given a wide range of duties including inventories, payrolls, purchasing, record keeping and correspondence. Eventually this part of the colliery operation became more and more the responsibility of the senior secretary, but throughout the 1860's all the Nanaimo office staff were closely supervised by the resident manager. A second branch of the colliery operation was headed by the mines' superintendent. Under this official were the foremen, miners, surveyors, tradesmen, and labourers who produced the coal and maintained the site. The mines' superintendent assigned men into working teams, planned the shift times, organized maintenance schedules, decided upon areas for surveying, and generally directed the work flow. Reporting to him were foremen either of shifts or teams. The hardest worked senior employees appear to have been the mines' superintendents, who soon prevailed upon Nicol to upgrade this level to mines' manager and appoint a series of supervisors for certain major mining, construction, and transport duties.¹¹ A third branch of colliery activity was sea transport. The small HBC fleet of colliers had been duly transferred along with other equipment at the time of purchase, and the Vancouver Coal Company chose to continue operating these vessels under its own flag. Finally, Nicol could count as his own a score of minor tasks to perform that ranged from the purely ceremonial, (as head

11 See figure 3-2 for VCMLC organization in 1863.

Fig.3-2 VCMLC CORPORATE HIERARCHY, 1862-89



of the Island's main industry), to managing subsidiary operations such as the stone quarry on Newcastle Island.¹² To further increase his burden, Nicol soon would be expected to pay increasing attention to the Vancouver Coal Company's aspirations in the areas of real estate and settlement.

FIRST YEAR OF OPERATION On 20 September, 1863 at Gresham House, London, the investors were informed that most shares had been sold. There were no outstanding liabilities either for the materials and equipment recently shipped to Nanaimo or for the considerable improvements made since the purchase to wharves, buildings, and other structures. Interest due on the mortgage had been met on time, while a total of £2,103 had been paid to the Hudson's Bay Company for goods and services not included in the original agreement but found necessary for operations during the past months. Current expenditures for labour, materials, transport, and other needs totalled £8,000/13/1, while £2,601/16 had been set aside for machinery purchases. Furthermore, £8,000 was required for expenditures on stores and merchandise in the coming year. Funds for all these it was claimed would be provided without calling upon the shareholders as profits from coal sales at Nanaimo were more than offsetting capital expenditures. Finally, moves were being made to purchase a small iron screw steamer, the S.S. *Fideliter*, at a cost of £12,060. If a mail subsidy for communications between Nanaimo and Victoria were awarded by the Colony, the vessel easily could pay its way transporting coal southbound from the mines to the Victoria and Esquimalt markets,

¹² The quarry was eventually leased to a contractor supplying stone for the San Francisco mint. *Mining Journal*, 7 May 1870, p. 376.

returning north with freight and passengers. Barge towing by the *Fideliter* was also mentioned as a potential revenue source. Other good news included information on coal contracts between the VCMLC and the gas companies of San Francisco, Sacramento, and Portland, all of whom it was hoped could be "enticed" to draw their future supplies of fuel from Vancouver Island. Finally, it was reported that Dickson, DeWolf and Co., another Victoria-based agent, had convinced several steamer captains travelling between San Francisco and the Island to use Nanaimo coal. Consequently, sales were up despite a general drop in the California coal market, and in the directors' view, this was cause for considerable optimism.¹³ In fact the whole of their report generated much confidence among the investors, and it suggests clearly by its contents that the resident manager was exercising a great deal of initiative on site, for apart from the efforts at reducing the mortgage, selling the outstanding shares, and negotiating with ships' captains in Victoria, virtually all else had been accomplished by Charles Nicol and his associates at Nanaimo.

13 *Colonist*, 19 Nov 1863 for director's first annual report. By Autumn, 1864 the VCMLC had secured a mail subsidy for the *Fideliter*, mainly by proving the vessel more reliable than the regular carrier, the *Emily Harris*. For \$194 monthly, the *Fideliter* departed Victoria on Tuesdays to call at Cowichan, Maple Bay and Saltspring Island; she left Nanaimo for New Westminster each Wednesday, returning to Nanaimo the following day. A once per month trip to Comox was also included. Later, the VCMLC ran a mail-passenger-freight service between Victoria and San Francisco for which it received a \$1,000 per month subsidy from the Colony of British Columbia. C. Nicol to W. Wakeford, CCol. Sec. VIs., 25 Oct. and 1 Nov 1864; Wakeford to C. Nicol, 29 Oct 1864; J. Nicol to Col. Sec. B.C., 26 Jan 1865; Col. Sec. B.C. to J. Nicol, Jan 1865 in "C.S. Nicol Papers", B.C. Colonial Papers, PABC MSS, (hereinafter NP).

COAL MARKETS AND SALES IN THE 1860's. Before studying details of the Vancouver Coal Company's operations and the lasting impact of its managerial approach upon the province's coal industry, it is useful to review the VCMLC's experience with markets and sales during the period when it had no serious competition in the Island coal trade.

Coal loaded at Nanaimo in 1862 totalled 18,177 tons 17.4 cwt. During the next year, the amount of coal entering ships holds reached 21,550 tons 12 cwt, an increase of eighteen percent. Shipments to Victoria and Esquimalt still dominated the trade, accounting for 13,205 tons 7 cwt or 61.2% of 1863's total tonnage. Exports were directed chiefly to two American ports, San Francisco and Portland, which received 5,671 tons and 490 tons respectively. Slightly less than 200 tons were forwarded to New Westminster, while a further 1,994 tons 10 cwt was sold at Nanaimo to Royal Navy and other steamers for their own use.¹⁴ The types of vessels calling for coal at the Vancouver Coal Company wharf varied widely, too. Of the 353 visits in 1863, only one was made by a ship; the others by two brigs, ten barques, fifty-eight sloops, 211 schooners, and seventy-one steamers.¹⁵ The larger vessels were in the foreign trade, moving as much as 596 tons of coal in a barque, 280 tons in a brig! The coasting trade was handled by sloops and schooners. The sloops carried no more than thirty tons, though as much as seventy-five tons

¹⁴ *Colonist*, 8 Jan 1864, p. 3. Comprehensive trade statistics for Vancouver Island's economy in the 1860's are available in P. Phillips, "B.C. and Confederation" and H.A. Innis and A.R.M. Lower, *Select Documents in Canadian Economic History*, Toronto, 1933.

¹⁵ *Colonist*, *op. cit.*

of coal could be loaded onboard the larger schooners.¹⁶ Naval steamers normally loaded amounts to fill their holds, as was the case of H.M.S. *Devestation* which took onboard 155 tons on 31 March.¹⁷ In June, thirty-nine vessels called at Nanaimo, taking away a total of 1,608 tons 15 cwt for a new record. Thirty of these were bound for Victoria, six for Esquimalt, and three were steamers buying coal for their own use.¹⁸ In mid-September, five American vessels were waiting in the harbour to load, and the VCMLC, having only 500 tons of coal on hand, was hard-pressed to fill their holds.¹⁹ Turn around in such instances could take weeks, a technical problem that would worry resident managers and dock supervisors for several years yet.

Finding buyers presented few problems during the 1860's, for Victoria customers like R. Brodrick, the Victoria Coal & Lumber Company, and Kavanagh & Company, all onetime regular dealers in HBC coal, continued to purchase the Nanaimo product. All three were wholesaler-retailer firms supplying the Island's domestic market with a standard price of \$11.00 per ton to their customers.²⁰ Deliveries from wharf to home were free. By and large these prices remained in force throughout the sixties, and were willingly paid by local residents whose only real

16 *Loc. cit.*

17 *Colonist*, 6 Apr 1863, p. 3.

18 *Ibid.*, 4 Jul 1863, p. 3.

19 *Ibid.*, 19 & 21 Sep 1863, p. 3.

20 *Colonist*, Dec 1862 and Jan 1863, *passim*. Kavanagh & Co. also advertised "Bellingham Bay" coal, an American import from across the Georgia Straits (2 Mar 1863).

option was "Cannel" or British coal which retailed in Victoria at \$18.00 per ton.²¹ The VCMLC pithead price was equally stable, moving only slightly ahead from \$6.00 per ton in 1862 to \$6.50 in 1867.²² No record of the cost to Victoria dealers is available, but the colonial secretary of British Columbia was informed on 6 October, 1864 that the Vancouver Coal Company would make its product available at New Westminster for \$8.50 per ton on the wharf, \$8.00 if unloaded from the ship.²³ Assuming transport and handling charges applied equally to both ports, it is likely that the Victoria coal dealers were profiting by at least \$2.00 per ton. For Michael Wallace, a newcomer to Victoria's retail coal trade in March 1867, this might have meant he was netting as much as \$6,000 each month since his advertisements claimed demand for coal was so great that he was selling 130 tons daily.²⁴ It must be pointed out, however, that this example reflected activity during the winter months, and that the general trade statistics for the capital city confirm coal sales always declined markedly as the climate warmed. Similar seasonal variations prevailed in the American markets, forcing the Vancouver Coal

²¹ *Colonist*, 5 Feb 1863, p. 2 and 20 Oct 1865, p. 2. A brief but worrisome retail price war erupted in Victoria during the last months of 1870. A retailer named Kriemer, recently arrived in the city, attempted to break-into the market by drastically undercutting coal prices. Within weeks, however, Kriemer disappeared from the scene and coal prices rose to their usual level. *Colonist*, Nov 1870 - Jan 1871, *passim*.

²² *Ibid.*, retail coal advertisements, 1862-67.

²³ Nicol to Col. Sec. (B.C.), 19 Dec 1864, NP. This offer presupposed a "direct line of steamers running to New Westminster from San Francisco or Panama"; the VCMLC would supply coal "in any quantities" in shipments of between 300-1000 tons per month. The Nanaimo wharf coal price remained at \$6.00 per ton.

²⁴ *Colonist*, 5 Mar 1867, p. 2.

Company to accept fluxuations there as a condition of the coal trade. But unlike their predecessors, VCMLC officials at Nanaimo did not attempt to match production to sales; instead management kept the mines going at the same speed in summer, intending to stockpile coal for months of higher demand.

1864 was a good year. Exports to the United States topped 11,000 tons, most of which reached San Francisco. Total load production rose to 29,042 tons 10 cwt, a full 7,697 tons over 1863.²⁵ The following year's output was higher yet, reaching 32,818 tons 13 cwt. Equally encouraging, San Francisco had become the major market for Vancouver Island coal, absorbing more than fifty percent of the Nanaimo product.²⁶ Despite a deepening recession in California at mid-decade, the VCMLC managed in 1866 to maintain at least seventy-one percent of its previous year's trade with San Francisco, rebounding in 1867 to the earlier high level by exporting to that city 16,907 tons of coal. 1868 was better still, for of the 43,778 tons produced, almost 23,000 were sent to San Francisco while the more distant centres of Sitka and Acapulco bought 2,295 and 1,805 tons respectively. 7,967 tons went to Victoria and Esquimalt, Portland imported 3,124 tons, and steamers calling into Nanaimo

²⁵*Colonist*, 5 Jan 1865, p. 3

²⁶*Ibid.*, 6 Jan 1866, p. 3.

for their own fuel took on 5,287 tons.²⁷ Another dip in sales occurred in 1869-71 when total annual production fell as low as 29,699 tons because the San Francisco market had fallen dramatically, buying in 1871 only 38.19 percent of all Island coal sold.²⁸ The Vancouver Coal Company was forced in this second period of recession to cut back on production as coal inventories were becoming too large to adequately store. By 1872, however, demand for coal again had risen sharply, and a new peak in VCMLC production was reached with 46,148 tons extracted from the mines. Additionally, the San California market accounted for 52.6 percent of all the Vancouver Coal Company's sales that year, and it was the source for 54.1 percent in 1873 when other firms such as Dunsmuir, Diggle and Limited were becoming active in the San Francisco coal trade.²⁹

27 *Ibid.*, 13 Jan 1868 and 12 Jan 1869. The VCMLC experienced several difficulties in 1865-66. The directors' annual meeting (30 Jan 1866) noted: no dividends would be paid due to "outlays on the Nanaimo works"; during the first 6 months of 1865 profits had fallen, though a steady rise in sales had occurred since then; the *Fideliter* had been sunk accidentally, but since she had been insured for £7,000, it was not considered a disaster, and because the small steamer had proven "unprofitable", no immediate replacement was planned; finally, "a source of considerable anxiety" - the original HBC inventory of trade goods acquired at the time of transfer - was now removed due to sales of onhand stocks. *Ibid.*, 5 Feb 1866.

28 *Colonist*, p. 2 for 12 Jan 1869, 16 Jan 1870, 4 Jan 1871, and 13 Jan 1872.

29 *Ibid.*, p. 2. for 5 Jan 1873 and 16 Jan 1874. See also chap. 5 below.

Table 3-1.. VCMLC Coal Production and Sales, 1863-69³⁰

Year	Production	Domestic Sales	Foreign Sales
1863	21,550 tons	15,390 tons	6,161 tons
1864	29,043	17,280	11,789
1865	32,819	15,733	17,086
1866	25,213	12,693	12,520
1867	31,174	11,902	19,272
1868	43,778	13,254	31,024
1869	35,577	15,006	19,971
Totals	219,154	101,258	117,823

While a number of factors contributed to the generally upward trend of both production and sales, none probably was more important than the resident manager's leadership. To best assess Charles Nicol's contribution, the following section examines his background, his approach to colliery operations, his relations with workers and government, and his personal influences upon the growing community of Vancouver Island.

RESIDENT MANAGER'S GOALS, TECHNIQUE, AND IMPACT TO 1869 Little is known of Charles Nicol's early years. His father was colonel of the Madras Light Infantry and onetime adjutant general of India. Likely Charles Nicol was trained either as a surveyor or engineer, probably both. He arrived in British Columbia during the last days of the Lower Fraser River gold rush, and on 1 March, 1859 was appointed by Governor Douglas to be high sheriff and justice of the peace for that colony.³¹ Nicol, reporting mainly to Colonel R.C. Moody, commander of the Royal Engineers' detachment,

30 "Coal Statistics" for years 1863-69, *Colonist*.

31 J. Douglas to C. Nicol, 1 Mar 1859, NP.

had a wide variety of assignments, including licencing, Indian agent duties, criminal arrests, and recruiting constables. Within weeks he was given the additional burdens of building inspections, townsite surveys (Fort Hope and Port Douglas), road maintenance, land leases, and industrial safety (in sawmills).³² Nicol resigned his post in August, but as no replacement was available, he remained on the job for several months.³³ In early 1859 he arrived in Nanaimo to replace the retiring colliery manager, George Robinson. For the next two years Nicol performed as he was expected to, making him the new owners' obvious choice for resident manager of the VCMLC. Until 1869, (when Nicol moved to head the company's newly established San Francisco office), he devoted himself to increasing the coal trade and to the orderly development of both the colliery and the emerging town of Nanaimo. No one for the time had more power or influence in either the industry or the community in that he chose to exercise his considerable authority from the outset. Nicol's first priority was to have repairs and improvements made to existing facilities. Understandably the HBC had spent few funds other than for emergencies in the months of negotiations, and Nicol was faced with upgrading and modernizing the operation as best he and his workforce could.

The Nanaimo Coal Company's railroad had been a horse-drawn affair running on wooden rails covered by metal straps. Nicol placed an order through the London office for steel rails, a locomotive, and

32 "Nicol Papers", *passim*, and particularly items therein for Mar-Jun 1859.

33 Nicol to Douglas, 23 Aug 1859, NP. See Dorothy Blakey Smith, "The Journal of A.T. Bushby, 1858-59", *BCHQ* 21:83-198 (1957-58) for a brief biographical note on C.S. Nicol.

new pumping machinery.³⁴ As the railway did not yet reach to all pits, he replaced the existing inefficient aerial tramway system with a similar but improved facility of greater capacity and speed.³⁵ By 1865 Nicol had elevators installed in the vertical shafts, and had extended the railway half-way from the harbour to the coal deposits located several miles inland.³⁶ He was also progressing with a plan to eliminate major delays at wharfside. From his arrival in Nanaimo, Nicol had been aware of the inadequacies of the harbour and its wharfage. The Nanaimo Coal Company jetty extended less than 200 feet from shore thus allowing for only one ship (or two sloops) to lay along either side for loading. No chutes or ramps had been built, so that all coal had to be shovelled into the holds of ships by dockside labour. Another difficulty causing innumerable delays lay in vessels approaching and departing the jetty, especially during low tides. Captains invariably called for a tow - a task usually performed with rowboats manned by VCMLC labourers.³⁷ Nicol decided upon a

34 *Colonist*, p. 3 for 24 Apr and 16 Jun 1863. This source also noted on 14 Jan 1864, p. 3, that the locomotive was "in full working order"; source of information re: rail improvements courtesy of John Cass, Nanaimo, 28 Nov 1976. Mr. Cass is a local historian who has written extensively on the mid-Island area. The VCMLC Director's *Fourth Report*, London, 29 Nov 1864, noted "2 iron barges, rails, one more [6 hp] locomotive, and ironwork for 40 additional waggons" had been supplied at Nicol's request - copy in HBCA (PAM) F33/1.

35 *Ibid.*, 16 Jun 1863, p. 3. The *Colonist* also reported that both No. 3 Pit and the Newcastle mines were "exhausted and closed" as of this date; all available machinery was to be transferred to the Douglas Pit. No. 3 Pit had had a history of boiler and engine breakdowns.

36 *Ibid.*, p. 3 for 17 Jul and 21 Aug 1865.

37 A VCMLC official was quoted as saying there were "vexations and serious delays in loading ships of large burden [for San Francisco]". *Colonist*, 9 Jan 1865, p. 3.

major reshaping of the harbour. He began by requesting the governor's permission to fill the space between the colliery and a small wharf leading shoreward from Cameron Island.³⁸ Next, on 14 April, 1864, Nicol asked the colonial secretary in Victoria for permission to construct a 200 by 500 foot wharf extending along the harbour's southwestern shore. Since considerable amounts of ballast were needed as underfill, Nicol proposed to drive parallel lines of "iron and coppered" piles joined by "grid iron" to prevent the landfill from slipping into and contaminating the harbour.³⁹

Such an undertaking was massive for the time, implying a high degree of engineering imagination and skill. The colonial administration was not favourably impressed, however, indicating instead that it had considerable misgivings regarding the scheme. The surveyor general, Joseph Pemberton, urged that the wharf be extended out only as far as the twelve foot low tide mark, and expressed anxiety in claiming the "unstable" clay and stone mixture to be used as underfill would eventually spill into the harbour unless Nicol ensured the grid was installed. Moreover, Pemberton wanted the governor's permission withheld until a time for completion of the whole project was guaranteed by the VCMLC. Nicol complied with this demand, then patiently awaited word from Governor Kennedy who approved the request in late April, allowing work on the new wharf to begin.⁴⁰ This was the new resident manager's first significant dealing with the colonial government, and while Nicol could be encouraged

38 Nicol to Young (VIs. col. sec'y), 15 Aug 1863 and 9 Jan 1864, NP.

39 Nicol to Young, 14 Apr 1864, NP.

40 Gov. Kennedy's minute to Nicol's 14 Apr letter.

with the result, it soon became plain that he had alienated Pemberton, a circumstance which in the near future would serve to create considerable frustration and difficulties for the Vancouver Coal Mining and Land Company.

For subsequent harbour improvement schemes, the VCMLC needed to purchase parcels of Crown land, usually waterfront, and the government always was loathe to agree. On 5 October, 1862, for instance, Nicol requested five acres of seafront land be granted the Vancouver Coal Company to build a small wharf and storehouse on behalf of settlers who were shipping their produce to Victoria.⁴¹ The colonial secretary responded by saying the lots would have to be auctioned.⁴² Two years later Nicol asked for ten acres at Maple Bay, ostensibly for the same purposes. Pemberton, by now Nicol's nemesis, balked at the proposal, claiming Nicol was trying to "monopolize" the shoreline, and recommended the VCMLC be sold only one acre, providing Nicol started construction of the wharf immediately.⁴³ These terms were unacceptable to the resident manager, and he countered with an offer to lease five acres together with five chains of waterfront at a price of one shilling per acre per annum for 25 years.⁴⁴ Pemberton again refused, stating that a town site was planned for Maple Bay, and the government needed the land sought by Nicol for a wharf of its own because deep water frontage was "very

41 From Nanaimo Harbour illustration in "Nicol Papers". See Fig. 6- below.

42 Nicol to Young, 5 Oct 1862 (including minute by col. sec.), NP.

43 Nicol to Young, 11 Apl 1864 (and minutes), NP.

44 Nicol to Young, 2 Jun 1864, NP.

limited".⁴⁵ Nicol had some satisfaction, though, for by 31 October, 1864, permission was given the Vancouver Coal Company to both purchase one lot in the newly surveyed townsite, and to construct a wharf if Nicol guaranteed the latter would be worth at least \$100 and built within three months.⁴⁶

Knowing of the resident manager's difficulties in dealing with the colonial officials in such matters is important to us for several reasons: First, it is clear that Nicol normally was an astute businessman capable of paying close attention to detail even in minor projects. Second, it shows that the resident manager's powers were sufficiently strong for Nicol to act directly with the colonial administration. Third, the colonial land policy appears to have been taken very seriously by officials in Victoria. Fourth, and most important for this study, the Vancouver Coal Company was receiving no favours or special treatment by the colonial administration, at least with regard to land sales. Moreover, the Vancouver Coal Company's experience in this regard becomes especially noteworthy when compared to some of the dealings between various provincial governments and the colliery owners as occurred later in the nineteenth century.⁴⁷

It is possible that Nicol had done much to damage the VCMLC's name in Victoria when he inquired in 1862 as to what terms could be given the company for its scheme to bring a "regular succession" of

45 Pemberton's minute to Nicol's 2 Jun letter.

46 Nicol to Wakeford, 31 Oct 1864 (and minutes), NP.

47 See some indication of this later trend in chaps. 1 and 5.

immigrants to Vancouver Island. There was good reason for him to expect a favourable response given the enthusiasm of Islanders for a greater population. Yet it was not to be simply a matter of this company or that receiving generous compensation for recruiting large number of settlers. Nicol's submission indicated a need for outright grants of land to make a fair bargain, including Gabriola and Valdes Islands as well as all unoccupied lands in both Cedar and Mountain district. According to Nicol, this was the amount of property needed to situate each settler on 300 acres of "good agricultural land". Dealing in land and promoting settlement had been, of course, among the VCMLC's primary objectives. This proposal, as presented by Nicol on behalf of the directors, was the company's first (and only) attempt to develop beyond the coal industry. Nicol proposed to spend £15 on improvements to VCMLC property for every acre of farmland granted.⁴⁸ The colonial secretary's reply was short and to the point: "the Government [is] not prepared at present to alienate land in any other manner than according to the present system", that is public auction.⁴⁹ Clearly, the VCMLC through its resident manager had overplayed its hand on this occasion, and the company never attempted again to deal on a large scale either in lands or settlers. No doubt the Vancouver Coal Company had hoped for both short and long term benefits in its immigration scheme, for among other possibilities, more settlers would mean more coal-buying customers. But these gains would be minor compared to acquiring mineral rights on such a vast acreage, and it is not likely that the company would have passed those on to the newcomers.

48 Nicol to Young, 4 Sep 1862, NP.

49 Young to Nicol, 15 Nov 1862. NP.

Automatically forwarding the administrators' request was a blunder out of character for Nicol; he should have recognized Victoria's growing concern with the VCMLC's apparent haste in acquiring Crown lands, and altered his approach accordingly.. The fact that the VCMLC never again pursued a like proposal indicates a lesson was learned, and by November 1864 relations between the company and colonial officials were sufficiently repaired for Nicol to attempt another harbour improvement. A request for permission to build a 250 foot wharf on VCMLC property at Departure Bay was speedily approved, with Pemberton's only comment being that he had no objection since no public lands were involved.⁵⁰ With the issues of land and settlement shelved for the foreseeable future, the Vancouver Coal Company stepped-up its efforts to increase production and sales, the details of which are outlined in the next section. As for Charles Nicol, the latter half of the 1860's were filled with community and political matters that drew him increasingly away from direct management of the colliery, forcing him to leave more and more of the operation in the hands of his chief lieutenants, Mark Bate, John Bryden, and Robert Dunsmuir, Nicol himself was named justice of the peace for Nanaimo in 1864, and appointed by the governor to the Island's legislative council on 15 January 1865, a duty that required him to spend considerable time in Victoria.⁵¹ Additionally, he served as electoral return officer, a

⁵⁰ James Nicol to Col. Sec. (Victoria), 26 Nov 1864 (and minutes), NP. For a short time in the winter of 1864-65, James Nicol, presumably Charles Nicol's brother, signed for the resident manager. Charles was absent on sick leave. It is highly likely, though, that Charles Nicol initiated the Departure Bay improvements proposal.

⁵¹ Nicol to Wakeford, 7 Jul 1864 (acknowledging appointment as J.P.), NP; *Colonist*, 4 Nov 1864 (notice of appointment as councillor).

posse member, and first president of the Nanaimo Literary Society.⁵² He became a land owner, purchasing a 160 acre farm (the district's largest) where he employed several labourers to raise crops and livestock.⁵³ At one point he speculated in a copper mine venture near Lake Cowichan, and just before his departure to San Francisco, (where he was to head British Columbia's coal industry's first foreign sales office), Nicol applied for a licence to open his own coal mine located north of Nanoose Harbour.⁵⁴ Both mining ventures folded before production started, and he left for California almost immediately. Within months of arriving in San Francisco, Nicol resigned from the VCMLC, travelling to Russia where he worked as a mining engineer. Later, he moved to Spain as the general manager of a privately-owned copper mine. It is said that he worked for awhile in

52 "Election Notice - Nanaimo District", 14 Jan 1860 (signed by C.S. Nicol, returning officer); Lt. Robson to RAdm. T. Maitland, 20 May 1861 (reported on a posse chasing Haida raiders); Nicol to Wakeford, 25 Jul 1864, NP, and *Colonist*, 4 Nov 1864 (re: Nan. Lit. Soc. grant of land by VCMLC and Nicol's election).

53 *Nanaimo Gazette*, 31 Jul 1865, p. 2. Little is known of Nicol's personal wealth, though as his holdings and investments for the period 1865-69 imply, he had become a man of considerable means.

54 Nicol to Col. Sec. (Victoria), 18 Jul 1865, NP: Nicol was granted permission to re-open an abandoned copper mine in partnership with four unnamed persons. Nicol to Trutch, 22 Oct 1868 (and minutes), NP: Nicol's application for the coal mining licence was duly processed by the colonial surveyor who added that the developer must employ at least four men, remain within the mineral land law, and show good progress eight months from starting. Wm. Pearse, ass't surveyor general, agreed, mentioning Nicol was associated with "certain San Francisco capitalists", and that this would be an opportunity of "introducing capital from that city to open our coal mines". Trutch, chief commissioner of lands and works, refused Nicol's application for an extension of time, and the venture folded.

Nicaragua, too. In 1872 he was back in San Francisco, retiring ultimately to nearby Mill Valley where he died in his eighty-first year.⁵⁵

POLICY FORMATION AND ADMINISTRATIVE PRACTICES TO 1870 Above Charles Nicol and his successors as resident manager stood the board of directors whose chief responsibilities lay in forming policies aimed at promoting orderly development of the company and in ensuring profits at levels acceptable to the shareholders. Although Nicol enjoyed a great deal of autonomy in organizing and operating the colliery, as well as in marketing and distributing the coal, he regularly was held to account by the directors who, as individuals, had little or no first hand experience with coal mining. Such circumstances were the norm for foreign mining ventures headquartered in London during the nineteenth century, and the administrative practices employed by the VCMLC varied little from other companies engaged in similar activities.

Like the governors of the Hudson's Bay Company, the Vancouver Coal Company directors rarely had close contact with the colliery management. Communications over the vast distance separating headquarters from the mines were extremely slow, imposing significant limits equally upon usefulness of the information received from the resident manager and the impact of board policy on operations. Indeed, within three years of purchasing the Nanaimo Coal Company, the VCMLC directors confessed to the

⁵⁵ *Nanaimo Free Press*, 9 Jul 1975, p. 10. Like most of B.C.'s early industrial figures, Nicol has received little attention from historians. The brief summary of his activities contained in D. Blakey Smith, ed., "Bushby Journal" (1957-58) is typical of the size of those few references made to C.S. Nicol.

shareholders that capital improvements had been made with "more rapidity than the Board have authorized".⁵⁶ In other words, Nicol's actions in upgrading the old HBC colliery were proving costly, much more so than company headquarters had either anticipated or sanctioned. And to cause further concern, coal prices at San Francisco were their lowest in years, a situation unless improved likely would have a negative effect on future dividends.⁵⁷ There were several implications to be drawn from these revelations: First, it was clear that Nicol was to bear the brunt of the blame for the apparent runaway expenditures. He was accused of not "correctly" estimating the costs of "additional plant necessary" to increase productivity while at the same time criticized for not reducing the "cost of out-put".⁵⁸ Second, the venture obviously had been under-financed to date, and this could only mean either a call-up of additional share capital, a reduction in dividends, or a lessening of reserve funds.⁵⁹ Finally, the likelihood of more expansion (like land deals) would have to wait until profitability improved. From this point until Nicol's

56 VCMLC Directors' *Fifth Report*, London, 29 May 1865; sighted copy is HBCA (PAM) F33/1 fo 104-108d.

57 *Ibid.*, fo 105. The board claimed both Vancouver Island and British Columbia were in depression, and that a major influx of Australian and other foreign coal on the California market gave the VCMLC "great difficulty in contending with low prices" at San Francisco.

58 *Ibid.*, fo 105d-106d. According to the chairman, "outlay on Works, Wharves, Roads, and Houses [had] been a constant drain on the Company's finances; and the chief cause assigned by [the treasurer] for his inability to make remittances, [had] been the large demands made upon him by Mr. Nicol whilst the sums received from the sale of coals were wholly inadequate to meet them". The board did admit, however, that Nicol's actions had greatly increased the property value.

59 *Loc. cit.*

departure in 1869, the company administration found itself increasingly at odds both with the realities of controlling its far distant frontier industry and with its own management which obviously had its own share of financial and operational problems.

As the sixties wore on, directors and shareholders alike focused attention in three directions: Their primary concern appears to have been a combination of profitability, dividend-size, and the state of the reserve fund. These they felt were linked directly to coal and land sales on one hand and the unyielding costs of colliery development on the other. Believing nothing could be done about the continuing depressed condition of the California market, the administration sought to achieve major economies by restricting further capital improvements. When this policy proved unrealistic primarily due to technical factors, the colliery management was blamed for making extravagant changes - an accusation that merely drove a deeper wedge between Nicol and his superiors. Lastly, the directors and shareholders debated a variety of minor issues, including workforce salaries, the use of agents, and the size of the board.⁶⁰ In short, the owners were coming to grips with as much of the operation as they could, but were increasingly frustrated by the inherent difficulties caused by delays in communications and by the organizational division between administration and management.

A main reason why profits were so much a concern to VCMLC headquarters during the 1860's is perhaps best found in the fact that despite the company's virtual monopoly in the Island coal trade, and an

⁶⁰ Summaries of VCMLC semi-annual meetings in *Mining Journal*, 1865-69, *passim*.

expectation of £12,000 per annum net profit listed in its "Prospectus". of 1861, the company's net earnings consistently fell-short of its initial hopes by a considerable sum.⁶¹ At no time did profits reach seventy-five percent of the original goal, and there were some years in which no dividend was paid. Still, there was no serious cause for alarm since the mines showed no sign of exhaustion; land sales from the original HBC holdings brought-in upwards of £10,000 during the decade; and in no year did the profit fall below £4,500. From time to time efforts were made to increase profitability by adjusting figures for depreciation, by lowering the reserve fund, by listing higher prices for on-hand coal, and by re-negotiating agents' fees, but all these had little lasting effect.⁶² More significant, of course, were the generally poor levels of coal sales in San Francisco and the ever-costly improvements to the colliery.

In 1865 a shareholder asked the board if steps had been taken "to more rigourously control the expenditure in the colony". Another claimed the potential for growth was there, and that he had "most implicit confidence in the stability of the undertaking, but none whatever in the management". A third shareholder suggested a "committee of enquiry be

61 VCMLC "Prospectus" c.1861, HBCA (PAM) F33/1 fo 97-97d. In this document, the directors predicted a 20% profit for an initial outlay of £50,000 - the amount believed necessary to modernize the colliery. Nicol was cited as the "present energetic manager" who had increased output to 1,000 tons per week selling for 25 shillings per ton. Since Nicol's experience had shown costs per ton of 10 shillings for raising the coal, 5 shillings for shipping and agents' overhead, and 1 shilling for taxes, the profitability would amount to 9 shillings. Assuming 500 tons per week were sold, then the annual profit would reach approximately £12,000.

62 *Op. cit.*

appointed to investigate the company's affairs", to which the chairman replied, "such a course would most materially strengthen the hands of the directors".⁶³ In 1866, Captain Edward Stamp, a Vancouver Island saw-mill operator, was appointed to investigate the colliery operation, which he did, and upon which he forwarded a series of recommendations to London that the directors expected would "reduce the expenditure for the coming year", though they chose not to divulge precisely how such was to be achieved.⁶⁴ One year later, Mr. John Wild, a shareholder, was "deputed" to visit Nanaimo and report upon the "present condition and management" of the property.⁶⁵ As we know, Nicol was moved to San Francisco to open a sales office in that city shortly after this time, and it is obvious that a change in management likely had been planned by the board, probably with Wild's report as final confirmation that a replacement for Nicol was needed. In November 1869, C.W. Fitzwilliam, now chairman, stated that Charles Nicol had retired from the company with £300 as compensation for loss of salary, and that "the directors wished it to be distinctly understood that Mr. Nicoll's (*sic*) services had been dispensed with solely with the view to economy".⁶⁶ Nicol, then, was finally out. And it remained for the administration to try to find a new resident manager who would have less of a tendency to spend large sums on improvements and who would be more willing to follow the board's policies.

63 "VCMLC", *Mining Journal*, 3 Jun 1865, p. 352.

64 *Ibid.*, 2 Jun 1866, p. 344.

65 *Ibid.*, 25 May 1867, p. 345.

66 *Ibid.*, 6 Nov 1869, p. 828.

Was Charles Nicol an effective manager, or was he the failure the administration apparently believed? Undoubtedly Nicol's efforts to upgrade the colliery at the expense of larger profits is the central issue upon which he should be judged. By emphasizing capital improvements as he did in the early- to mid-sixties, Nicol provided the VCMLC with a much stronger potential for future earnings than would have been possible if substantially more dividends had been paid-out. Moreover, the inexperience of the Londoners in mining matters, coupled with the difficulties inherent in long-distance communications, forced Nicol to act largely upon his own initiative, and he cannot be faulted for this. Still, it is probable that as the VCMLC's power and influence increased on Vancouver Island, the resident manager's confidence and arrogance grew apace. Nicol's political and personal business activities in the late-sixties can be seen as evidence of his growing detachment with the company's affairs, thus implying a preference of one his part to ignore the widening split between administration and management.⁶⁷ If such was the case, it was well for the directors to replace him since there were still major obstacles to overcome in establishing a modern, highly profitable colliery, and all those responsible, especially at the most senior levels, had to pull-together to achieve this goal.

67 There exists some controversy re: Nicol's integrity; some have claimed he was dismissed for corruption and graft, but no evidence to this effect has been found by the writer. Until such proof is available, the directors avowed reason for his departure (as one of economy - see fn 66 above) should indicate that Nicol's honesty was not then in question.

III

VCMLC PRODUCTION AND SALES, 1874-91 One reason why Charles Nicol may have survived so long as the head of the company's management was the fact that the Vancouver Coal Company had no significant competitors until 1873. Nicol's successors, Mark Bate and Samuel Robins, whose actions are discussed shortly, were not so fortunate. As will be argued, Bates' failure to keep the VCMLC ahead of its chief rival, Dunsmuir, Diggle and Company, was due as much to his own shortcomings as a leader as to either the deficiencies of the resident manager system or the talents of his competitors. But, Robins, a much stronger character, fared not much better, for by the seventies, coal mining was a highly regarded field of opportunity that attracted a wide range of investors, the more successful of which cut deeply into the VCMLC's position of primary coal supplier to the Pacific northwest. Just how badly the Vancouver Coal Company was affected is plainly revealed in the following brief examination of the VCMLC's returns from 1874 to 1891.

Vancouver Island's collieries produced 81,000 tons of coal in 1874. Of this amount, the VCMLC contributed 63.9 percent - meaning its share of the market had fallen in the space of five years by more than one-third. This occurred despite a one-third rise in its own output.⁶⁸ As Table 3-2 below indicates, coal production climbed steadily for the VCMLC until 1880, (when a six week strike occurred), forcing output down to three quarters of that of the previous year.⁶⁹

68 B.C. Min. of Mines, *Annual Report*, 1869-74, *passim*.

69 *Ibid.*, 1880, p. 436-37.

The drop in 1881 was caused chiefly by another strike, though a major underground fire also had effect. Serious flooding of No. 1 mine in 1883 slowed output again, and extensive repair work to another shaft in 1886 caused closure of one third of the mining activity. The decline of 1889 was explained by a total lack of shipping in the last two months of the year.⁷⁰

Table 3-2. VCMLC Coal Production and Sales, 1874-1891.⁷¹

Year	Plant Value	Production (tons)	Exports (tons)	Home Sales (tons)	Unsold (tons)	% of Total BC Production
1874	\$ 93,657	51,728	32,319	18,878	5,065	63.9
1875	102,398	59,603	227,045	22,376	15,246	54.2
1876	118,000	73,798	61,871	16,665	10,509	53.1
1877	123,000	94,809	68,780	16,869	19,670	61.6
1878	120,000	82,133	81,600	14,729	5,377	48.0
1879	112,000	104,288	78,187	20,678	10,800	43.3
1880	110,000	77,734	663,181	19,641	5,712	29.0
1881	115,000	47,308	36,467	9,665	6,887	20.7
1882	140,000	51,529	43,842	14,032	442	18.2
1883	150,000	35,665	19,631	16,371	442	16.7
1884	350,000	133,858	104,813	28,103	1,048	33.9
1885	"	138,352	111,670	26,710	1,019	37.9
1886	"	112,761	79,637	33,260	882	34.5
1887	"	138,712	114,815	23,491	1,288	33.6
1888	"	258,817	215,252	39,731	5,121	52.9
1889	"	223,870	179,286	40,113	9,593	38.6
1890	"	389,505	292,809	98,340	6,072	57.4
1891	"	527,457	383,886	140,761	8,883	51.2

Worth noting above is the marked increase in plant value recorded for 1883. Apparently a continual decline in fixed assets necessitated a major influx of capital for improvements which in turn had a large

⁷⁰ B.C. Min. of Mines, *Annual Report*, 1889, p. 304.

⁷¹ *Ibid.*, 1874-89, *passim*.

impact upon subsequent production.⁷² It is also worth mentioning that the dramatic drop in unsold coal for 1878 resulted from a production cut-back due to a "dullness of trade" in the San Francisco market.⁷³ Finally, it is plain that the Vancouver Coal Company's share of coal sales, both domestic and foreign, fell both steadily and alarmingly during the period 1880-83 when Mark Bake was, theoretically at least, well experienced as resident manager. The VCMLC recovery in 1877 was due chiefly to a major strike in Dunsmuir's colliery, an event that for a time threatened to spread to Nanaimo.⁷⁴ Apart from a sharp falling-off in output in 1889 when a major mine disaster occurred at its main colliery, the Vancouver Coal Company, under Samuel Robin's management, tended to climb slowly but steadily from approximately one-third of the province's annual coal trade to slightly more than one-half. But this was still a major drop from the 1860's and early 1870's when it monopolized the industry.

LOSS AND RECOVERY OF MANAGERIAL INITIATIVE, 1869-91 While it is argued below that the VCMLC's failure to maintain the lead in coal production was due in large part to its own failings as a company, it is further argued that Robert Dunsmuir's master-stroke in developing the Wellington seam created serious competition for the Vancouver Coal Company. Moreover, the Douglas and Newcastle seams, (upon which the VCMLC's fortunes lay), presented more technical difficulties in the 1870's and 1880's than did the Wellington, insofar as reaching faults in the coalface were common.

72 B.C. Min. of Mines, *Annual Report*, 1883, p. 423.

73 *Ibid.*, 1878, p. 408.

74 See chapters 5 and 7.

Fig. 3-3 VCMLC COAL PRODUCTION, 1863-91
(thousands of long tons)

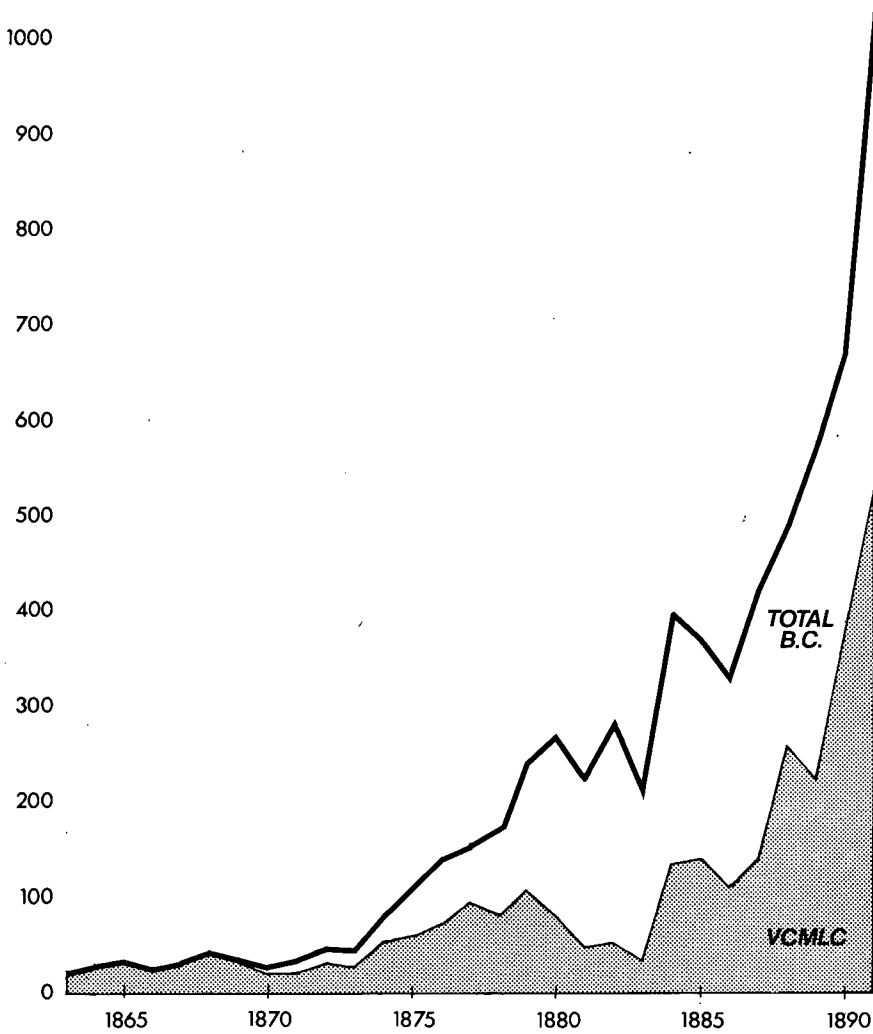
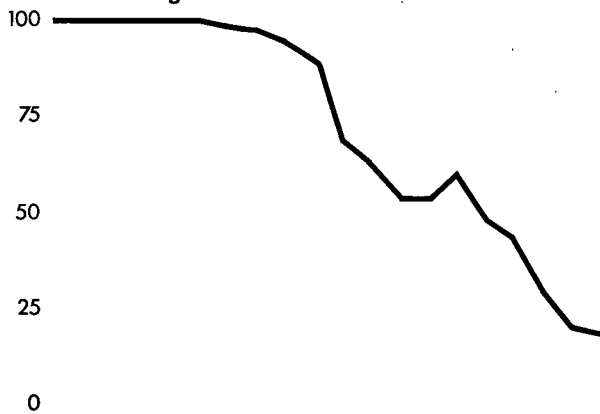


Fig. 3-3a AS PERCENT OF B.C. TOTAL



occurrences for the VCMLC and its coal measures were also proving then to be less thick.⁷⁵ Yet these were not insurmountable hurdles, for in the 1890's the Island's two major collieries by and large matched each other's output. The principal cause of the VCMLC decline to 1884 is to be found elsewhere. And from the evidence, it appears that the blame lay chiefly with management.

Charles Nicol's successor, Mark Bate, youngest son of an English iron manufacturer and nephew of George Robinson, last manager of the Nanaimo Coal Company, arrived on Vancouver Island in 1857 to take a clerk's position at the HBC mines. Subsequent promotions carried him from cashier to accountant, the job from which he stepped to succeed Nicol.⁷⁶ Having mainly a clerical and financial background, Bate was poorly prepared to pass judgment upon technical matters, and he chose to leave such issues to his chief assistants, John Bryden and Robert Dunsmuir. Dunsmuir left early in Bate's tenure to start his own coal operation, but Bryden remained, becoming mines' manager in late 1869. Another important person in the VCMLC management structure was the Company's agent in Victoria, John Rosenfield, a shipping and commission merchant who had been responsible for much of the coal sales since 1863.⁷⁷ Samuel M. Robins, secretary and principal administrative officer in the London headquarters, was gradually becoming a fourth major figure, in that he attempted increasingly to

75 See chapter 1 for description of these seams.

76 For more information on Mark Bate's life see *Biographical Dictionary of Well Known British Columbians*, Vancouver (1890), pp. 96-7 and R.E. Gosnell, *A History of British Columbia*, Victoria (1906), pp. 335-36.

77 *Colonist*, 24 Jun 1887, p. 2.

influence the minds of the directors with his own opinions on colliery operations.⁷⁸

From the start of their relationship, Bate and Bryden disagreed on how the workforce should be handled. Bryden was a hard-liner, willing to dismiss miners and tradesmen who complained about wages or working conditions. He believed concessions led to greater demands, and that consistently firm treatment of the men would best serve the VCMLC's interest.⁷⁹ Bate, however, was ready at any time to receive delegations and redress grievances, though his tendency was to decide in the workers' favour.⁸⁰ The new resident manager's apparent openness helped cool many disputes, but it also had the effects of undermining Bryden's position, as mines supervisor. Bryden must have been frustrated further by Bate's increasing interest in politics and civic affairs. The resident manager literally inherited Nicol's offices, including president of the literary society and justice of the peace. In 1875, Bate was elected as Nanaimo's first mayor, holding that office eleven times until 1890. He also was a Mason, an Oddfellow, and an investor in several local business ventures.⁸¹ Bryden, whose diaries and reports revealed him to be a dedicated, knowledgeable mines' manager devoted to recording at length details of mining techniques and equipment repairs, was hard-pressed to maintain operations in the face

78 "VCMLC", *Mining Journal*, 1870-83, *passim*.

79 John Bryden, "Diary and Letter Book, 1878-1880", PABC MSS, *passim*; also revealing in this regard is VCMLC "Director's Diary, 1 Jul 1880 - 30 Sep. 1881" (as kept by Mark Bate) which often mentions Bryden's actions and attitudes - see entry for 13 Jul 1880 especially.

80 *Loc. cit.* (director's diary) and *passim*.

81 *Bibliographical Dictionary*, 1890, pp. 96-7.

of Bate's growing indifference. By 1878 operations at the VCMLC colliery were being badly affected by flooding, fires, and scores of minor accidents involving power machinery. The threat of exhausting certain key coal deposits forced Bryden to step-up exploration at the expense of production, which, in turn, caused many miners to resign for lack of opportunity to earn sufficient wages.⁸² Those who stayed stepped-up their arguments that they needed a per-ton wage increase to offset declines in their daily production.⁸³ Meanwhile the directors in London, alarmed by falling profits, insisted that a general wage reduction be made - a move that Bate would not attempt for fear of a strike like the lengthy work stoppage that had occurred in 1871 when the directors had ordered a similar wage cut.⁸⁴ Bryden likewise was anxious, but he was willing to approach small sections of the workforce in the hope that he could contain dissent and thereby avoid a labour-management confrontation. Behind this action, too, was his conviction that the workers were in danger of being dominated and led into a work stoppage by a small group of agitators whom he was determined to root-out and dismiss.⁸⁵ This suspicion of a conspiracy was so strong in Bryden that on one occasion he recommended that no "white" miners be

82 Bryden, "Diary and Letter Book" to 30 Mar 1878; B.C. Min. of Mines AR, 1878, pp. 380-85; on the subject of coal deposits exhaustion in the VCMLC mines, see James Dickson, "Submarine Coal Mining at Nanaimo, Vancouver Island, British Columbia"; CIMM *Transactions*, pp. 465-72 (1935).

83 Bryden to Robins, 17 Oct 1878 (in "Diary and Letterbook").

84 See next section for details on 1871 strike.

85 Bryden to Robins, 17 Oct 1878; 7 Aug & 27 Nov 1879; 26 Feb & 18 Mar 1880 in *op. cit.*

hired, and that "independent-minded" Italians from San Francisco be brought-in to work the colliery.⁸⁶

On 27 November, 1879, Bryden on his own initiative wrote to Robins admitting management's failures to date in negotiating the expected reduction. He implied a lack of firmness on Bate's part had emboldened the miners, causing the latter to proclaim they were "masters of the field".⁸⁷ Backed by a telegram from the directors to the resident manager demanding action, Bryden put the long-awaited wage reductions into effect. Predictably, the miners struck almost immediately.⁸⁸ The mines' supervisor determined to hold firm, but another telegram, this time from Rosenfield in Victoria, saying, "directors leave decision to me, I advise you to resume work immediately, on best terms", destroyed the mines' supervisor's position, pushing him to resign from the VCMLC on 9 April, 1880.⁸⁹ Bryden believed the only aims were to break the strike, restore colliery discipline, and resume production. He suspected Rosenfield of first panicking, then intervening on his own behalf with the directors without considering alternative sources of coal supply such as Dunsmuir, Diggle - at least until management had won the dispute. In Bryden's view, the director's demand for a reduction, followed closely by their capitulation to Rosenfield (and thus the workers), made for the worst kind of leadership. In his

86 Bryden to Robins, 7 Aug 1879, "Diary and Letterbook".

87 Bryden to Robins, 27 Nov 1879, *ibid.*

88 Bryden to Robins, 18 Mar 1880, *ibid.*

89 Bryden to Robins, 9 Apr 1880, *ibid.*

parting statements, Bryden remarked the company should have "but one head ... as the full management".⁹⁰

With Bryden gone and Bate all but ineffectual, the Vancouver Coal Mining and Land Company's decline accelerated. By 1883 production had fallen to 35,665 tons, only 16.7 percent of the Island total.⁹¹ Realizing their investment was in serious trouble due to what they then claimed was "incompetent management", the directors despatched Robins the following year to Nanaimo as Bate's replacement. Robins' instructions were to "put the mines on a paying basis", and it is clear from the statistics that he did so within a relatively short time. A Cornishman born in 1834, Samuel Robins had gained considerable experience working for his father's mining and manufacturing enterprises before joining the VCMLC as principal secretary in 1869.⁹² Both Bate and Bryden had forwarded monthly reports to Robins which served to make the latter fully familiar with all facets of the colliery operation years before he arrived in Nanaimo. Tackling one major problem after another, Robins soon re-established both labour and community confidence in the VCMLC, making it obvious to most that the change in management was a primary cause for the upswing in efficiency, production, and sales. Among Robins' most significant achievements were the improvements he fostered in mines' safety, a move acknowledged and welcomed by the minister of mines.⁹³ Additionally, Robins helped the directors to rationalize the Vancouver

⁹⁰ Bryden to Robins, 15 Apr 1880, "Diary and Letterbook". See p. 180, fn 928 for some personal background on John Bryden's "Letterbook".

⁹¹ See Table 3-2 above.

⁹² *Bibliographical Dictionary*, 1890, p. 278.

⁹³ B.C. Min. of Mines AR, 1885, pp. 506-09.

Coal Company's coal lands' acquisitions policies and procedures in the course of clearing away indentures, mortgages, and liens on a variety of adjacent lands (some major) that had long been the interest but never the property of the VCMLC.⁹⁴

Typical of the land deals under Robins' management was the purchase of the Bank of British Columbia's interest in the Harewood Estate, a coal-bearing property comprising 8,895 acres located immediately west of the original VCMLC acreage. In a carefully planned arrangement with the bank, the resident manager secured on behalf of the directors a contract to purchase Harewood with Vancouver Coal Company debentures. A total of 250 shares valued at £100 each were issued, 120 of which were made in payment for the property which contained a dormant colliery apparatus consisting of mine shafts, a railway, a tramway, and wharves at Departure Bay. Financing was done through debentures fixed at a dividend rate of six percent per annum, and the remaining £13,000 realized in their sale went directly to colliery improvements. This then left untapped £15,000 of the £100,000 the directors were able by law to raise through the sale of debentures. Robins convinced them in 1887 to meet their limit, and place the resulting capital towards further improvements at Nanaimo.⁹⁵ By 1889, the new resident manager had been instrumental in bringing in

94 "Western Fuel Company, 1862-1928", BU A52 for originals and copies of many such legal documents.

95 "Contract for Sale of Bank of British Columbia's Interest in the Harewood Estate, Vancouver Island ...", 27 Apr 1884. Copy in *loc. cit.* Also, VCMLC "Articles of Association, 1862" as cited therein.

through increased allotments and investor capital approximately \$300,000.⁹⁶ This amount he turned almost exclusively into equity - a main reason why the VCMLC was able to modernize the Nanaimo colliery and soon raise its share of the coal trade to one third of the provincial total. A re-organization of the firm occurred on 2 March, 1889, increasing again the amount of share capital it could raise and creating an opportunity to strengthen the board of directors. Operating now under the name of the New Vancouver Coal Mining and Land Company, the board retained Robins as resident manager.⁹⁷

ADMINISTRATION IN THE TIME OF TROUBLE Directors and shareholders alike learned in their first decade of handling the Vancouver Coal Company's affairs that establishing and administering a profitable overseas mining operation was a difficult and often precarious undertaking. And like other nineteenth century investors, the VCMLC administrators soon discovered the second decade could be an even greater time of trouble. In entering the 1870's, the owners believed their recent change of resident managers had proved sound, insofar as both production and profits climbed at steady and encouraging rates, thereby making it easy for the board to declare half-yearly dividends of at least ten percent.⁹⁸ Between 1871-76, however, the VCMLC experienced a series of setbacks that shook the shareholders'

96 *British Columbia Directory, 1884-85*, Victoria (1885), pp. 117-18. This source claims upwards of \$250,000 had been recently invested by the VCMLC into "works and property".

97 A.F. Buckham, "History of Vancouver Island's Coal Industry", unpub. typescript - copy in BCPM mh.

98 "VCMLC", *Mining Journal*, 14 May 1870, p. 400 and 12 Nov 1870, p. 948. 10% was the average dividend figure for 1870. See Appendix for available profit and dividend statistics, 1870-85.

confidence in the administration, and set the stage for a long and sometimes bitter debate among the owners as to how the company should best be run.

The first sign of trouble appeared late in 1870 when the colliery was forced to cut-back on production to avoid overstocking unsold coal. A backhaul trade involving California wheat and Australian coal had developed, glutting the San Francisco market with the latter. Ironically, in the VCMLC's ongoing attempts to improve profits, board policy had been shifting towards increasing output while reducing prices. One director explained the aim was to change from 40,000 tons at twelve shillings to 60,000 at eight.⁹⁹ This the board was prepared to do if and when it became clear to the administration that coal prices would fall no further. Meanwhile, the directors planned to curtail production and pay a dividend of only three shillings.¹⁰⁰ In November 1871, several shareholders pressed for a five percent dividend, but the board refused claiming such a concession would require use of reserve funds which at that time were invested in "Russian Stock", and which likely would be needed to develop new coal discoveries on Newcastle Island. This argument was accepted, for apart from expressing a "general wish" to re-invest the reserve in "more profitable securities", the shareholders were content to leave the matter of dividends rest.¹⁰¹

With a revival of the California market in 1873, VCMLC coal sales jumped and the investors were awarded a return of ten percent. Had the board not held firm at that point to its policy of balancing dividends as equally as possible over the long-term, the administrators' capacity to

⁹⁹ *Ibid. cit.* Income in either case would be 480,000 shillings, but the lower price clearly would be of advantage in competing with Australian cut-rate coal.

¹⁰⁰ *Ibid.*, 11 Nov 1871, p. 988.

¹⁰¹ *Ibid. cit.*

control future earning undoubtedly would have been greatly diminished.¹⁰² Almost immediately the wisdom of this course became apparent since in 1874 serious flooding occurred at No. 4 level of the Douglas mine, forcing a major slowdown in production and a corresponding reduction of profits.¹⁰³ Additionally, it was reported in November that new technical problems were cutting further into productivity, making another period of low earnings inevitable. Fitzwilliam, now chairman, misjudged the investors' temper and delivered a superficial account of operations, implying that matters were well in hand. Notwithstanding Fitzwilliam's assurances that a ten percent dividend was forthcoming, Tendron, an elderly shareholder charged the chairman with giving a "more sanguine" view than that contained in the written report. Likely stung by Fitzwilliam's patronizing attitude, Tendron warned the board against offering overly optimistic predictions. In the course of subsequent discussion, Galsworthy made the unfortunate remark that the Nanaimo coalfield was "chopped-up by its faults", a statement Tendron claimed would cause "an immense amount of harm" to the company's "prospects" if made public. Stung in turn, Galsworthy protested Tendron's accusation, adding the shareholder was no more able than he to judge what kind of statements were in the VCMLC's best interests. Hill, another shareholder, cooled matters by gently rebuking both men for their intemperate remarks, but it was obvious to all present that an element of mistrust between the directors and various shareholders was now in the open, and nor was it likely to disappear for some time to come.¹⁰⁴

102 "VCMLC", *Mining Journal*.

103 *Ibid.*, 9 May 1874, p. 511b.

104 *Ibid.*, 7 Nov 1874, pp. 1226a-b. There is no evidence to suggest such differences were caused by anything other than interpretations of the resident manager's report.

By 1876 the Vancouver Coal Company realized it had yet another major concern on its hands. As it had been board policy not to attempt a monopoly of the Island's coal industry, the rise of competing collieries to that juncture had not been cause for alarm. Indeed the board openly admitted it could not have hoped to raise the capital to "acquire mine after mine", and that it was satisfied with its present holdings. Still, there could be no doubting now that Dunsmuir, Diggle was aggressively pursuing sales in markets the VCMLC believed it had well-secured for itself, and with the San Francisco trade again slowing-down due to low demand, further competition in any form could not be taken lightly. Yet the directors felt they could do no more than warn their rival that should the latter attempt to "engross the whole [coal] trade of Vancouver Island", it was bound to lead the latter to "ruin".¹⁰⁵

What was the outlook for the VCMLC in view of these events? So far in the seventies the company had been hit by a series of major technical and labour difficulties (of which the owners knew), and had had its colliery operation poorly managed (a fact it yet did not know). These factors were those mainly responsible for a general decline in the rate of production increases, and this in turn meant profit margins tended to be more narrow each year.¹⁰⁶ The continued weakness of the California market, coupled with the rivalry of Dunsmuir, Diggle, further diminished the VCMLC's profitability, making it awkward (and at times impossible) for the board to continue declaring dividends at levels acceptable to the shareholders.

105 "VCMLC", *Mining Journal*, 25 Nov 1876, p. 1305a. See chap 5 for an account of Dunsmuir, Diggle's operations.

106 See fn 98 this chapter.

Such failings created friction between the board and the other investors, and to overcome this problem, attention was focused upon finding more ways to economize and better methods to improve sales.

Tendron led the way in the attempts to cut-back costs by urging reduction in administration overhead. Boardmembers claimed instead that greatly increased production, price cuts, and a forcing of more VCMLC coal into foreign markets was the only logical course to take. Tendron, openly admitting his desire for more immediate returns, (as well as his wish to have a profitable investment to pass on to his heirs), demanded that fewer funds be placed annually into reserve, that dividends deserved greater priority. And since investor return had fallen to two shillings six pence per share, several others supported his view.¹⁰⁷ Again, the board prevailed, and Nanaimo, not London, was forced to bear the greatest burden in all attempts to increase profits. Finally, in 1883, when the VCMLC's production had fallen to only 16.3 percent of the provincial total, the board could no longer hope that its present policies would serve to reverse the company's swiftly declining fortunes. And it was plain that a new approach was needed not only at headquarters, but on Vancouver Island, too. For several years the administrators had been observing Bate's performance with growing concern. Bryden's resignation had not immediately caused a full-scale review of the colliery management, though it was clear at the time to the Londoners, especially Robins, that some action in this regard was vital if the company was to survive. Thus in 1883 he volunteered to

107 "VCMLC", *Mining Journal*, 25 Nov 1876, p. 1305b. The *Mining Journal's* coverage of the VCMLC's meetings is extensive. While there are several gaps in this coverage from 1870-91, readers anxious to amass details will not be disappointed by this source.

visit Nanaimo in a desperate attempt to correct the difficulties there. Determining in short course that Bate was both overextended and incompetent, Robins recommended to the board that he himself be given the resident manager's position, and upon the directors' approval of this step, he moved in to take charge.¹⁰⁸

As has been seen, Robins both restored the influence of the resident manager's position amongst the workforce and reshaped the relationship between administration and management. When more experienced in colliery operations, Robins sought to provide the investors with greater insight on a wide range of issues. His long tenure as secretary had convinced him of the board's need to be free from becoming bogged-down by minor details, and consequently spared them the incidentals, providing instead only those facts and recommendations needed for making broad policy decisions. In this he was correct, and since there could be nothing but praise for the speed with which he was increasing both production and profits, the administrators wisely allowed him sufficient room to manage their affairs on the Pacific coast to his own satisfaction.¹⁰⁹ In short, the resident manager system was beginning to work in the manner originally planned. Under Robin's leadership, the colliery management in its third decade greatly improved the levels of expertise, specialization and

108 See pp. 124-26.

109 "VCMLC", *Mining Journal*, 29 Nov 1884, p. 1371. The Chairman, Galsworthy, said one year after Robin's appointment that that he had "great sense" of the new resident manager's contribution; even Tendron was satisfied, saying the investors "were all very much led by Mr. Robins".

mechanization - all of which added materially to output.¹¹⁰

At its best, this management approach was superior in almost every way to the bureaucratic methods employed by the Hudson's Bay Company. During Nicol's early years as resident manager and throughout Robin's tenure in the position, the Nanaimo side of the VCMLC made consistently good decisions in operating the mines. The large emphasis placed by management in these periods upon colliery development did more to strengthen the company's long-term position than any other activity. Moreover, with such well-qualified men in senior management positions, the system proved itself capable of matching the production, productivity, and sales of any other form of colliery leadership. Yet because the owners reserved for themselves all decisions on further coal lands acquisitions and the opening of new, major markets, management had little opportunity to exercise within the bounds of the company any entrepreneurial impulses they themselves may have had. Nicol, it will be remembered, speculated in a variety of local ventures, but these were strictly his own undertakings. Bate had similar aspirations, as did Robins eventually. But these men, too, had to move outside the confines of the VCMLC to satisfy their urge for wider investments. As will be seen, the entrepreneurial activities amongst lower levels of management took its own forms, but never within the framework of the Vancouver Coal Company.¹¹¹ Finally, it should be noted that while

¹¹⁰ See chaps. 6 & 7 for discussion on the impacts of specialization and mechanization.

¹¹¹ Recalling from the Introduction those comments re: the pattern of foreign capital affecting B.C.'s (and other Canadian) mining companies, and noting from chapters 2 and 4 above the caution with which both the HBC and VCMLC administrators (in London) approached the development of their coal properties despite opportunities to rapidly expand their land

the resident managers were not trained coal miners, and varied greatly in their technical knowledge of colliery operations, their lieutenants, the supervisors and foremen, were highly skilled and experienced colliers. Since many were also ambitious, the VCMLC soon became the main reservoir of mining talent and leadership from which coal speculators drew managers for their own ventures.

holdings whenever other coal ventures failed, it is plain that the experience of these two companies strongly supported D.G. Paterson's (*British Direct Investment in Canada*, 1976) arguments re: the forms in which British capital entered Canadian industry.

Chapter Four

PROMOTERS AND SPECULATORS

INTRODUCTION Nineteenth century coal promoters in British Columbia added a lively and at times exciting dimension to mining activity, though their individual contributions rarely had a major impact upon the course of the province's coal industry. Possibly as many as forty coal mining ventures were started in the coastal region during the period 1864-89, but only a few reached the production stage. The record of B.C. interior coal enterprises in those years was less impressive yet, since none of the twelve mining licences awarded resulted in the erection of a working colliery.¹ Notwithstanding these poor showings, the story of promotion and speculation in the coal trade is important for the light it casts upon capital formation methods and the evolution of management technique. It also helps to explain why the entrepreneur so often played a role of minor significance during the rise of British Columbia's coal trade.

I

ENTREPRENEURSHIP AND COAL MINING Several factors contributed towards British Columbians' early enthusiasm for coal mining enterprises, of which the following likely were most pressing: The gold economy's collapse in the mid-sixties released local investor capital and skilled labour, both of which could be applied to the infant coal industry.

¹ See Fig. 4-1 for general locations of all coal mining activities as proven by records now available in the PABC MSS division. As gaps exist in these holdings, it is likely that several more mines were established, hence the above estimate of 40 ventures.

Second, despite the two colonies' economic woes, coal demand along North America's west coast remained strong.² Moreover, shipping and settlement were growing steadily in the region, a firm indication that coal was the fuel of the future. Third, repeated discoveries of coal deposits on Vancouver Island and on the mainland, both immediately above and below the American border, were taken as proof that the area was underlaid by vast coal measures, a circumstance that undoubtedly would result in the area becoming the manufacturing centre for the Pacific coast. Such considerations spurred speculators towards forming coal partnerships, but as events showed, making a success of coal mining was far too complex an activity for all but the most adept and dedicated entrepreneurs. To those outside the industry coal mining seemed to be a simple matter of surveying, extraction, distribution, and sales. Neither the HBC nor the VCMLC had needed huge capital expenditures to build a working colliery, and it further seemed obvious to non-operators that both skilled labour and modern coal mining technology could be imported at reasonable cost. In short, there arose in the case of coal mining what could be called a "growth perspective", a consensus amongst local investors that this industry was on the verge of rapid expansion and that the success of the operating collieries could be easily imitated if not surpassed.³

2 See Chap. 8.

3. The term "growth perspective" is A.O. Hirschman's whose work *The Strategy of Economic Development* (New Haven (1958) deals at length with this theme. See especially his section "The Importance of Being a Latecomer", ch. 1, pp. 7-11 where he argues in part that in a climate of growth, newcomers will feel compelled to participate, thereby adding themselves to the trend. See also chap. 5 of this thesis for more examples of the relevancy of Hirschman's ideas to B.C.'s early coal industry.

Once a coal mining licence was secured, the coal promoter's foremost task was to quickly gather sufficient funds and expertise to "prove the claim", for without some evidence of a good coal find, investor capital would not follow. Since in most cases those who were promoting the venture intended to carry-on to the colliery-building stage, there appears to have been a large number of men willing to become coal entrepreneurs, the general role of whom is worth pausing for a moment to examine.

Organizing new industrial concerns involves risk-taking, goal-setting, marshalling resources, and directing operations - tasks normally split today between the levels of administration, management, and supervision. During the nineteenth century, such responsibilities often were handled either by one man or by a small group of partners whose initial contribution could be capital or expertise or both. The HBC's and VCMLC's experiences apart, this kind of approach to colliery management characterized British Columbia's coal industry to 1891. Why was this so? Plainly, not only was it seen as desirable to retain control of a new coal enterprise in as few hands as possible, but easy, too. For start-up only a few basic resources were necessary: a coal claim and mining licence; a small force of skilled miners accompanied by a not much larger number of labourers; a rudimentary means to move the coal to tidewater; and no more equipment than that required to bring coal to the surface. Subsequent financing, including payments for improvements, operations, dividends, and debts would be met with profits on coal sales. This strategy was designed as much as anything to both maintain production and create further growth. In other words, the venture soon was to become a self-sustaining enterprise needing neither future borrowings nor additional investors. All this, of course, assumed

adequate coal reserves, access to markets, and no shortages of either labour or equipment.⁴ Equally affecting the size of partnerships was the tendency of coal prices at San Francisco to fluctuate widely within the space of a single year. If a stable market was beyond the partners' grasp, the opportunity to easily constrain dividends even over the long term was not. Had they had a large number of investors to satisfy, their firm's chances of surviving extended periods of little or no profits would be low indeed. Consequently, small partnerships made-up of speculators willing to purchase transferable shares issued in large denominations were the norm. Finally, there appears to have been in some instances at least a clear urge to pursue coal mining for the wealth, power, and prestige it could bring to the colliery proprietors and their families. Very few ultimately realized this aim, for success in the forms of huge personal fortune and vast political influence came only to those promoters who became genuine entrepreneurs, risking everything at the start and continuing their effort by channelling virtually all their profits and energies for many years to come back into their mining operation.⁵

OPPORTUNITIES IN COAL Until the Hudson's Bay Company's trade monopoly on Vancouver Island was broken by the Company's failure in 1859 to secure an extension of its grant, it was impossible for outsiders to enter the

4 See chaps. 6 & 7 for details on labour and technology respectively. For extensive examinations of the motives, workings, and influences of entrepreneurs in modern business history, see S. Pollard, *The Genesis of Modern Management*, London (1965); P.L. Payne, *British Entrepreneurship in the Nineteenth Century*, London (1974); A.D. Chandler, *The Visible Hand: The Managerial Revolution in American Business*, Cambridge, Mass. (1977) - all of which are referred to again in chap. 5 below.

5 See next chapter for the most renowned case of a successful B.C. colliery proprietor.

coal trade as independent producers. Even after all legal constraints surrounding the monopoly were removed, only ex-officials of the Nanaimo Coal Company were advantageously placed to capture the HBC coal rights and mining apparatus, but to do so they required substantial financial support which at that time was available only in Britain. For anyone else the obstacles appeared too great.

Much of the difficulty facing entrepreneurs lay in the way the colonial economy developed after 1858. Before the summer of that year less than two thousand whites occupied the British territories north of Oregon and west of the Rocky Mountains. By far the largest number of these were in the employ of the HBC or one of its subsidiaries.⁶ Thus virtually all capital, labour, and equipment at work in the region was tied to the Company's objectives, and apart from those resources needed for coal mining and agriculture, very few were available for other industrial development. Still, Columbia District officers experimented in a variety of other projects, including stoneworks, saltworks, fisheries, sawmills, tanneries, and other processing schemes in the hope that more than furs, coal, and farm produce could be gained from the region's natural resources.⁷ Despite generally slow progress in these ventures, the HBC experiments stimulated the region's more enterprising inhabitants towards thinking of a new kind

6 For details on the HBC experience to 1858 see E.E. Richy, *Hudson's Bay Company* (1959), chaps. 9, 19, 23, 26-7. Also useful are H. Innis, *The Fur Trade* (1930), J.S. Galbraith, *Hudson's Bay Company as an Imperial Factor* (1957) and M.A. Ormsby, *British Columbia* (1958).

7 See John McLoughlin's and Eden Colville's correspondence as published by the HBCS, London, vols. 4, 6, 7, 19; see, too, J. Mackay's description of Columbia District economic activities in R.E. Gosnell, ed., *Year Book of B.C., 1897-1907*, pp. 21-25.

of economy, one based upon large commitments to resource extraction, manufacturing, and trade. Between 1858-62 a series of gold discoveries on the mainland accelerated both settlement and investment in the two colonies, though the ultimate economic results tended to be as harmful in some sectors as they were positive in others. Thanks to the swiftly expanding gold frontier, transport, commerce, finance, and other services (including government) grew rapidly after 1858.⁸ Equally impressive at times were the gains in construction and agriculture, while other advances were being made in lumbering, sawmilling, boatbuilding, and to a lesser degree, in manufacturing. Still, the nature of the gold economy was such that it funnelled almost all available resources into a pyramid-like structure of supply and demand having the gold miners at the apex. For Island industries like lumbering and coal mining, which were caught outside of this network, it became for the time all but impossible to attract local capital or skilled labour. Moreover, once the gold seekers were forced to shift from placer to pit mining, vital machinery became both scarce and prohibitively expensive for the colliery operators.⁹ From 1858 to 1864 the value of gold shipments out of the Interior totalled \$15,012,234.¹⁰ For the same period

8 For a comprehensive view of Vancouver Island's economy up to 1889, see Paul A. Phillips, "Confederation and the Economy of British Columbia", (1967), pp. 43-66; J.M.S. Careless, "The Business Community of Victoria, British Columbia", *Canadian Business History*, D.S. Macmillan, ed., Toronto (1972), pp. 104-23; Ormsby, *British Columbia*, pp. 134-231.

9 See chap. 7.

10 B.C. Min. of Mines, *Annual Report*, 1875, "Table" on gold mining statistics, 1858-75, n.p.

coal returns were less than \$350,000.¹¹ As for working miners, the gold fields were estimated in 1862 to have 4,200 earning an annual average of \$634, whereas we know the VCMLC in that year employed no more than 100 men averaging \$150 apiece.¹² Scores of firms in Victoria and on the Mainland dealt directly in gold-related activities, but fewer than half a dozen had dealings in coal.¹³

The gold economy, however, had definite limits as to the amount of resources it could absorb. By 1865 gold exports were falling: compared to either California or Australia, British Columbia's easily accessible gold deposits were relatively small, a circumstance which forced many miners and merchants to re-examine their current commitments. One year later the colonial economies were in recession, and it was obvious that funds invested in gold-related activities were not likely to show reasonable returns. The impending exhaustion of the Mainland gold fields was a serious threat to the Victoria business community, though at first no concerted effort was made to shift towards a new economic base. As the crisis worsened, voices increasingly were raised once again in praise of the Island's own natural resources. Newspaper articles and editorials urged investments in local enterprises and increases in immigration. Coal mining was singled-out by journalists as the best opportunity the colony had for a prosperous future. One writer went so far as to predict the area would become the "Newcastle

¹¹ B.C. Dep't of Mines, *Annual Report*, 1973, Table 8A, "Coal Production, 1836-1973", p. A47. For years 1858-59, data must be sought from colliery returns published by the *Colonist* in January of those years.

¹² See *AR*'s mentioned in fns 10 and 11 above.

¹³ See chap. 3 above for the names of agents and merchants dealing in Island coal.

of the Dominion", so convinced was he of the value of the Island coal measures.¹⁴ The Board of Trade was active in promoting coal lands speculation, and the government was urged to assist the development of coal mining by a combination of measures, including surveys and legislation designed to stimulate further exploration and exploitation.

THE GOVERNMENT'S HAND Laws and regulations with respect to coal mining in British Columbia evolved much slower than those prepared for exploiting the gold fields. Up to April 1877, when the province's coal industry received its first comprehensive regulatory act, twelve major pieces of legislation had been passed to control gold mining activity. Indeed, as early as 1859, a new bureaucracy headed by a commissioner was formed to handle licencing, claims, partnerships, disputes, and other matters common to gold mining.¹⁵ Until an order-in-council dated 11 June, 1864, outlined procedures to be taken in making a coal claim, coal mining received comparatively little attention from government officials. It will be recalled that during the early 1860's, the colonial-surveyor, Joseph Pemberton, appeared concerned more with land policy than mining activities, while successive governors tended mainly to be interested in preventing an illicit foreign coal trade.¹⁶ While the government's seeming lack of interest in coal mining activities may or may not have had an effect upon the rate of

14 "Nanaimo and her Coal", *Colonist*, 4 Oct. 1865, p. 2. The term "Dominion" is an accurate quote, but a curious reference for 1865.

15 The literature on this subject is extensive; most useful perhaps is Sage, *James Douglas*, (1930), chaps. 7 & 9.

16 *Loc. cit.* and chap. 2 of this thesis.

the industry's development before 1864, earlier passage of joint-stock-company acts in both B.C.'s and Vancouver Island's colonial assemblies provided promoters with the opportunity to form locally-registered coal companies.¹⁷ The federal government, incidently, played only a small role after confederation, confining itself in the seventies and eighties to a series of mineral surveys along the Island's east coast conducted by the Geological Survey of Canada.¹⁸ In 1874, the Province created a ministry of mines which, among its limited responsibilities, required colliery operators to submit annual reports giving details of production, sales, work force size, and equipments used.¹⁹ The prolonged strike at Wellington in 1877 forced the provincial government to increase its own role in coal mining, and a permanent inspector of mines, Edward Prior, was appointed.²⁰ From that point on, the Province found itself-committed not only to the general improvement of colliery operations, but increasingly to the promotion of coal mining, too. As mentioned above, an act to regulate all facets of coal mining was passed in that year, and this was followed by a series of amendments, based upon experience, that went far towards strengthening the industry's safety record, its management, and its ability to

17 Gov. J. Douglas, "Proclamation" of "B.C. Joint-Stock-Companies Act, 1859"; Van. Is. Leg. Assb'y, "Act to Extend the Provisions of the Joint-Stock-Companies Act of 1856-58 to Vancouver Island and its Dependencies" - both held in PABC MSS div.

18 See James Richardson, *Report on the Coal Fields of the East Coast of Vancouver Island* (1872), *Report on Geological Explorations in British Columbia* (1874), and *Report on the Coal Fields of Nanaimo, Comox, Cowichen (sic), Burrard Inlet and Sooke British Columbia*, (1877), Ottawa, Geological Survey of Canada, *passim*. Copies in BCPM mh.

19 B.C. Legislature, "Minister of Mines Act, 1874", SBC 1874.

20 B.C. Min. of Mines AR, 1877.

adapt to new technologies.²¹ More is discussed on these subjects in later chapters, but it is important to note here that the 1877 legislation placed a major obstacle in the way of speculative coal ventures, so explicit and demanding were its clauses pertaining to colliery management and operation.

Despite the provincial government's insistence on high operating standards, both officials and politicians felt themselves bound to promote further exploration and development. In May 1883, the Legislature passed a "Coal Prospecting" act which was designed "to encourage coal mining" anywhere in the province. Accordingly, those eager to begin explorations on Crown land need only apply for a prospecting licence, submit a written plan, stake-out the boundaries, and pay the commissioner of lands and works a twenty-five dollar fee. Restrictions were few: every licensee was given access to 480 acres in each land block, although no stone or timber could be removed from the property other than for purposes of erecting buildings and conducting mining operations. Licences were valid for twelve months, with a year's extension available to those who could show bona fide proof of thorough surveys. Should the prospector want to purchase coal-bearing properties, the land price was fixed at ten dollars per acre west of the Cascade Mountains, five dollars an acre east. For purchase of coal mining rights on Crown lands already granted to another, prices were fixed at nine dollars per acre, though the present occupants were to have first refusal. (In such cases, should the mines become exhausted, all rights and properties were to return to the original owners, a stipulation that

21 B.C. Leg. "Coal Mines Regulation Act, 1877", SBC 1877 15:33-63.

would have meant little by that time to any coal speculator).²² Seemingly, the act created a tremendous opportunity for small investors, but in practice it did not. By the time this legislation was passed, the markets for British Columbia coal could absorb only small annual increases. Additionally, the two largest collieries, the Vancouver Coal Company and Dunsmuir, Diggle, almost completely dominated the coal industry, drawing most of the available labour and equipment to their works. Indeed, the

22 B.C. Leg. "Coal Prospecting Act, 1883". SBC 1883 3:5-8. In reviewing the effects of these coal mining laws, it is interesting to note the rate at which coal companies were formed in relation to the times of new legislation. Two years after the 1864 order-in-council, Vancouver Island's colonial secretary noted 29 "prospecting leases or permits" were held on land "bordering on Baynes Sound". In July 1866, the Black Diamond Coal Company (B.C. registered) was granted "lease No. 33" by the Island's surveyor general to work in the same area. Regretably, insufficient records now exist to trace the full number of coal enterprises, or the degrees to which most were pursued, but it is clear that a great deal of coal lands speculation occurred on the coast in the 1860's. Apparently, this was less so for the seventies, in that only eight coal licences were issued under the provision of the "Mineral Ordinance, 1869", the last four of which occurred in 1872. Upon passage of the "Coal Prospecting Act, 1883", ten new companies were formed within a year, but the numbers of additional licences dropped sharply until 1885-87 when, in that period, a total of eighteen new claims were made. Equally noteworthy are the results of this writer's attempts to find both the amounts of acreage granted to promoters and the number of individuals who invested in B.C. coal ventures to 1891. Here, too, spotty records have been an obstacle, but some approximations are possible: Probably no more than 100,000 acres of Crown land were involved in coal mining leases, and possibly no more than 300 persons made direct investments in B.C.'s coal industry. A count of actual names has resulted in a figure of 218 investors, while the sum of acreage listed on available official documents totals only 71,857½ - obviously too low, but not exceedingly so. See Bibliography for references to records employed in above review. See also R.E. Cail, *Land, Man, and the Law. The Disposal of Crown Lands in B.C., 1871-1913*, Vancouver (1974), p. 80 and App. B, Tables 6 & 7, pp. 270-72 for further data. Cail notes coal companies could acquire up to 1,000 acres at \$5 per acre until 1873; this was then changed to a rate of \$1 apiece for 640 acres until the act of 1883.

[illegible]

government's hand in promoting coal mining tended to have the opposite effect of what was expected, because almost as soon as a new colliery began operations, its owners discovered the competition was so great that they were forced either to close-down or sell-out to the larger firms. Robert Dunsmuir, whose activities are discussed at length in the next chapter, was the main beneficiary of this trend.²³

II

If governmental initiatives to promote and regulate the coal industry by and large resulted in gains for the large concerns at the expense of the small, it remains to be asked if there were other factors that worked against entrepreneurs attempting to find footholds in the coal trade. Other questions worth considering are, how far were the most successful of the smaller companies able to advance before being forced to withdraw from the industry? And to what purposes were their former assets put? The following survey of various coal partnerships considered prominent at the time provides some answers.

HAREWOOD COAL COMPANY On 1 March, 1864 a schooner delivered a work party complete with surveying and boring equipment to Departure Bay, three miles north of Nanaimo. This was the Harewood Coal Company's advance group for a new mining enterprise with an output goal of 600 tons daily. Promoting this venture was Cmdr. the Hon. Horace Douglas Lascelles, R.N., a naval

²³ Canadian Collieries (Dunsmuir) Ltd., achieved a virtual monopoly of Vancouver Island's coal industry in 1928 when it purchased the Western Fuel Company's colliery operations. The latter was the successor of the VCMLC. (Note the licenced lands granted in 1883 alone were approx 35,000 acres - from extant copies of B.C. "Mining Licences", PABC MSS).

officer stationed at Esquimalt. Aware that the Admiralty's policy to convert its fleet to steampower would ensure at least one steady domestic market for Vancouver Island coal, and being caught by the local enthusiasm for such investments, Lascelles moved into an industry of which he knew little. He first purchased a freehold of 8,962 acres bordering the VCMLC property to the south and west. Next, he hired Robert Dunsmuir to be coalmaster and resident manager. By the spring of 1866 Lascelles and several silent partners had invested approximately \$30,000 of their own funds in buying the lands, constructing works, and performing surveys. A small rail line was projected for the run to Departure Bay, and a regular though modest labour force was kept busy preparing for actual mining operations.²⁴

Signs of weakness soon began to show, however, Lascelles and other shareholders were forced to return to England in an attempt to raise sufficient capital to begin extracting the coal at a time when the Island's coal sales were falling-off and the market value of Vancouver Coal Company shares were depreciating.²⁵ Worse still, Dunsmuir kept submitting negative coal survey reports, while an earlier dispute with the VCMLC over rail access rights to Departure Bay was as yet unresolved. Any one of these obstacles could in itself have been sufficient cause for failure, but it appears that Lascelles' lack of success in raising funds was what actually finished the venture. He claimed high interest rates together with a shortage of investment capital had prevented him from

²⁴ *Colonist*, 27 Mar 1866, p. 3.

²⁵ See *Mining Journal*, vols. 34-36 (1864-66) *passim* for the climate in mining investments.

securing the £100,000 he believed was needed.²⁶ By 1867 Lascelles and his partners were through. With debts mounting and no hope for additional funds, they had little choice but to sell the company and all its assets to the VCMLC. The latter in turn manipulated the Harewood operations to hedge against the current recession in coal sales by closing its newly acquired pits and offering the Harewood miners land for farming. Dunsmuir was retained as caretaker manager, an undemanding task that left him much time for surveying.²⁷

QUEEN CHARLOTTE COAL MINING COMPANY Among the better promoted speculative ventures of the 1860's was the Queen Charlotte Coal Mining Company whose operations, as the name implies, were planned for the large islands laying sixty miles off the north coast of B.C. A survey party had discovered what it called a "rich seam of anthracite coal" located a half mile inland from the southern shore of Graham Island.²⁸ On the basis of this report, six Victoria merchants sought and were granted the mineral rights to twenty

26 *Colonist*, loc. cit.

27 Some details on the difficulties faced by the Harewood Coal Co. in starting operations are found in the *Nanaimo Gazette*, 29 Jan 1866, p. 3 (two articles). See also Alex D. Macdonald to Harewood Coal Co. Proprietors, 28 Feb 1864 (in "A.D. Macdonald Correspondence", PABC) which was a comprehensive engineering and market report on the company's coal, timber, and land assets. Because Macdonald's viewss on the Harewood property had more of an impact upon Robertt Dunsmuir in the latter's later business dealings than upon Lascelles and his partners, this report is given greater emphasis in the following chapter. The breakup and subsequent disposal of Harewood's assets is discussed in an unpub. letter to the editor of the *Victoria Daily Standard* dated 4 Nov 1882 held in "Robert Brown Collection" PABC. (No reference found re: the price paid by the VCMLC for the Harewood Coal Co.).

28 A technical description of the QCCMC site published in the *Colonist* on 30 Sep 1865 was the first public notice of activity.

thousand acres surrounding the find. This unprecedented concession was secured by a forty-two year lease on five thousand acres rented at \$100 annually. A further \$1000 was paid to purchase one thousand acres for a townsite.²⁹ On 20 October, 1865, the directors, led by the chairman, Thomas Trounce, published a prospectus offering shares to the public. Capital was listed at \$30,000 in 15,000 shares of two dollars each. George Robinson, a former Nanaimo Coal Company manager, was named as mining superintendent, while William P. Sayward, a Vancouver Island sawmill operator, was given the treasurer's post. The QCCMC had been incorporated under the "British Columbia Joint-Stock-Companies Act, 1859", with the partners' assurance that \$50,000 had been earmarked for improvements, several of which, including a tramway and wharf, were claimed to be under construction.³⁰ Actual production, originally planned for April, did not begin until much later. By July 1868 only forty tons of coal had been shipped out, which should have worried the partners, though they claimed they remained optimistic. At the heart of the trouble was a lack of adequate transport to move the coal south to market. Despite glowing reports on the quality of Queen Charlotte coal, the mine was considered too far distant for regular trade. Occasionally vessels enroute to northern waters stopped-by, and occasionally, too, the QCCMC shipped small cargoes of coal to Victoria in rented bottoms.³¹ Building a collier fleet of its own was

29 "Prospectus of the QCCMC" as published in the *Colonist*, 20 Oct 1865, p. 2.

30 *Loc. cit.*

31 Some measure of the difficulties faced by the QCCMC in transporting its coal to market is seen in a *Colonist*, 27 Nov 1865 report that said the schooner *Alpha* had taken 21 days to transit from the Charlottes to Victoria - she arrived with 1½ tons of coal.

out of the question for the new company, however, for the volume of trade needed to at once remain price-competitive and offset ships' operating costs simply did not exist. Thus it became a case of either attracting vessels to the mines or shutting-down.

The crisis came in 1870. On 11 October the directors announced the QCCMC was forced into voluntary liquidation, citing "want of means to move the fossil to a market" as the cause.³² Upwards of \$100,000 had been spent in developing the coal field, and now the mine had to be abandoned. The company's various assets were soon disposed of in an auction eagerly attended by other coal companies apparently desperate at the time for equipment.³³ The departure of the QCCMC from the coal trade had almost no effect upon the industry's output and little influence upon the confidence of other entrepreneurs. The directors' claim that transport problems were solely to blame for their company's failure was not questioned by others, an oversight that undoubtedly misled many speculators who had no idea of how expensive it was to develop and supply a colliery operation in an isolated location like the northern island group. Other companies were formed to exploit the Queen Charlotte coalfields, and if anything, collapsed even more rapidly than the QCCMC had.³⁴ Eventually the message

32 *Colonist*, 11 Oct 1870, p. 3.

33 *Ibid.*, 20 Jan 1871, p. 3.

34 *Ibid.*, 8 & 13 Sep 1866, p. 3. The Seymour Coal Co. had a 5,000 acre claim located S.E. of Skidegate Bay on a "bituminous" seam allegedly 1 mile long and 10 feet thick. C.E. Stephens, a civil engineer from Victoria, assured the partners that the coal was "good for steaming", contained "no sulphur", and would produce "very fair coke". A report entitled "Coal Fields of British Columbia" by F.G. Claudet (New Westminster, 13 Jul 1866) claimed this "coal bed was of incalculable advantage" to the colony, given the "almost unlimited demand" for coal. (PABC MSS).

got through to investors who now believed any coal venture on those islands was bound to fail. Only in the late 1880's when coal demand was high and sufficient shipping available, were entrepreneurs willing to resume coal mining on the Queen Charlottes. Two attempts were made to re-open abandoned mine sites, but for various reasons, including insufficient capital, labour shortages, and the failure to discover rich coal seams, both companies quit within a short time of starting, closing the chapter on coal mining on B.C.'s north coast.

BAYNES SOUND COAL MINING COMPANY. A speculative coal enterprise much better located on the shipping lanes was the Baynes Sound Coal Mining Company. In June 1864 a survey party led by Dr. Robert Brown reported coal outcrops had been found in Comox district. No attempts were made to develop these deposits until September 1866 when the *Victoria Daily Colonist* noted California interests had purchased the "Comox coal seam". This action was disputed by a party of Vancouver Islanders who claimed prior rights of discovery, though their objections did not prevent a team of four "practical miners" led by C.E. Lansdale of San Francisco from examining the area

The North Pacific Anthracite Coal Co. also held a lease on the Queen Charlottes in 1866, and it, too, hired C.E. Stephens to prepare a report. The terms of his contract with the NPACC promoters was to survey a tramway line, produce a detailed map, estimate equipment and construction costs, and "trace the coal seam". Details of his instructions are found in "Agreement", NPACC with C.E. Stephens, 27 Feb 1866, PABC MSS.

Neither of these two coal companies appears to have reached the production stage.

surrounding the outcrops.³⁵ All was quiet again until September 1867 when the *Colonist* reported the start-up of the "Baynes Sound Coal Company". According to a newspaper account in November 1868, surveyors in this company's employ were pleased with their progress, but nine months later the same source stated that Mr. Birmingham, a "San Francisco capitalist", had left Victoria after refraining from investing \$200,000 in the mine.³⁶

There are no available records to show who exactly Birmingham was, how he had become involved, or why he chose to withdraw. Indeed, the appearance of his name in the story serves to distort the picture one has of the company's earliest years, for all other sources point towards it being a purely local enterprise, at least until 1870. In March 1869, for example, the partners claimed expenditures to date of \$7,936 which

35 *Colonist*, 12 & 22 Sep 1866 and 18 Mar 1867, p. 3. It seems many Americans were eager to invest in Vancouver Island coal mines at this time. Sixty-one Californians petitioned Victoria in July 1866 for a lease of 5,000 acres at Baynes Sound which they hoped would "furnish a coal suitable for the manufacture of gas". By Nov 1866, this group had secured 29 "prospecting leases or permits" for land "bordering on Baynes Sound", and urged the B.C. gov't to expedite granting of the lease as per the provisions in the order-in-council of 1864. Calling itself the Black Diamond Coal Co. (registered in B.C.), the American partnership appointed J. Robertson Stewart of Victoria as its local agent. Stewart explained to colonial officials that no purchase of the land would be asked for until the seam was proven by engineers recently engaged for the task. Victoria eventually did approve the lease, but it appears that the company did not move beyond this stage since there is no record of either a colliery or any production. "Petitioners" to Young (col. sec., Van. Is.), 6 Jul 1866; W.C. Ralston *et al* to Young, 24 Nov 1866; J.W. Trutch to Stewart, 26 Mar 1867 - all in "Black Diamond Coal Co." Papers; PABC MSS. According to one gov't source, Black Diamond had prospecting licences on 18,560 acres (Comox alone) in July 1866. "Licences and Grants for Coal Mining Purposes", (Wm. Pearse mémo of 6 Mar 1866) in "Perserverance Coal Co., 1873 Papers", PABC MSS.

36 *Ibid.*, 30 Sep 1867, 10 Nov 1868, and 29 Aug 1869 - all p. 3.

they implied came directly from their own funds. Rather than approaching Californians for capital, they were asking "Wm. Mather and others of Salford Iron Works" in Manchester, England to finance development and operations. Apparently nothing came of this attempt; and by November the partners, without additional capital, were unable to proceed further.³⁷

Ceasing activity for any reason on a coal claim in the late sixties carried considerable risks for a partnership; the chief commissioner of lands and works, Joseph Trutch, and his assistant, Wm. Pearse, who were determined to prevent speculators from tying-up mineral lands, demanded the promoters adhere strictly to the licencing conditions. As anxious as anyone in British Columbia to have the ailing economy improved, these officials were eager to see foreign money enter the colony, but were willing to take no chances merely upon assurances that such was forthcoming. Instead, Trutch and Pearse wanted tangible evidence of capital at work - be it from outside or otherwise - before approving any coal lands' lease or purchase. In their view, a company acting "in good faith" would not complain as to the government's "liberal" terms, which, in the case of the Baynes Sound enterprise, meant incorporation as a company, "continuous" prospecting and mining, steady employment of at least four "white miners", and payment of a ten cent per ton royalty. Nonetheless, Trutch did give the partners approval to close-down their activities for the winter of

37 The "Baynes Sound Coal Co." of 1866-69 should not be confused with the Black Diamond Coal Co. that sought land in the same location during 1866-67. Nor must it be confused with the Baynes Sound Coal Mining Co. of 1870-75, though it is clear that the same group of investors were involved in the two "Baynes Sound" ventures.

For details on expenditures and attempts at capitalization before 1870, see "Baynes Sound Coal Co. Correspondence from 1868" (hereinafter BSC), PABC MSS, entries from 3 Mar - 5 Nov. 1869.

1869-70, but with the understanding that this concession was justified solely by the time that the surveyors needed to prepare a detailed report.³⁸

On 7 May, 1870 seven Victorians signed a memorandum of association calling for \$50,000 in capital to be raised by selling 500 shares at one hundred dollars apiece.³⁹ For their time and money already spent in promoting and surveying the earlier claim, each associate member received a small block of fully paid-up shares. All were expected, moreover, to surrender their prior rights of ownership.⁴⁰ During the next four years, these men; (and others who subsequently joined the association of shareholders), traded shares back and forth until, as in the case of David Leneveu, originator of the scheme, some had amassed four times their initial holdings.⁴¹ None of the members could have been considered expert

38 *Ibid.*, 8 Apl 1870 - 30 May 1871, *passim*.

39 "Memorandum of Association", Baynes Sound Coal Mining Co., Victoria 7 May 1870 in "Baynes Sound Coal Mine" file BU vol. 87, PABC. The "object" of the association is noteworthy: ". . . coal mining on Vancouver Island, boring for and making coal, oil, and erection of smelting works and saw-mills, and trading generally on lands held by the Company, also the construction and purchase of vessels to be used in connection with the foregoing objects". Compare this to the VCMLC's actual operation as outlined in chap. 3.

40 BSCMC, "Memorandum of Association".

41 From unpub. research notes in BU vol. 87 derived from Buckham's private research and from B.C. "Register of Companies". Leveneue was perhaps the most active of the B.C. coal speculators. In addition to his efforts on behalf of the BSCMC, Leveneue in the early 1870's was one of 11 partners in a scheme to promote coal mining on 2,500 acres in the Comox district (B.C. "Coal Mining Licence" No. 1a, 1871, PABC MSS). He led essentially the same group in acquiring an adjacent 2,500 acre parcel in 1872 ("Licence" No. 6). Earlier, in 1864, Leveneue and 17 others had formed the North Pacific Coal Co. with the intention of re-opening the Susquash coalfield. This venture was doomed from the start due to the paucity of coal reserves in the area, but such was not the reason.

in colliery operations; most were either merchants or agents for larger concerns. James Fell, for example, had been in the tea trade at Liverpool until 1858 when he sailed for Vancouver Island. On arriving in Victoria, Fell entered a partnership with John Finlayson, retailer in coffee, spices, and groceries.⁴² Typical, too, was Henry Heisterman, a native of Bremen, Germany, who had become a naturalized British subject when he worked in Liverpool, and who came to Victoria in 1862 where he eventually settled into the real estate business after some dealings in paints and glassworks.⁴³ The only criterion for membership in the shareholders' association appears therefore to have been a willingness to purchase shares; the main objective of the members, to profit by their investments.

Having finally become a legal entity with what the partners claimed was "more than enough" capital to "construct works and ship coal [early] in 1871", the Baynes Sound Coal Mining Company appeared to have

given by the partners for its collapse. Instead, they blamed the colonial government for its failure to either grant or lease the 5,000 acres they hoped to acquire after their expenditures of "several thousand dollars". "North Pacific Coal Co. Papers", PABC MSS, *passim* and B.C. "Coal Licences", 1870-72, *passim*.

⁴² *Ibid.*, (Buckham's notes).

⁴³ *Loc. cit.* Heisterman later promoted a major speculative coal venture planned for the Sayward district. In 1883, he and 29 other investors obtained a licence to mine on 14,400 acres. No colliery was erected, and there is no record of production. B.C. "Mining Licence" No. 9 (1883). Large partnerships were not common in the province's coal industry; the next largest had 20 shareholders (another 1883 Sayward district licence on 10,080 acres - lic. no. 11) while a few numbered between 10 and 12, especially in the seventies, but from 1884 on, coal companies with more than 4 partners were rare.

excellent chances for success. For the moment, at least, colonial land officials adopted a "wait-and-see" attitude, content perhaps with evidence of \$11,000 expended in the surveying phase and the fact of recent incorporation which they took to mean a serious commitment by the speculators to the mining venture.⁴⁴ Further progress was made in May 1870 when Edward Alston, a California speculator acting on behalf of himself and other San Franciscans who lately had acquired more than half of the BSCMC shares, informed Trutch of their intent to join the partnership and work together with the Islanders to open the mine.⁴⁵ Within weeks, however, Heisterman complained to Pearse that the conditions of their lease were too restrictive to attract further capital. It is not clear, but it seems that the present investors hoped to finance the enterprise without calling-up the full share value. Instead, they "canvassed" not only London and San Francisco for additional financing, but "certain leading capitalists in Montreal" - all of whom allegedly refused to support the

44 Heisterman to Trutch, 8 Apl 1870, BSC.

45 Alston to Trutch, 4 May 1870, BSC. Less than a month earlier, Victoria had alerted the BSCMC to the California shareholders' demand that no lease be given the as yet unincorporated partnership, adding that the gov't would in no way become involved in this dispute, but warned the Islanders nevertheless that their own permit would be "terminated" unless incorporation followed within a month. (Trutch to Heisterman, 18 Apl 1870, BSC). Two days later Heisterman informed the lands' commissioner that the "Company was duly incorporated on 18 March, 1870", that the BSCMC suspected the "San Francisco interests" (led by Alston) evidently had "ulterior purposes of their own" by refusing to join the partnership, probably to delay incorporation and thus defeat the Islanders' attempt to secure a lease. (Heisterman to Trutch, 20 Apl 1870, BSC). There is no record of a reply by Victoria.

BSCMC unless the government allowed better terms, including removal of the royalty, adjustments to the "continuous work" requirement, and assurance that the property could be purchased. Pointing-out that the Beaufort Coal Company, a neighbouring venture, was satisfied with similar conditions in its own lease, and stressing the BSCMC had acquired mining rights for one dollar an acre under the 1864 order-in-council provisions whereas under the newly-passed mineral ordinance the cost would be five times that amount, Victoria stated it was prepared only to re-negotiate royalty payments. Worse still for the company, all hope for purchasing the property was now precluded by the B.C. government's agreement with the Dominion to prevent further alienation of Crown land (excepting pre-emptors) pending the "location of the Canadian Pacific Railway".⁴⁶

In June 1871 the *Colonist* reported the Baynes Sound Coal Mining Company had been sold to an English firm for \$60,000 though it was also noted most of the stock remained in the hands of Vancouver Islanders.⁴⁷ While there may have been some coal produced by the BSCMC in the years before 1875, (when Dunsmuir, Diggle purchased it outright as a source of future coal reserves), the company never was a significant element in the industry's rise.⁴⁸ It may, however, have been a worthwhile speculative venture for local investors who obviously profited from the 1871 sale.

⁴⁶ Heisterman to Pearse, 25 May 1871; Pearse to BSCMC, 25 May 1871; Pearse to Heisterman, 30 May 1871 - all in BSC.

⁴⁷ *Colonist*, 17 Jun 1871, p. 3.

⁴⁸ See chap. 5 for Dunsmuir's handling of these lands.

SOUTH WELLINGTON COLLIERY Another coal company absorbed by Dunsmuir,

Diggle in this period was the South Wellington Colliery which lasted in the original owners' hands for less than one year. At some point in the late seventies, a group of speculators represented by R. Wingate, a Victoria accountant, secured coal lands north of Nanaimo where they sank two shafts into the Wellington seam. They then bargained with the VCMLC for a right-of-way to build three miles of railway which they then laid to tidewater, erecting a large loading pier at the end of track. Two horizontal steam engines and two large boilers were located at the shaft, and a workforce of twenty whites and ten Chinese were employed during the winter of 1878-79. The owners valued their operation at \$60,000, but no record of who they were or how they raised this capital is now available.⁴⁹ It must be noted that their choice of time to begin operations was most unfortunate, for as the provincial inspector of mines said:

The coal mines of Vancouver Island have, during the year 1878, passed through a period of unprecedented discouragement; the prices at San Francisco, the chief foreign market for these coals, having reached the lowest rate yet attained; indeed, while subjected to so much depression, only the most able commercial management, and the utmost economy in carrying on the works, have saved this important industry from entire cessation.⁵⁰

In fact, B.C.'s coal trade had been depressed due to poor markets since mid-decade, a circumstance that had weighed heavily upon the BSCMC's chances for success, as well as being the primary cause of the new Harewood

49 B.C. Min. of Mines, AR, 1879, pp. 382 & 387.

50 *Ibid.*, p. 382.

Colliery's collapse in 1878.⁵¹ The South Wellington Colliery survived into 1879, but its position was seriously threatened due to a severe shortage of operating capital. During the final weeks of 1878, South Wellington raised 320 tons of coal, but in the new year the proprietors faced another crisis when warned by the mines' inspector that the company had "totally disregarded" the mining act's safety regulation.⁵² Steps were taken immediately to comply with the rules and although upwards of 20,000 tons of coal were mined in the next eight months, coal prices were so low that the owners opted for liquidation, selling the colliery in the late autumn at a public auction. Both the Vancouver Coal Company and Dunsmuir, Diggle were in a mood to expand their operations, and the latter purchased the South Wellington Colliery by aggressively outbidding its chief competitor.⁵³

EAST WELLINGTON COLLIERY :No new speculative coal ventures were attempted until 1882 when a San Francisco entrepreneur, R.D. Chandler, purchased coal lands near Nanaimo. Calling his company the East Wellington Colliery, Chandler hired George Hawxhurst as manager and installed a relative living on Vancouver Island, W.S. Chandler, as accountant. In the mines ministry's opinion, the "large amount of capital invested", coupled with its location in the Wellington area, placed Chandler's mine in an excellent position

⁵¹ *Loc. cit.* Apparently the Harewood mine properties were re-opened in the mid 1870's, but no details re: ownership, capital, etc. are currently available.

⁵² B.C. Min. of Mines, AR, 1878, p. 249.

⁵³ See also Chap. 5. W.S. Chandler later became a partner in a large speculative coal enterprise planned for the Sayward district. See reference to H.J. Heisterman in fn 43 above.

to become a "good and extensive colliery". It was further noted by Victoria that lumbering would be another likely enterprise of the new company.⁵⁴ Despite new Dominion export taxes and prevailing American duties on coal, the East Wellington Colliery managed to ship 83.4 percent of its first year's production to the United States.⁵⁵ Chandler also was able to secure a sizeable workforce to which he paid competitive wages. The chief difficulty seemed to be finding profitable coal deposits. Located in the Millstone Valley, the East Wellington Colliery was on the periphery of the main Wellington seam. Consequently, the resident manager found it necessary to sink a series of parallel shafts perpendicular to the main axis of the claim, none of which ever encountered a coal seam more than three feet thick laying within the boundaries of the colliery property. Nonetheless, Chandler continued to invest money in the mine, achieving hard-won annual increases in output. Moreover, his sawmill soon attained a steady daily outflow of 12,000 board feet, most of which was exported. A determined coal entrepreneur, Chandler was one of few who stayed with his investment, building and operating his colliery until the mid-1890's when he sold his holdings to James Dunsmuir.⁵⁶

54 B.C. Min. of Mines, *AR*, 1883, pp. 419-20.

55 *Ibid.*, p. 428. See chap. 8 for details on U.S. tariffs.

56 *Ibid.*, 1884-96, *passim*.

Table 4-1. East Wellington Colliery Statistics, 1883-91.⁵⁷

Year	Plant Value	Workforce	Max.Wage	Production	Exports	% of Total BC Production
1883	\$10,000	74	-	6,270 tons	5,188 tons	2.9%
1884	100,000	31	\$5 daily	5,672	4,734	1.4
1885	100,000	84	\$3 "	7,244	5,568	1.9
1886	100,000	161	\$5 "	28,029	25,042	8.6
1887	119,000	130	\$5 "	35,431	32,831	8.5
1888	140,000	132	\$5 "	30,092	25,813	6.2
1889	140,000	190	\$5 "	51,372	43,089	8.9
1890	100,000	170	\$5 "	44,602	35,132	6.5
1891	140,000	188	\$3 "	41,666	36,181	4.0
		Totals		250,378	213,578	

OTHER COAL VENTURES In addition to the Vancouver Coal Company and the collieries discussed above, there were six more coal ventures on Vancouver Island that went at least as far as the stages of incorporation and exploration. The most important of this latter group was, of course, Dunsmuir, Diggle & Company which began operations in 1871. Since the next chapter of this thesis is devoted mainly to both that firm's record and its approach to management, it need not be examined further here.

Between 1871-72 extensive coal surveys were again carried out in the Comox district by advance parties working either as or for speculators. Three enterprises were listed as a result of these explorations with the B.C. Registrar of Companies. Included were the Beaufort Coal Company, the Perserverance Coal Company, and the Union Coal Company - none of which reached production. During the late 1870's and early 1880's, Dunsmuir, Diggle acquired each of these in turn by straight purchase, thereby ensuring for itself almost complete ownership of the Comox.

⁵⁷ B.C. Min. of Mines, AR, 1883-91.

coalfield.⁵⁸ Yet no attempt at further developing coal mines in the area occurred until 1888 when James Dunsmuir formed the Union Collieries for the purposes of consolidating all of the northern area's coal lands on one hand, and beginning coal extraction in that location on the other.⁵⁹

In 1889 two more speculative attempts at starting coal mines occurred on the Island. A small group of investors with little apparent financing sunk a series of exploratory shafts near Victoria. Called the Tumbo Island Coal Mining Company, this venture never progressed beyond the prospecting stage. A similar fate was in store for the Oyster Harbour Coal Company which tried to survey lands near Chemainus Bay, but soon abandoned its efforts. The reasons for this failure are not clear, though it is probable that the sparse coal measure of that area soon discouraged the surveyors and their backers.⁶⁰

58 B.C. Att'y Gen., Companies Branch, "Register of Companies, 1862-72", *passim*. (Registers held in "Company's Office", Victoria, B.C.). So similar were the Perserverance and Beaufort coal companies' experiences to those of the BSCMC that extensive treatment of their origins and developments would be redundant here. Worth noting, however, are some details: Both companies were small partnerships promoted chiefly by Dr. J. Ash of Victoria; both sought and failed to receive start-up capital from English financiers; neither appears to have spent more than \$3,000 in surveys or other work. Perserverance once sought to trade its claim for another property closer to tidewater, and kept-alive for 7 years its hope to purchase the coal lands. Both appeared more willing than most to comply with the gov't's coal lands' policies, but argued often for minor concessions. Beaufort listed its capital at \$50,000. "Beaufort Coal Company, 1871, Papers" and "Perserverance Coal Mining Company, 1873, Papers", PABC MSS, *passim*.

59 See chap. 5 for details on Union Collieries' operations.

60 B.C. Min. of Mines, *AR*, 1889, p. 301. Another venture of the time worth noting is the Alexandria Colliery, a subsidiary of the Esquimalt and Nanaimo Railway. Considered initially as a promising enterprise, for reasons unexplained it never progressed beyond the surveying stage. Some additional information on the Alexandria effort is available in the next chapter. Two American firms in close proximity to B.C. were the Bellingham

Discussion of speculation in coal lands for the period 1864-91 can be completed with mention of the British Columbia Coal Mining Company. Surveys of Burrard Inlet by H.M.S. *Plumper* in 1859 revealed a number of coal outcrops which the master, Captain Richards, reported to both his naval superiors and the colonial officials. No immediate action to develop the deposits was taken, however, for as one observer put it, demand for coal was not yet strong enough to attract "speculators", particularly in view of the sales competition they would face from the Nanaimo Coal Company. Five years later, George Dietz and Hugh Nelson, owners of a local transport firm, together with Sewell P. Moody, a mainland sawmill operator, submitted at New Westminster a coal mine proposal requesting 640 acres of Crown land at one dollar per acre. Governor Seymour agreed, stipulating a 6.25 percent royalty on all coal raised. On 22 July, 1865, the partners, now joined by J.P. Cranford, formed the British Columbia Coal Mining Company under the B.C. "Joint-Stock-Companies Act, 1859", with listed capital of \$100,000 in 2,000 shares of fifty dollars each. Application for a much larger tract of land was refused by the governor who believed such a concession was premature. Seymour was willing, though, to loan government tools and drilling equipment which were used to start operations in October. By February 1866, \$3,000 had been spent without finding a workable seam. Further disputes with the government over lands, and arguments with a neighbour about coal rights, added to the owners' frustrations, forcing them to close down later in the year.⁶¹ As no new coal ventures

Bay Coal Co. and the Fuca Straits Coal Co. Both were small scale due to limited deposits and neither offered much competition (see also chap. 8).

⁶¹ A full account of this company's activities is found in F.W. Howay, "Coal Mining on Burrard Inlet, 1865-66", *BCHQ* 4:1-20 (1940). Drilling details are given in Richardson's *G.S.C. Report*, 1877, pp. 188-90.

opened in the area, the chapter on coal mining in the Lower Mainland was closed early.

III

What answers to our earlier questions does this survey give?

Plainly, there were several factors in addition to governmental initiatives that obstructed most coal entrepreneurs. Their own eagerness to attract capital and secure licences before the coal deposits were "proven" led many to early failure. Market conditions during much of the period were poor, which meant that partnerships expecting to finance their coal operations solely through the use of profits had little chance for success. Nor did those Vancouver Islanders seeking to build collieries with foreign capital fare any better. Harewood, Baynes Sound, Beaufort, and Perserverance were only the more significant failures in this regard. Perhaps equally important was the promoters general lack of coal mining experience, though this possibility cannot be confirmed. The answer to how far they advanced is straightforward, though: survival of a purely speculative coal venture beyond two years was unusual. What other features did these speculative enterprises have in common? Did their aims and activities form a pattern of management that we would recognize as being separate and distinct from others in the coal industry? What impact did these ventures have upon the province's coal trade to 1891.

Generally the tendency was for promoters to invite small groups of local speculators to form mining partnerships aimed at developing recently discovered coal deposits. Usually with little or no mining experience behind any of them, the partners would recruit a small workforce

of mine surveyors and labourers which was expected to explore the property, prove the coal, and prepare a colliery apparatus. (Occasionally, the original partners attempted to gather more funds by issuing a prospectus calling for a new round of investors - often foreign - to purchase common shares.). Normally the amount of declared capital ranged between \$50,000 - \$100,000 in these speculative enterprises, though only a portion of each share was called-up at any given time. In cases where subsequent surveys indicated the coal measures were either too meagre or too difficult to mine, the proprietors were eager to sell-out quickly rather than sink more funds into the business. In this way they avoided serious loss, particularly if they could unload the company intact to another firm anxious to obtain the coal lands as a future reserve.

Another common feature of the speculative coal ventures was, of course, the difficulty each firm experienced in equipping its operation with machinery and transport. (Evidence for this point is found by reading details of the auctions held to dispose of company assets whenever one colliery or another closed-down.). Recruitment and handling of the work-force apparently varied little from firm to firm. Most often a resident manager system was adopted whereby an experienced foreman, drawn from a larger company by promise of promotion, (and often a share of the profits), was placed in-charge of operations. He in turn hired a body of miners, labourers, and tradesmen at prevailing wage rates. After 1870 it became customary in producing collieries to employ a mixed force of whites and Orientals on different pay scales.⁶² There were other features common

⁶² Colliery returns as listed in B.C. Min. of Mines, AR, 1874-89, *passim*. See also chap. 6 below.

to these early ventures, (including the problems brought-on by government intransigence), but the main ones at least have been outlined here. Given the high degrees of similarity amongst the speculative coal enterprises, we may now ask: Was there a distinct pattern of either administration or management? And, if so, was it significant for the coal industry?

The answer to both questions is yes. It must be recognized that in face of the competition coming from the larger collieries in a limited market situation, none of these companies except Chandler's East Wellington Colliery were sufficiently funded to conduct sustained, large-scale operations that could survive through long periods of recession. Furthermore, with few exceptions, the owners were personally deficient in either technical knowledge, administrative skills, or entrepreneurial drive. In the unsteady west coast economy between 1865-85, it is likely that no industrial enterprise was safe unless it was strong in all three of these areas. Perhaps the most serious shortcoming common almost to all was a lack of foresight with regard to both government land policy and capitalization. Furthermore, very few appear to have projected ahead to the marketing phase. Only the VCMLC and Dunsmuir took steps to secure firm footholds in the San Francisco trade by establishing sales offices in that city.⁶³ In truth, then, a distinct management pattern did exist amongst the coal speculators, though finding a title for it is difficult. The main trends are obvious enough - amateurism, absenteeism, ignorance, timidity - but they merely describe, not defined the usual approach of the

63 B.C. Min. of Mines, *AR*, 1884, p. 429. Prior, the mines inspector, viewed Chandler as an "enterprising proprietor" despite the difficulties the latter was facing. Chandler, a resident of San Francisco, maintained a sales office in that city.

speculator in British Columbia coal. Perhaps there is no need to place a name on their administrative or managerial techniques, but to concentrate instead on understanding the impact the speculator's activities had upon the coal industry.

Unquestionably their collected efforts stimulated public interest and government action in the coal trade. Newspapers invariably published accounts of one exploration or another, and the general tone of editorials on the subject of coal mining was more than encouraging. Moreover, without the pressure generated by investors on government for more concessions in the use of Crown lands for coal mining, much of the legislation creating wider opportunities for the dominant firms might not have been passed. Nor can the speculators' efforts in opening new coal fields (like Comox), or their accumulation of mining equipment and other fixed assets, be treated lightly. Over time their investments in capital goods added substantially to the province's industrial capacity, while their enterprises provided for a major increase in the numbers of skilled workers.⁶⁴ In the long-run these resources were of more benefit to the larger operators than the speculators themselves, but was that so bad? It is not likely that either of the major collieries could have developed as fast as they did during the thirty years after 1880 had it not been for the speculators' earlier investments and the assets the latter had amassed. It is fair to say that the industry's growth was accelerated by their activities, for one one hand they materially increased the

64 See chaps. 5-7.

resources available for coal mining, while on the other, they did not significantly interfere with the growth of the two largest collieries which were the real generators of wealth.

OWNER-MANAGERS

INTRODUCTION In the complex and often unstable world of British Columbia's early coal speculators, only the Dunsmuirs cleared all obstacles laid in the path of local entrepreneurs seeking to enter and flourish in the province's coal trade. One finds in the history of the Dunsmuir operations the best balance between colliery administration and management, the closest harmony of production agents, and the highest levels of efficiency as achieved by any coal company before the 1890's.¹

Robert Dunsmuir, founder of the family coal enterprise, was the first owner-manager in B.C.'s coal industry and by far the coal trade's most impressive entrepreneur. In the words of one historian he became the province's "wealthiest and most controversial figure".² Today he personifies for many the unbridled capitalism of the nineteenth century, which is a severe judgment in that no definitive biography of Robert Dunsmuir exists, making him as poorly known or understood as any major figure in British Columbia's past.³ Nor does the following account of the

1 For extensive examination of the statistical relationships between production agents see research notes, "Coal Mining", BCPMmh.

2 Ormsby, *British Columbia*, pp. 304-06.

3 A legendary family in B.C. the Dunsmuirs - especially Robert and his son, James - have been favourite subjects of Canadian writers. Largely depending upon their own world view, authors have tended either to eulogize or vilify these two men in particular. Until the publication of Gustavus Myer's muckraking *A History of Canadian Wealth*, Chicago (1914), criticism in print of any family member was rare. Rather, nineteenth century accounts of their exploits were exceedingly high in praise. Wm. Bennett's, *Builders of British Columbia*, Vancouver (1937), Paul Phillips', *No Power Greater. A Century of Labour in B.C.*, Vancouver (1967), and Martin Robin's, *The Company Province*, Toronto (1972) are leftist views, unequivocal in their condemnation of the Dunsmuir business philosophies and practices. At the

Dunsmuir collieries give a detailed portrait of him, for as fascinating a subject as Robert Dunsmuir might be, the primary purpose of this chapter is to describe and compare factors of production under Dunsmuir control, with the further objective of assessing the owner-managers' approach to colliery development and operations *vis-a-vis* the methods employed by other operators.

I.

GENERAL CHARACTERISTICS OF OWNER-MANAGERS As shortly will be seen, the owner-managers were highly motivated towards business enterprise. All had a large capacity to perceive opportunity, a determination to create working collieries from mere coal claims, and an eagerness to risk their personal wealth in acquiring additional coal lands. In short, they were business administrators who made and carried-out company policy, a position of power denied both the Nanaimo Coal Company bureaucrats and the Vancouver Coal Company resident managers. The owner-managers' advantage over the promoter-speculators was no less absolute; while many of the latter were willing to risk substantial sums in developing coal lands, in British Columbia none appear to have had any significant experience in either exploration or mining. Consequently, the speculators had to rely upon the

other extreme is James Audain's *Coalmine to Castle*, New York (1955), a third generation Dunsmuir obviously proud of his lineage. Perhaps the most balanced (though cursory) impression of the colliery owners themselves is Ormsby's, which says in part that Robert Dunsmuir was in the front rank of "acquisitive merchants, lawyers, industrialists, and landed proprietors" who controlled B.C.'s economy and politics in the latter half of the 19th century. (*Loc. cit.*) A 3,000 word summary of Robert Dunsmuir's life, written by the author of this study, is to be published in the *Dictionary of Canadian Biography*, vol. 4 (in press).

technical expertise of others, and thus were precluded from effectively managing day-to-day operations. In other words, speculators might have been owners, but rarely could they hope to become managers and certainly not supervisors whereas the most effective coal proprietors, like Robert Dunsmuir, combined all three roles in one.

ROBERT DUNSMUIR'S MINING BACKGROUND TO 1869 Born the son and grandson of Scottish coalmasters, Robert Dunsmuir apprenticed as a miner in Ayrshire to his uncle and guardian, Boyd Gilmour, who, it will be recalled, replaced John Muir as oversman at Fort Rupert.⁴ Dunsmuir arrived on Vancouver Island in 1851 under a coal miner's indenture to the Hudson's Bay Company.⁵ Like all others who surveyed and worked the Susquash coalfield, he soon was convinced the deposit was worthless, and welcomed his transfer to the Nanaimo Coal Company's No. 1 pit.⁶ Having decided by early 1855 to petition Governor Douglas for a "free miners licence" to re-open a shaft earlier abandoned by Gilmour, Dunsmuir refused to join a dissident miners' strike

4 See chap. 2, pp. 55-8 above. Robert Dunsmuir was married to Joanne Olive White of Kilmarnock, Scotland. She bore Robert 10 children, the third of which, James, was born at Fort Vancouver enroute to Fort Rupert. See Audain's *Coalmine to Castle* and *Alexander Dunsmuir's Dilemma*, Victoria (1964) for information re: family members. See also "Hon. R. Dunsmuir Dead" (obit.) *Vancouver Weekly World*, 18 Apr 1889 and "Death of Hon. James Dunsmuir", *Colonist*, 10 May 1920, p. 8. Also to note are Dunsmuir biographies listed in the Bibliography of this thesis.

5 *Weekly World*, *Loc. cit.*

6 "Nanaimo Correspondence", J. Douglas to J. McKay, Aug 1852 - Sep 1853, *passim*; also Audain, *Coalmine to Castle*, pp. 8-10 and "Douglas' Journal", 14 Dec 1852, HBCA (PAM) A11/73 fo 296.

that summer.⁷ Grateful for Dunsmuir's loyalty, Douglas gave him permission to undertake "at [Dunsmuir's] own risk and expense" the venture he sought. Additionally, Dunsmuir was granted a long-term coal supply contract with the NCC as, in Douglas' words, " it is [in the] HBC's interest to openly encourage such enterprises . . . whereby a steady miner might by honest industry improve his condition and make a moderate provision for his family [to the] mutual advantage of [both] miner and Company".⁸ With his new position secured, Dunsmuir over the next seven years filled the terms of his contract and conducted extensive coal surveys of the lands surrounding Nanaimo.

For a brief period following the changeover from HBC to VCMLC control, Dunsmuir busied himself with more surveys, but in time agreed to an oversman's contract with the new company.⁹ In 1864 he accepted Lascelle's offer of the resident manager's position at the Harewood Coal Company, which, it will be remembered, failed chiefly due to the owner's inability to raise sufficient capital, as well as the VCMLC's unwillingness to co-operate with Lascelle's request for a transport corridor to tidewater.¹⁰

7 See chap. 2 for details of this strike; see, too, Audain, *op. cit.*, pp. 23-5.

8 Douglas to Smith (HBC Sec'y), 5 Nov 1855, HBCA (PAM) A11/75 fo 805-06.

9 *Weekly World*, 18 Apr 1889.

10 *Colonist*, 27 Mar 1866 and *Nanaimo Gazette*, 29 Jan 1866, p. 3 (two articles); see also chap. 4 above and Alex D. Macdonald to Harewood Coal Co. Proprietors, 28 Feb 1864 (in "A.D. Macdonald Correspondence", PABC MSS). Macdonald, a contract surveyor, explained much of Dunsmuir's difficulties in attempting to find a workable coal seam. Additional minor details upon the company's breakup and the subsequent disposal of Harewood's assets is found in an unsigned, unpub. letter to the *Victoria Daily Standard* dated 4 Nov 1866 (in "Robert Brown Collection", PABC MSS).

Dunsmuir was only marginally aware of these issues, being preoccupied with property surveys and proving the coal. When Harewood folded, Dunsmuir moved back to the Vancouver Coal Company, this time as a "mines' supervisor", and shortly thereafter as "mines' superintendent", thereby becoming Nicol's chief lieutenant for operations. Despite his added responsibilities, Dunsmuir spent much of his time on clandestine surveys for a coal deposit he hoped he could claim as his own.¹¹

THE WELLINGTON SEAM DISCOVERY AND CLAIM As explained in the first chapter, the Nanaimo area contained three major coal seams. Until the late 1860's, however, there was knowledge only of the Douglas and the Newcastle, both of which had been discovered in HBC days. Since these seams outcropped on and near the shores of Nanaimo Harbour, and since the Nanaimo and Vancouver coal companies in turn channelled virtually all their labour and equipment onto the tasks of colliery building and mining, very few of their respective resources were left for further exploration. Unfettered by either competition or scruple, Dunsmuir was thus free to roam the surrounding lands for new evidence of coal deposits. In October 1869, three miles inland from Departure Bay, he discovered outcroppings of what he rightly believed to be a hitherto undiscovered coal seam. His initial probes revealed a 3.5 foot thick deposit five fathoms deep sloping gently to the southeast.¹² In November he applied for a coal prospecting licence on 1,000 acres behind Departure Bay. The colonial governor, advised by

¹¹ *Weekly World*, 18 Apr 1889.

¹² R. Dunsmuir to H.L. Langevin (B.C. min. of public works), 20 Sep 1871 (copy in BCPMmh).

Trutch that the lands department had considerable regard for the applicant's experience and abilities, and consequently had "no hesitation" in recommending the licence, immediately approved Dunsmuir's request, granting terms "similar" to those given the Baynes Sound promoters. In truth, there was a substantive difference to Dunsmuir's award; among all coal speculators of the time he alone was permitted to file claim as a one man operation, a circumstance that caused him trouble, later.¹³

A further and better coal find on the property's easternmost side in April 1870 prompted Dunsmuir to erect his main works on this new site. This time his surveyors had placed him squarely above the main seam. When all bore hole results were in, the coalfield appeared as large as one half mile wide with an average thickness of eight feet. Moreover, a chance outcrop sighting at the eastern extremity revealed a lengthy six foot wide, nine foot thick deposit overburdened by only four feet of soil and clay, a "remarkable discovery" in Dunsmuir's view for it meant mining could proceed by hand, thereby eliminating the need for large machinery "for some time to come".¹⁴ Conservatively estimating a coal yield of at least 7,000 tons per acre, he stressed that should the seam continue to prove an average of nine feet thickness, production would be "much more".¹⁵

13 Dunsmuir to Trutch, Nov 1869; Trutch to Governor (B.C.) - and Governor's minute - 8 Nov 1869; Trutch to Dunsmuir, 8 Dec 1869, all in "Dunsmuir, Diggle Correspondence with B.C. Lands Dep't", (hereinafter DDC), p. ABC MSS. Also, "Prospecting Licence" for Robert Dunsmuir, 6 Dec 1869 per *Mineral Ordinance, 1869* (copy in BCPMmh).

14 Dunsmuir to Langevin, *op. cit.*

15 *Ibid.*

Hence, in spite of a lack of output to date, he had reason to be highly optimistic, informing Victoria of his eagerness "to get another colliery in operation on the Island".¹⁶

By September Dunsmuir had managed to extract about 500 tons, some of which was placed upon H.M.S. *Boxer* for comparative tests against coals from the Douglas and Newcastle seams. In every respect, the Wellington coal proved superior, though not dramatically so. In a sense he was fortunate, for had there been a marked difference in his favour, other speculators might have attempted to stake claims of their own on adjacent properties. As it was, the main attention of promoters in that period appears to have been focused upon coal discoveries in the Comox district. Nor did a Canadian Geological Survey report published in 1872 on the coal measures of Nanaimo that in part described Dunsmuir's claim pose any threat since James Richardson, its author, gave no indication that Dunsmuir had discovered an altogether new seam.¹⁷

Table 5-1. Composition of Douglas, Newcastle, and Wellington Seams.¹⁸

	Douglas	Newcastle	Wellington
carbon	71.0%	67.7%	75.5%
hydrogen	4.9	4.7	5.1
oxygen	11.9	13.4	9.8

¹⁶ Dunsmuir to Chief Commissioner, Lands and Works (Trutch), 28 Apr 1870, DDC.

¹⁷ J. Richardson, *Report on the Coalfields of the East Coast of Vancouver Island*, G.S.C., Ottawa, Q.P., 1 May 1872, pp. 80-2.

¹⁸ From Table 1-5 on p. 14 above.

Table 5-2. Results of H.M.S. *Boxer* Trials on Vancouver Island Coals, 1870.¹⁹

Trial	Douglas	Newcastle	"Dunsmuir"
Hours Steaming	7:40	7:30	7:30
Height of Steam Gauge	34 lbs.	34 lbs.	34 lbs.
Quantity of Coal Burned	15,778 lbs.	13,869 lbs.	13,632 lbs.
R.P.M.	143	144	151
Horsepower	292.9	276.2	296.1
Coals per Mile	225.4 lbs.	231.2 lbs.	209.7 lbs.

With his coal lands "proven" and the product through a crucial test, Dunsmuir, like any other coal promoter, needed a source of start-up capital. At first he relied upon short-term financing supplied by Bermingham and Rosenfeldt of San Francisco.²⁰ But as Dunsmuir's operation was as yet very small, he was caught between having to service his mounting debts and wanting to build a cash reserve for additional expansion. He then approached a group of naval officers led by Lieut. W.N. Diggle at Esquimalt who together paid-in a total of £32,000 to become partners in the enterprise. Diggle's own investment was at least £10,000, making his the largest financial contribution, some recognition for which is found in the new company's name, Dunsmuir, Diggle Ltd. For his own part, Dunsmuir agreed to put forth his claim to the coal deposit, his expertise, and his willingness to build and operate the colliery. In return, he received from his partners an agreement giving half the shares and full

¹⁹ A. Watt (*Boxer* engineer), "Trial of . . . Coal . . . Sep 1870", DDC.

²⁰ T.A. Rickhard, "A History of Coal Mining in British Columbia", *The Miner*, 15:6:30-34 (1942), p. 32. Rickhard claims Bermingham and Rosenfeldt were prepared to carry Dunsmuir only as long as he could clear the principal as well as meet the interest of his short-term loans.

control over all operations, a manoeuvre at once establishing Robert Dunsmuir as manager and an owner of the new coal mining company.²¹

II II

OBJECTIVES AND RISE OF DUNSMUIR, DIGGLE The coal partnership between Robert Dunsmuir and the naval officers led by Diggle originated in 1871, was duly incorporated in 1873 at Victoria with a paid-up capital of \$160,000 and lasted until 1883 when the Dunsmuir family gained control of all shares.²² Dunsmuir, Diggle's sole purpose was the coal trade, and in this it came to surpass all local competitors, including the Vancouver

21 Rickhard, "Coal Mining in B.C.", pp. 31-33. and "Wellington Mine", *Colonist*, 12 Dec 1883, p. 3.

22 *Colonist*, *loc. cit.*, "Dunsmuir, Diggle Ltd." in 1862-71 "Companies Register", B.C. Companies Office, Victoria; B.C. CCLW "Mining Licence No. 3", 21 Nov 1871. In addition to Wadham Nestor Diggle, Robert Dunsmuir's original partners were: (RAdm) Arthur Farquhar, James Harvey, S.H. Rickman, F.A. Herne (?), R. Williams, John Tweedie, and Dunsmuir's sons, James and Alexander. Additional funds appear to have been forthcoming from Capt. F.W. Egerton.

By forming a 10 man partnership Dunsmuir had filled the prevailing letter of the law, and was no different in this respect from other promoters. His company differed from most, though, in having its capital fully paid-up (see previous chapter for comparisons). B.C. appears to have followed English legal and investment practices in this period; Dunsmuir's approach notwithstanding, partly paid-up shares (e.g. the VCMLC) were a common feature of the limited liability companies prior to the 1880's. Moreover, only a small percentage of all new companies issued shares below £5, with 52% of all new shares ranging in value between £10-£100. The largest coal company shares in English collieries during the 1860's reached £1,000, incidentally, implying both the large capital needs of coal mining and a tendency to keep the number of partners in each coal enterprise as small as possible. Generally, new partnerships tended to call-up capital by installments, but this could be a troublesome practice in coal mining since initial development costs usually were high. In any event, the substitution in Britain (and in B.C.) of the "law of corporations" for the "law of partnerships" in the late 1850's shifted responsibility for losses from individual partners to the company, making mining ventures much more attractive as speculative investments. For more background on these events see H.A. Shannon, "The Coming of General Limited Liability", *Economic History*

Coal Mining and Land Company. Although coal continuously was extracted from Dunsmuir's pits on the Wellington seam from as early as 1870, British Columbia's minister of mines did not acknowledge the operation as a fully working colliery until 1874. In that year, Dunsmuir submitted a return claiming 29,818 tons 12 cwt of coal raised, 23,719 tons of which was exported. In comparison, the Vancouver Coal Company produced 51,728 tons 16 cwt, selling 32,319 tons in foreign markets.²³ The following year, Dunsmuir, Diggle's output came within 10,000 tons of the VCMLC's total production, but fell further behind in 1876-77 when the latter increased its activity.²⁴ By 1878, however, Dunsmuir, Diggle had overtaken its chief rival, raising 88,361 tons of coal to the VCMLC's 82,135.²⁵ Mainly due to poor management, coupled with a series of technical setbacks, the Vancouver Coal Company's output then declined steadily until 1883 when it fell to 35,665 tons. In contrast, Dunsmuir, Diggle's annual production had climbed, reaching a total of 171,364 tons.²⁶

(1931), and J.B. Jefferies, "The Denomination and Character of Shares, 1855-1885, *Economic History Review* (1946).

23 B.C. Min. of Mines, *AR*, 1874, pp. 16-17.

24 *Ibid.*, 1875, p. 18; 1876, p. 425; 1877, p. 407.

25 *Ibid.*, 1878, pp. 382-86.

26 *Ibid.*, 1883, pp. 422-23.

Table 5-3. Dunsmuir, Diggle Coal Production and Sales, 1874-83.²⁷

Year	Plant Value	Production (tons)	Exports (tons)	Home Sales (tons)	Unsold (tons)	% of B.C. Production
1874	-	29,818	23,719	6,144	2,429	36.6%
1875	\$110,000	50,542	39,347	8,876	2,384	45.9
1876	-	52,935	-	-	-	38.0
1877	140,000	48,743	37,486	6,342	6,795	31.6
1878	-	88,361	82,983	11,237	6,795	51.7
1879	235,000	137,013	110,708	18,416	936	52.4
1880	245,000	189,862	162,668	26,872	4,764	70.9
1881	245,000	181,049	152,856	30,526	2,430	79.3
1882	245,000	230,710	188,569	42,129	2,443	81.8
1883	250,000	171,364	124,748	47,333	2,443	80.3

The speed with which Dunsmuir, Diggle overtook the VCMLC is explained in large part by the latter's failure to properly manage its affairs, thus creating the double effect of allowing its own output to decline while leaving a market vacuum which other suppliers, particularly Dunsmuir, Diggle, quickly moved in to fill. Still, profiting at the expense of its rival accounts only partially for Dunsmuir, Diggle's success. As important was the manner in which Robert Dunsmuir had developed his own coal mines.

Compared with other coal entrepreneurs of the seventies and eighties, Robert Dunsmuir should not be considered either extremely lucky or especially ruthless despite the legend to this effect that has grown around his name. It is fair to say, however, that Dunsmuir was a shrewd, opportunistic coal proprietor who made the most of certain important advantages he had over his competitors. First, Dunsmuir had been a

²⁷ B.C. Min. of Mines, AR, 1874-83. Source of 1876 figure is *Nanaimo Free Press*; low production levels in 1877 and 1883 were due mainly to lengthy labour disputes; 1879 figure includes amounts raised by South Wellington Colliery prior to its purchase by Dunsmuir, Diggle.

thoroughly knowledgeable coal miner and a highly experienced mines' supervisor prior to starting his own colliery. Second, by being the sole claimant on the Island's richest coal seam at the time when he began his first venture as a coal proprietor, Dunsmuir's potential as a producer was higher than anyone's. Next, by being a relative latecomer to the province's coal trade, his entry occurred at a time when speculative coal enterprises were at their peak. What separated him most from those promoters who failed to secure sufficient start-up capital was his astute move in turning for support to naval officers with both a heightened awareness of the region's coalfields' value and the financial means to make substantial investments in a new coal enterprise. Fourth, as Dunsmuir's usual residence was Nanaimo, he was well-placed to live on the colliery site, meaning, in essence, that nothing to do with operations escaped his attention, and his day-to-day management decisions were made that much easier. Furthermore, as will be seen, Robert Dunsmuir was both dedicated to the new coal industry and determined to dominate if not monopolize it. Finally, he had at his disposal two sons and a son-in-law whom he was able to recruit and train as his chief subordinates and whom, in the case of his sons, at least, were included in the original partnership.²⁸ Not only did he fix

²⁸28 James Dunsmuir (1851-1920) was Robert's first-born son. Educated in Nanaimo, he was trained as a coal miner and oversman at his father's hand from 1869-c72. After attending a Virginia military academy where he gained engineering experience, he re-joined Dunsmuir, Diggle, becoming mines' superintendent in 1876. In 1883 he was made a "managing partner", and stepped-into the presidency of R. Dunsmuir and Sons when his father died in 1889. He was both B.C.'s premier (1900-02) and Lt. Gov. (1906-08). He sold his coal interests to Mackenzie and Mann of Canadian Northern fame in 1910.

Alexander Dunsmuir (1853-1900) also apprenticed as a miner under his father, but soon worked as the company's "liaison" with business and political interests in Victoria. He opened Dunsmuir, Diggle's San Francisco

the colliery management in the family's grip, but he also ensured that as the company prospered, the financial position of the family was correspondingly strengthened. Thus it was that most of Dunsmuir, Diggle's power and wealth came to be concentrated in the Dunsmuir family's hands. During the late 1870's the Dunsmuirs made a step-by-step buying-out of their partners' holdings until, in 1880, only Diggle's share was as yet outstanding. On 14 September, 1883, the *Victoria Daily Colonist* announced that Diggle recently had sold his share of the Wellington Colliery (as it was commonly called) to Robert Dunsmuir for \$600,000, and from that date on, the firm would conduct business "under the name and style of R. Dunsmuir and Sons".

COAL LANDS AND PRODUCTION STRATEGIES Once Robert Dunsmuir had his colliery in full operation, comparisons between he and other coal entrepreneurs made little sense, for Dunsmuir clearly had reached a new plateau that no one else among local coal promoters was even close to approaching. Only the Vancouver Coal Mining and Land Company provided any competition for Dunsmuir, Diggle after 1874, and as has been seen, the former colliery at that time was in a period of serious decline. Perhaps the best that can be said of Dunsmuir's business ~~rethicks~~ from 1869-74 is that he openly and regularly revealed his land acquisitions and production strategies.

office in 1874, and although he appears to have done a reasonable job there, was considered the family's "black sheep", dying an alcoholic in that city.

John Bryden married Elizabeth Dunsmuir, eldest daughter of Robert in 1867, and later transferred his loyalty from the VCMLC to Dunsmuir when he joined the latter's firm as a managing partner. Bryden generally was effective as an owner-manager, focusing his main efforts on mines' management and supervision, particularly in the newly opened operations at Comox. See Bibliography for a full list of readings on these men.

To Trutch he accused the VCMLC of holding-back the coal trade's progress by overpricing its product, claiming his own experience with that company had revealed the VCMLC's production costs were no more than \$3.25 per ton, less than half what it charged in the market.²⁹ Frustrated by a neighbour's unwillingness to negotiate a transport corridor from his own property to tidewater on terms highly favourable to himself, Dunsmuir wrote directly to the governor saying the other's position was "out of all question".³⁰ Pearse, to whom Dunsmuir's appeal was referred to, argued the neighbour's demands were "not outrageous", and that Dunsmuir had been told repeatedly to reorganize his claim by opting for a new licence under the *Mineral Ordinance, 1869*, which in turn would automatically qualify him for an access to the sea.³¹ Such a move further meant, however, that Dunsmuir would be required to establish a partnership, something he had been resisting, arguing he "could bring the undertaking out more successfully not having too many voices in the matter".³² In the event Dunsmuir was forced to create a partnership and accept a new lease on

29 Dunsmuir to CCLW, 28 Apr 1870, DDC. Dunsmuir further said he was "anxious and doing all [he could] to get another colliery in operation on the Island", and until that happened, coal demand would not increase since the VCMLC's price was "far too high" to compete in San Francisco. *Loc. cit.*

30 Dunsmuir to Governor, 28 Sep 1871, DDC.

31 Pearse's minute on *ibid.*

32 Dunsmuir to Governor, *op. cit.* Admitting he had "anticipated possible trouble" by having a one man claim, Dunsmuir nonetheless argued the 1869 ordinance was "unfair towards one person prepared to invest more [money] than 10 men" - a farfetched statement considering his current need for outside capital.

Crown land under terms similar to those given the Baynes Sound enterprise.³³ To his credit, he did throw his total resources into the venture, giving Pearse occasion to say later that Dunsmuir had "done a good work [and] spent a large sum of money in building a tramway and a most substantial structure".³⁴

When R. Dunsmuir and Sons began its first year of operation, the family already had acquired the majority of Vancouver Island's good coal lands. It will be recalled that almost all the speculative coal ventures in the Comox district had fallen into the hands of Dunsmuir, Diggle before 1880.³⁵ Additionally, Robert Dunsmuir had been quick to purchase several small parcels of coal lands in the Nanaimo-Departure Bay area during the mid-seventies. A more significant acquisition was the South Wellington Colliery which Dunsmuir bought on behalf of himself and his partners in 1879. With this purchase, he almost doubled the lands and equipment of Dunsmuir, Diggle. To his company's current plant of 4.75 miles of railway, 4 locomotives, 100 coal cars, 4 hauling engines, 2 steam pumps, and three wharves, Robert Dunsmuir had added in buying South Wellington a further 4.5 miles of track, another locomotive, 50 more coal cars, a steam pump, and three engines. In combination, these adjacent coal

33 Trutch to Governor, 8 Nov 1869, DDC.

34 Pearse's minute of 29 Nov 1871 on Wm. Hughes' letter to [Victoria], 5 Dec 1871, DDC. Hughes was the neighbour who would not easily succumb to Dunsmuir's pressure. His arguments pointed-out the proposed tramway would cut his property in two, and the vessels loading coal at the wharf already "erected without [his] permission" would attract vessels that were bound to cut the fishnets from which he gained his main source of income. *Loc. cit.*

35 See previous chapter.

properties provided underground access through one pit (160' deep), and two shafts (one reaching 310' depth). 310 men were employed at the main colliery and 106 at the new property. Total coal output from the two in that year amounted to 137,013 tons, (approximately 20,000 tons of which had been raised and sold by South Wellington's previous owners). Dunsmuir valued his new holding at \$90,000, but the greatest importance associated with its acquisition was the effect it had in thrusting Dunsmuir, Diggle far ahead of the VCMLC.³⁶ In other words, Robert Dunsmuir (and his partners) were then owners of B.C.'s largest colliery, and because its chief competitor, beset by serious technical and managerial problems, could not sustain even a constant rate of production, Dunsmuir, Diggle then had a brilliant opportunity to greatly increase its share of the coal market. Between 1879-83, the Dunsmuir collieries' annual output more than doubled while that of the VCMLC dropped by two-thirds. The period 1884-91 was not as dramatic a period of growth for R. Dunsmuir and Sons, (and the VCMLC, it will be remembered, recovered steadily under Robin's leadership in those years), but it is clear the elder Dunsmuir's bold moves in coal lands acquisitions after 1874 were a major innovation in the industry's expansion.

36 B.C. Min. of Mines, *AR*, 1879, pp. 259-60.

Fig.5-1 DUNSMUIR, DIGGLE Co. HIERARCHY, 1874

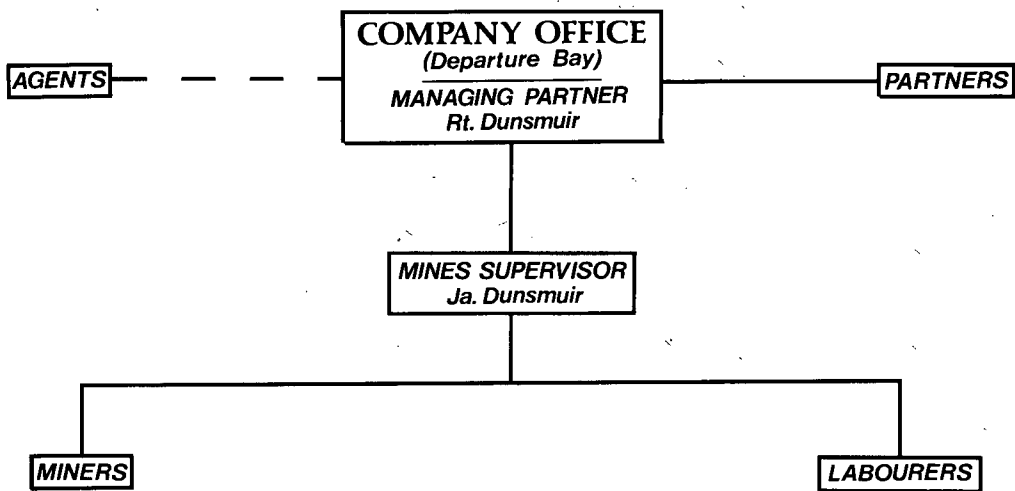


Fig. 5-2 R. DUNSMUIR & SONS HIERARCHY, 1884

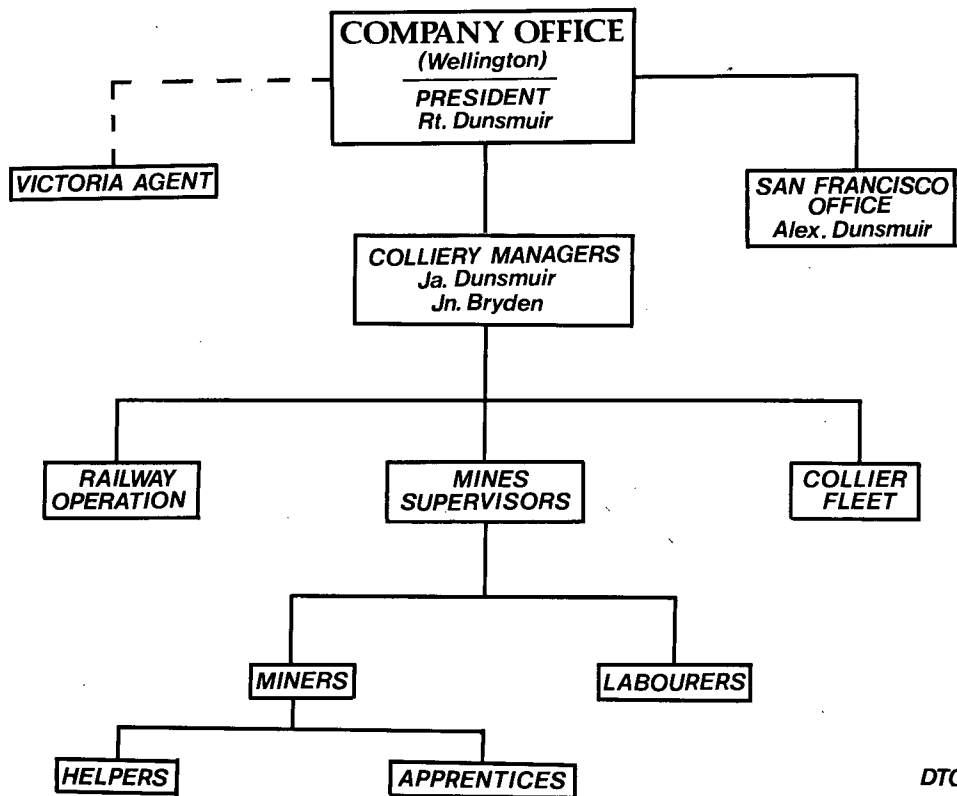


Table 5-4. R. Dunsmuir & Sons Coal Production and Sales, 1884-89.³⁷

Year	Plant Value	Production (tons)	Exports (tons)	Homes Sales (tons)	Unsold (tons)	% of Island's total production
1884	\$250,000	254,538	196,931	58,746	586	64.6%
1885	"	220,000	120,559	68,340	31,691	660.3
1886	"	185,846	144,526	52,300	20,711	56.9
1887	"	239,217	187,193	72,464	721	57.9
1888	"	198,392	124,649	70,041	3,701	39.8
1889	150,000	273,383	197,510	76,524	3,050	47.1

As mentioned in the previous chapter, Dunsmuir, Diggle purchased several failing coal companies during the period 1874-79. Although some had amassed to the time of their sale both a skilled workforce and a fairly large inventory of equipment, Dunsmuir's chief reason for acquiring such properties undoubtedly was to add to his coal reserves, for more than any other coal proprietor, he appears to have recognized the need to continually expand his holdings of coal lands. Obviously this policy paid-off in another way, because by the later 1870's, Dunsmuir, Diggle not only controlled most of the land on the Wellington seam, but completely monopolized the Comox coalfield, too. Having bought-up the Perserverance and Baynes Sound ventures, he then purchased the Union Coal Company which had been registered in Victoria as a Comox district enterprise in 1872, but with only \$22,000 in declared capital, had failed to enter sustained production.³⁸

³⁷ B.C. Min. of Mines, *AR*, 1884-89.

³⁸ "Companies' Register, 1862-71" (Victoria, B.C.) The Union Coal Co. appears as a unique case of workers' enterprise. Of the 8 partners who divided 110 shares valued at \$200 apiece (hence \$22,000 capital), 4 were miners from Nanaimo, 2 were farmers from that town, and the remaining 2 were a "master mariner" and a "merchant" from Victoria.

Although Robert Dunsmuir was content to let such lands lie idle, preserving their coal deposits for the time when his current mines were exhausted, both James Dunsmuir and John Bryden were anxious to bring the Comox field into full production. It was not, however, until the mid-1880's, when the elder Dunsmuir had passed essentially all control of the family's colliery operations to these younger men that work was begun on opening the northern coalfield. At least \$25,000 was invested in preparing a modern mining apparatus on the old "Union" site before production began, an outlay resulting in a four level, three tunnel, two shaft, one slope mine headed by a substantial upperworks. Next the owner-managers installed several steam pumps, erected a steam sawmill nearby, built two wharves at Union Bay, and connected the latter to the new colliery with a ten mile rail link.³⁹ By 1890 the Union Colliery, (as it was now called), employed 150 Whites and 200 Chinese who produced 69,537 tons of coal in that year, only 1,481 tons of which were sold for home consumption.⁴⁰ In short, these two men had developed a fully operational colliery comparable in complexity if not yet in size to any at Nanaimo totally from their own resources in less than three years. Robert Dunsmuir had not participated in their effort; indeed he had resisted for years all urgings to open new collieries. The younger generation obviously was more aggressive, and proved themselves with the successful opening of the Comox field to be owner-managers as capable as the founder once had been. When the elder died in 1889, the surviving partners split the main coal operations into

39 B.C. Min. of Mines, *Ann.* 1888, pp. 336-37 and 342.

40 *Ibid.*, 1890, p. 394.

two separate firms; the Departure Bay activity becoming the Wellington Colliery, the Comox property retaining its name of Union Colliery.⁴¹

Table 5-5. Wellington Colliery Production and Sales, 1888-91.⁴²

Year	Plant Value	Production (tons)	Exports (tons)	Home Sales (tons)	Unsold (tons)	% of B.C. Output
1888	250,000	198,392	124,649	70,041	3,701	40.5%
1889	150,000	273,383	197,510	76,524	3,050	47.1
1890	150,000	174,469	106,281	68,769	2,495	25.7
1891	150,000	345,182	282,452	54,724	10,500	33.5

⁴¹ Difference in coal lands' strategy, (between the two Dunsmuir generations), taken from interview with A.F. Buckham, Victoria, September 1976. Robert Dunsmuir was deeply involved in other business activities during the eighties, including: president and principal shareholder of Albion Iron Works (capital \$500,000 in 1882); president of the Victoria Theatre Co. (capital \$50,000 in 1884); major shareholder in the Matsqui Land Co. (capital \$100,000 in 1885); major shareholder in the Pacific Navigation Co.; owner of extensive farm lands in the Comox district (and land holdings elsewhere); owner and president of the Esquimalt and Nanaimo Railway (for the building of which he received from government \$750,000 and a land grant of 1,900,000 acres - almost 1/5 of Vancouver Island). See "Companies Registers", 1872-89 (Victoria); "E & N RR Contract", SPBC, 1884, pp. P183-91; R. Turner, *Vancouver Island Railroads*, San Marino (1973) pp. 39-46; *Vancouver Weekly World*, 18 Apr 1889; R. Cail, *Land, Man, and the Law*, Vancouver (1974), pp. 138-42; *SBC*, 1882, 45 Vict., c. 15, s. 18; W. Kaye Lamb, *Canadian Pacific Railway*, New York (1977), p. 235.

Robert Dunsmuir also entered politics, becoming M.P.P. for Nanaimo in 1882 and again in 1886. He served as president of the council during his latter term, but is not known especially for his role in government. Like the HBC bureaucrats and the VCMLC resident managers, the Dunsmuirs gravitated naturally towards positions of community and political influence given their strong financial powers. British Columbians were very much in a mind for rapid economic expansion in that period, openly encouraging and applauding aggressive entrepreneurs, particularly those in the industrial sector. No record of Robert Dunsmuir's actual worth between 1883-89 is available, but considering the extent of his equity holdings, he likely amassed a personal fortune of five million dollars, possibly six - virtually all of which was inherited by his wife. "Last Will and Testament of Robert Dunsmuir", in Probate Records' Office, Victoria. See also-Bibliography of this thesis and "Robert Dunsmuir", PABCvf.

⁴² B.C. Min. of Mines, *AR's*, 1888-91.

Fig. 5-3 DUNSMUIRS' COLLIERIES' OUTPUT, 1871 - 91
(thousands of long tons)

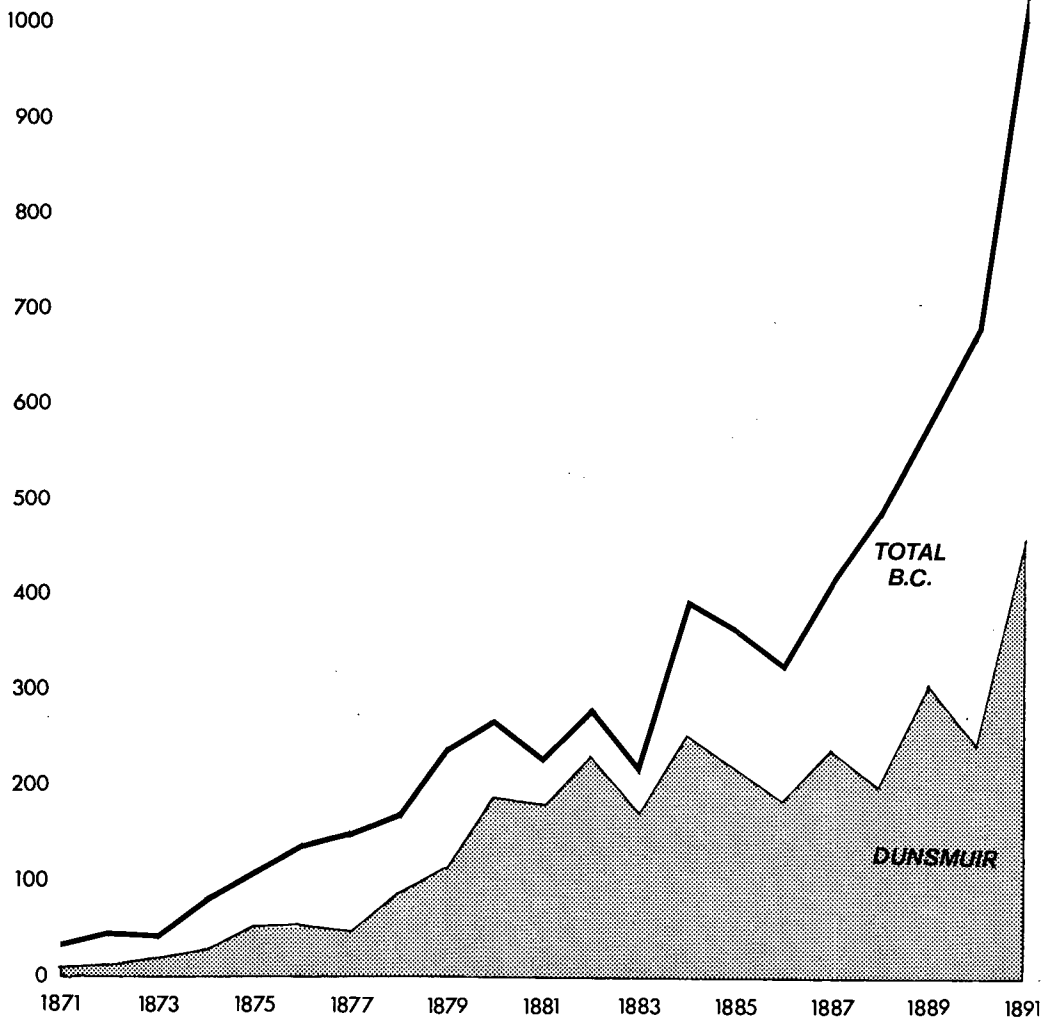
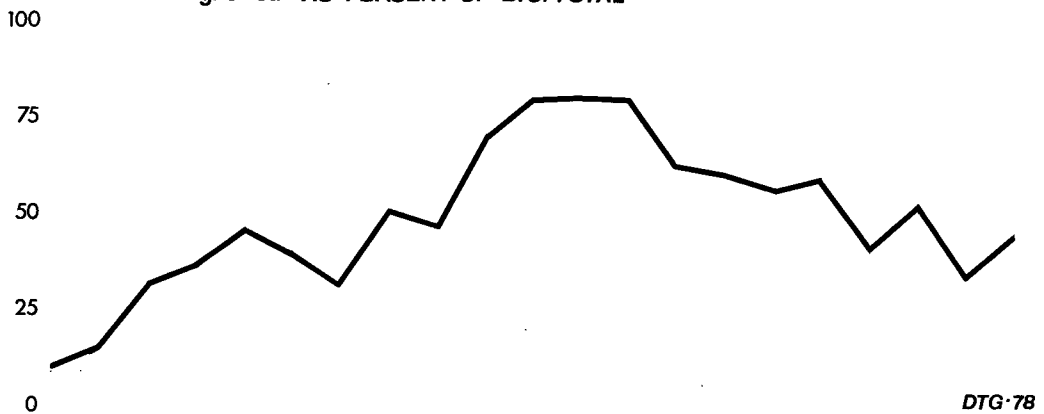


Fig. 5-3a AS PERCENT OF B.C. TOTAL



DTG-78

Table 5-6. Union Colliery Production and Sales, 1888-91.⁴³

Year	Plant Value	Production (tons)	Exports (tons)	HomesSales (tons)	Unsold (tons)	% of B.C. Output
1888	\$25,000	2,000	-	-	2,000	0.4%
1889	25,000	31,204	23,790	100	9,314	5.4
1890	25,000	69,537	74,048	1,481	3,322	10.3
1891	*	114,792	103,960	*	*	11.2

* no available data

III

LABOUR, TECHNOLOGY, AND MARKETS Before closing this final chapter on colliery management, it remains to be asked how much emphasis did the Dunsmuir place upon other production agents. So far discussions have shown that they were superior to all other colliery administrators in attracting capital and acquiring coal lands. But what was their record with regard to employing labour, handling new technologies, and securing sales? in the first place it must be recognized that despite the greater availability of mining equipment and other colliery machinery during the two decades following 1869, British Columbia's coal mines were still of sufficiently small scale to function effectively as essentially manual operations. Where Dunsmuir appears to have gained another advantage over his competitors was not in outpacing other collieries with technical innovations, (for collieries of comparable size had similar physical assets), but in making his operations more labour intensive than his rivals. This he achieved by recruiting a large workforce and by hiring proportionately higher numbers of Oriental workers, (whom were paid only half the

⁴³ *Loc. cit.*

rates of Whites), than did any of his peers. Moreover, by installing Chinese workers in positions no higher than miners' assistants, Dunsmuir avoided a potential source of serious confrontation with the workers of British and European origins. While these brilliant hiring tactics placed Dunsmuir, Diggle in an even better competitive position, it was later offset by Robert Dunsmuir's determination to hold-down wages. As will be seen later in this study, the owner-managers' greatest shortcoming as colliery operators was their unwillingness to recognize labour's legitimate needs. Made arrogant by their fast-growing power, the Dunsmuirs came to believe they could withstand all demands for higher wages, job security, and major improvements in mine safety. This attitude was a main cause of several strikes, including a severe one in 1877, and served as much as anything else to drive a deep wedge between management and labour in British Columbia's coal industry. Both Bryden and James Dunsmuir tended to be hard-liners on workers' rewards, but not as determinedly so as the elder Dunsmuir. Again as will be seen, there were many contentious issues between owners and workers, but in the early years of Dunsmuir, Diggle's operations, wage rates were most apt to cause confrontations.⁴⁴

In regard to seeking new sales' outlets, the owner-managers' performance was impressive, though not particularly outstanding. Initially they relied upon those domestic and foreign markets originally established by the HBC and maintained since 1862 by the VCMLC. Opening sales offices in Victoria and San Francisco were logical steps for a large colliery like Dunsmuir, Diggle to take, as was its bolder move in creating the company's

⁴⁴ See following chapter for details on the Dunsmuirs handling of colliery labour. See chap. 7 for the owner-managers' use of technology.

own fleet of colliers which eventually reduced substantially its transport overhead. The building of the Esquimalt and Nanaimo Railway by Robert Dunsmuir in 1884-86 may be seen in a similar light. For as well as the gains he received in land grants and revenues, Dunsmuir then owned another bulk carrier to transport at no cost to himself much of his coal output from the Wellington mines to Victoria and places in between. The Dunsmuirs tended to be more aggressive than the VCMLC in pursuing naval contracts, and were more active advertisers of their product. Perhaps most importantly, they relied extensively upon nurturing personal contacts with business and government leaders throughout California and the Pacific Northwest. Indeed, the Dunsmuirs' chief backers for their E & N railway venture were owners of the Southern Pacific Railway, a group whose interest in the family colliery had long been cultivated by both Alexander and James Dunsmuir.⁴⁵

Generally, then, the owner-managers, (a category which really applies to the Dunsmuirs alone), appears at this stage of our study to have been innovative in both their large-scale employment of Oriental workers and their aggressive pursuit of coal sales. As for the Dunsmuir's use of technology to achieve more coal output and bigger markets, only their large investments in rail and sea transport seem out of the ordinary. In order to test these and other tentative conclusions so far reached in this thesis, the next four chapters are devoted in turn to examining labour, technology, markets, and colliery productivity. But before proceeding in those directions, it is useful to summarize very briefly our main findings so far on coal lands, capital, and management.

45 See p.188 fn 41 above for brief discussion on the E & N venture.

SUMMARY OF COLLIERY MANAGEMENT GOALS AND STRATEGIES Foremost amongst the resources needed for colliery-building and operation are, of course, the coal lands themselves. As has been seen, Vancouver Island was fairly well endowed with coal measures and reasonably well located in relation to growing markets for a coal industry to develop and take-hold during the period 1849-91. Successive government policies with regard to exploiting these deposits by and large had the effect of stimulating the industry, though usually to the benefit of the large operator at the expense of the small. Those companies that survived for lengthy periods placed a great deal of emphasis upon securing and proving large coal-bearing land tracts on one hand, and upon attracting sufficient capital to begin operations on the other.

Financing, both for start-up and continuous operation, often was very difficult to obtain, especially in the sixties and seventies. The Hudson's Bay Company's coal administrators ultimately were forced to rely extensively upon the Columbia District's annual budget allotment to enlarge and maintain the Nanaimo Coal Company. The Vancouver Coal Mining and Land Company's original promoters were fortunate in that they had a better financial climate than those who followed in the province's coal trade in which to raise capital, but even the VCMLC was led eventually into selling debentures and making drastic economies, (including on occasion heroic reductions in dividend payments), in order to have adequate amounts of working capital. Speculative ventures for the most part were extremely hard-pressed to raise sufficient funds even for start-up. While much of their difficulty lay in the generally depressed economic climate of the time, more to the point probably was the almost total lack

of entrepreneurial drive and skill among the mining promoters. In this regard, only Robert Dunsmuir appears to have been well enough equipped and strongly enough dedicated to take his venture from coal claim to fully working colliery.

Dunsmuir's unique position as both owner and manager was possibly his biggest advantage over his competitors. By being able to both set policy and enforce it, he avoided much of the inefficiency and mistrust that characterized the relationships between administrators and managers in both the HBC's and the VCMLC's collieries. Being on-site also worked greatly to Dunsmuir's benefit, as did his discovery of the Wellington seam. It appears, too, that being a latecomer assisted his progress, for he had no difficulty in raising sufficient capital once he approached the group of well-to-do naval officers at Esquimalt who realized the Island's coal industry's potential and the significance of Dunsmuir's own technical expertise. In the longer term, both the decline of the VCMLC and Dunsmuir's tactic of making his sons partners in Dunsmuir, Diggle and its successor, R. Dunsmuir and Sons, had highly important effects upon the rate of growth of the holdings he controlled. Dunsmuir, Diggle's share of the market rose in direct proportion to the amount that the VCMLC's dropped. By increasing the family's grip on the firm, the Dunsmuir's power to mobilize both working and investment capital was that much strengthened. Finally, the owner-managers appear to have been eager to dominate the province's coal trade, a goal they actually achieved between 1880-87.⁴⁶ All evidence to this point in our study appears, therefore, to show the

⁴⁶ See Fig. 5-3a.

owner-managers as being superior in technique and more realistic in outlook than any other form of colliery leadership. Further arguments in support of this hypothesis are contained in the following chapters, as are descriptions of how labour, technology, and markets affected the rise of British Columbia's coal industry to 1891.

Chapter Six

MINERS

INTRODUCTION In twenty years following the arrival of John Muir and his party at Fort Rupert much of the activity required to find, prove, extract, prepare, and ship Vancouver Island coal was a task exclusively for hand labour. No colliery administrator or manager favoured this state of affairs, because in addition to being utterly incapable of handling many technical problems, manpower by itself was a high-cost and often inefficient factor of production. Mainly it was a matter of having little or no power equipment, which then meant that only through corresponding increases in the number of workers could output be raised. And a large labour force meant large payrolls. Equally troublesome for colliery owners was the chronic shortage of skilled labour in those earliest years; laying-off workers in periods of slack demand usually meant losing them to other employers or other lands.¹ It is little wonder, therefore, that both the HBC and the VCMLC managements in turn placed great emphasis upon acquiring and installing machinery in the hope of reducing their overwhelming dependence upon labour. Once purchased and installed, machines normally required small sums for maintenance, repair, and operation. It was not, of course, a simple matter of replacing men with equipment since manpower was needed

1 No definitive study of labour supply is available, but the record contains innumerable references to the problem of worker shortages. M. Macfie, *Vancouver Island and British Columbia* (1865), for example made a typical colonial period plea for newcomers, claiming immigration was the "most important question" (pp. 423-92); during the 1870s-80s the *Victoria Daily Colonist* published several editorials on the issues of labour shortages and immigration; Paul Phillips, *No Power Greater* (1967), mentions the problem in describing B.C.'s labour supply during construction of the CPR (pp. 9-10).

to both handle each new apparatus and to perform a wide variety of tasks that no machinery could. Rather, it was a case of integrating power equipment into as many phases of the mining operation as could be absorbed in the cause of increasing both efficiency and productivity while reducing overhead costs.

This heavy reliance upon manpower also created problems of labour discipline. During the nineteenth century British Columbia's coal industry was generally peaceful in terms of labour - management relations, but there were sufficient incidents of insubordination and work stoppage to make owners determined not to lose the upper hand. Proprietors adopted several methods to control their employees, four of which appeared to work best: First, emphasis was laid upon upgrading the workforce. Normally this was achieved by seeking recruits from the ranks of skilled miners elsewhere, by choosing strong leaders for supervisory positions, and by establishing in-house training. Next, proprietors sought out large bodies of already-disciplined workers who could function as team members either under contractors or as regular colliery employees. The introduction of Chinese labourers as early as the 1860's, (and their continued use throughout the century), was an obvious example of this tactic. Third, the owners rarely hesitated to use the law to protect their property from dissident workers, and took every opportunity to influence the drafting of land and labour legislation to their own interests.² Finally, colliery proprietors continuously sought relief in technological change, for such advances tended to reduce proportionately

2 See chaps. 3-5 for examples.

the need for manpower.³ As it happened, all these steps had the overall effect of improving the workforce, reducing its size relative to productivity, encouraging labour discipline, cutting unit costs, increasing profitability, and making labour an increasingly expendable factor of coal production.

I

COLLIERY LABOUR TO 1862 Only in the last years of the 1870's did the physical layout and work flow of Vancouver Island's mines come to resemble those then operating in Britain. It will be recalled that the HBC's Fort Rupert operation was an outright failure. The coal resource was severely limited both in quantity and quality while the apparatus used to extract and ship the coal depended wholly upon manual labour. The Muirs did no more than sink a 40 foot pit and prospect adjacent lands, while those miners initially led by Boyd Gilmour removed only 10,000 tons during the two years following their arrival in 1851.⁴ These dismal performances could be attributed in large part to insufficient coal measures and the absence of power machinery, but equal blame must be placed upon the HBC's inept attempts at organizing work. Even in the absence of modern technology, all activities undoubtedly would have benefitted from an approach that fully integrated the available labour skills. Yet for several years this was not done in the HBC's mines. Instead,

³ As will be seen below, Robert Dunsmuir was a notable exception in this regard.

⁴ J.E. Muller and M.E. Atchison, *Geology, History and Potential of Vancouver Island Coal Deposits*, Ottawa, GSC Paper 70-53, 1971, p. 16.

there was an unsystematic division of work, causing both inefficiency and continual friction between management and the miners. Coal production could have risen had the miners been able to devote their whole attention to exploration and extraction, rather than carrying the added burdens of timbering, hauling, and even cleaning latrines inside the fort. It was as if the miners were employed as a support group to the fur traders rather than vice-versa. The initial plan had held that the miners would mine, the regular Company servants - axemen, blacksmiths, labourers - would construct and maintain the upperworks while native Indians would transport the coal to ships.⁵ In practice the Companymen ignored their part of this arrangement, ultimately causing serious disruption of the mining operation and contributing much to the first venture's ultimate collapse.

Although the miners (and eventually the HBC bureaucrats) realized the vital need to integrate all available labour skills, there were sufficient other technical problems still to overcome that even the best possible organization of the workforce would not be a solution expected to resolve them all. Central to exploration and mining itself was the need for more speed in proving the coal and more power to extract it. From his earliest days at Fort Rupert John Muir was eager to acquire and install a forty horsepower engine for pumping and hoisting because he knew manual labour alone was inadequate for deeper pitwork. Meanwhile he and his party were forced to rely solely upon hand tools and mechanical

⁵ Private Diary of Andrew Muir, 9 Nov 1848 - 5 Aug 1850, *passim*, PABC MSS.

devices to work the coal deposits.⁶ Their successors, as led by Gilmour, then Dunsmuir, fared no better, though a steam engine did arrive on Vancouver Island prior to the latters' transfer to Nanaimo.⁷ Essentially, the Fort Rupert operation had been a hand labour affair and therefore not dissimilar to an early eighteenth century English colliery.⁸

It will be remembered that by separating coal mining from the fur trade during the shift from Beaver Harbour to Nanaimo, Douglas and Mackay did much to start the new venture on a sound management footing. The recruitment and subsequent arrival of a large party of Staffordshire miners in 1854 to join the dozen or so miners since moved down from Fort Rupert gave the NCC leaders a small but viable workforce of skilled colliers for the new field.⁹ Despite occasional labour unrest, most notably in the 1855 strike over wages, the miners tended to be increasingly productive, raising acceptable amounts of coal each year.¹⁰ Additional numbers of men were recruited between 1859-62 from the ranks of gold miners returning from the mainland, bringing the total skilled workforce more into line with that in a British colliery having comparable holdings

6 *Loc. cit.* and Eden Colville to J.H. Pelly, 6 Feb 1850, *Colville Correspondence Inward, 1849-52*, HBRV vol. 19, p. 5.

7 Audain, *Coalmine to Castle*, pp. 8-9 and H.H. Bancroft, *History of British Columbia*, pp. 195-96.

8 See next chapter for a cursory description of such a colliery.

9 Bancroft (*ibid.*, p. 195) claims 25 "practical men" arrived at Fort Rupert from Scotland in May 1851 - a group that included Robert Dunsmuir. The 21 miners who came to Nanaimo in 1854 were recruited in England by HBC agents. B.H. Gault, "First and Last Days of the 'Princess Royal'", *BCHQ*, 3:15-24 (1939).

10 See Table 6-1.

of coal lands.¹¹ Additionally, it was now possible to expand the number of specialized jobs in which men could be employed. The term "miners" hitherto had included all those employed in exploration, extraction, and grading. Now it was common to speak of miners as only those who actually worked below ground cutting and loading the coal onto sleds. Other workers had begun specializing as prospectors (or drillers), while the term labourer was being applied less often in favour of specific titles like pusher, packer, picker, loader, and hauler. The wood handlers were divided into trades called timbermen, cutters, axemen, and carpenters and placed in a slightly higher wage category than those who merely transported coal. In many cases assistant miners were hired in the apprentice role, and the occasional upperworks tradesman like enginemen, mechanics, blacksmiths, teamsters, and carpenters had apprentices of their own.¹² This trend towards increasingly specialized jobs both below and above ground continued for as long as new techniques and equipment were being introduced, a phase lasting well into the 1870's. It is worth noting, too, that pay scales reflecting varying degrees of required skills were in force as early as 1853.¹³ Such refinements helped management in its

11 Mark Bate, "Reminiscences of Early Days in Nanaimo", *Nanaimo Free Press*, 16 Feb - 13 Apr 1907, *passim*; S. Pollard, *The Genesis of Modern Management*, p. 10 (arguing that a "large" colliery for 1850 would have been 120-150 workers); A.J. Taylor, "Labour Productivity and Technological Innovation in the British Coal Industry, 1850-1914".

12 Bate, "Reminiscences"; also "Nanaimo Correspondence, James Douglas - Joseph McKay, Aug 1852 - Sep 1853", PABC MSS; "Nanaimo Journal, Aug 1855 - Mar 1857", PABC MSS.

13 Douglas refused to pay assistant miners the same yearly rate as the miners who were receiving £50 for 310 working days. He claimed they were not as skilled, hence not as productive. He also said they were benefiting from their training, and if an assistant produced more than 3/4 ton per day, he would receive a small premium on all coal over that. Douglas to McKay, 20 May 1853, *op. cit.*

attempts to organize and discipline the workforce, but they further served to give the miners and upper works journeymen a sense of being elites amongst the labour force. In cultivating this self-given image, the miners in particular became highly protective of their position and its privileges. And this in turn soon made it exceedingly difficult for management to make any major changes in the sub-surface work flow.

Unlike the coalfields near Fort Rupert, those at Nanaimo proved to be extensive. Yet the mid-Island deposits presented greater challenges for even the most skilled miners. Foremost was their need to follow the seams into hillsides surrounding Nanaimo harbour. On the most prominent outcrops, two adits were driven southward into the Douglas seam as gently sloping cuts to take advantage of the thin ground cover which then made it easy enough to strip the overburden by hand and to drain the adit by gravity. Within months, however, it was necessary to sink shafts into the seams because the covering had become too thick to "economically remove".¹⁴ Adding to their difficulty, the miners encountered considerable faulting that they termed "pitches", the existence of which necessitated more exploration to discover where the seams took-up again. Although steam pumps had been installed as early as 1855 to drain the water that accumulated at these greater depths, all else had to be performed by men and animals. Drilling was still a task for two men, one holding and rotating the bore while the other hammered it down through the rock. Hewing the coal was done with picks and wedges, cutting it down in slabs. Indians "pushers" moved the fallen coal onto sleds which were hauled by

¹⁴ Bate, "Reminiscences".

"stiff-kneed" horses to the pit mouth. Once on the surface, the coal was piled into "skiveys" -woven cedar baskets attached to fir-framed, wheeled carts that the Indians hauled to tidewater. There the natives piled and ultimately loaded it in canoes for transport to ships at anchor in the harbour where a laborious procedure of hoisting the coal onboard began.¹⁵ These methods for prospecting, extraction, and handling continued throughout the Nanaimo Coal Company's brief history.

Still, at the time of its sale in 1862, the HBC's colliery had grown rapidly in size from what it had been in 1855, and with the application of some steam machinery, had become considerably more sophisticated, too. During those years the HBC had increased the number of operating mines from one to three, and it had enlarged the workforce from the original number of seven miners to more than 100 men, half of whom worked below ground. Additionally, there were three sizable coal wharves in place, one water-driven sawmill, a series of wagon roads between the mines and wharves, about ninety-five buildings of all types, and two steam engines putting-out approximately sixty horsepower each for pumping and hoisting. All this had had the effect of raising annual output from 2,500 tons to 18,178 tons during the decade 1852-62.¹⁶ But when it is considered that England's Newcastle-on-Tyne coal district had produced almost twice this amount using similar mining methods (save steampower) in the year 1564, and within a century from that date was shipping twenty times that tonnage - 200 years before Nanaimo - we have a clearer picture of how

¹⁵ *Loc. cit.*

¹⁶ "Nanaimo Harbour", Admiralty Chart No. 573 by Capt. G.H. Richards, H.M.S. *Hecate*, 1862. Also, *Daily Colonist*, 4 Jan 1863, p. 3.

truly small and primitive the HBC operation was.¹⁷ What, then, was accomplished by the HBC on the labour front in the years before 1863? Tabel 6-1 shows steady and significant advances had been made in technology, productivity, and the size of the workforce. (The incompleteness of this data, incidently, should not prevent us from accepting as fact the general and fairly impressive rise in the colliery's productive capacity prior to its purchase by the Vancouver Coal Mining and Land Company).

Table 6-1. HBC Colliery Statistics, 1849-62.¹⁸

Year	Production (tons)	Miners	Mines	Steam Machines	Productivity (annual tonnage)	
					Per miner	per machine
1849	1,100	6	1	0	183	-
1850	3,300	10	1	0	330	-
1851	3,300	8	2	1	413	3,300
1852	3,300	-	-	1	-	3,300
1853	5,000	-	-	1	-	-
1854	5,000	30	3	1	167	1,667
1855	5,500	-	3	1	-	1,833
1856	-	-	4	1	-	-
1857	-	-	4	1	-	-
1858	-	-	4	1	-	-
1859	-	-	4	1	-	-
1860	14,247	-	4	2	-	7,124
1861	13,774	-	4	2	-	6,887
1862	18,178	50	5	2	364	9,089

Plainly, the more rapid advance in annual production towards the end of this period, and the more than doubling of labour productivity

¹⁷ J.U. Nef, "Coal Mining and Utilization", *A History of Technology*, Oxford (1958), vol. 3, pp. 72-88.

¹⁸ Data gathered from a wide range of sources including HBCA (PAM) A11/72-76; see also Bibliography.

between 1854-62, implies a significant breakthrough was made in the attempt to create a modern operation. The introduction of steam power and the steady increase in the workforce size undoubtedly combined to improve productivity, but the level of production was still so low, and the gaps in available data so pronounced, that it is impossible to assess either the actual impact of these machines, the real gains achieved in coal output by labour alone, or the true effects of management reforms. The same can be said of the values achieved in increasing the number of operating mines or of opening new markets like that of California. Generally, it appears that both production and productivity climbed during the HBC years more directly in proportion to amount of manpower than the number of either mines in operation or machines employed. Perhaps the only other conclusion about labour as a significant factor of production that can be drawn for this earliest period is to say that the employment of skilled miners paid much greater benefits to the HBC than relying solely upon untrained natives as had been the case during the beginnings at Beaver Harbour. Happily, much more complete statistics on land, labour, and machinery are available for later periods of this study, and shortly it will be possible to draw some satisfactory conclusions regarding the values and relative importance of these agents.

II

VCML& AND LABOUR SHORTAGES TO 1874 Like all west coast economic activities for the period, coal mining suffered from the general lack of available labour. Although the problem of scarcity in B.C.'s labour supply during the nineteenth century is not well documented, enough

evidence exists to strongly suggest that many of the difficulties experienced by resources producers before 1890 resulted from their inability to attract and retain sufficient numbers of skilled workers.¹⁹ Insofar as colliery managers aggressively pursued technological improvements, introducing power machinery whenever it was available and affordable, they perhaps suffered less from labour shortages than their counterparts in other industries. Nonetheless, up to 1874 especially, coal mine operators had to be both aggressive and inventive in competing for workers.

There were five pools from which colliery workers were recruited before 1890 - British coal miners, native Indians, gold miners, Orientals, and local youths. The paucity of skilled miners and other tradesmen at Fort Rupert and Nanaimo during the HBC days made the employment of Indians essential. No natives worked underground as miners for the HBC, however, and no record exists of Indians being employed below the surface after 1862 in any role other than that of coal transporter. By 1874, only six percent of the VCMLC's total labour force were natives, a portion that was reduced to zero by 1889. Other collieries tended to employ even fewer Indians.²⁰ Youth, or "boys" as they were known, became a significant element of the surface workforce in the mid-1870's, mainly on the picking tables. The comprehensive *Coal Mines Regulation Act, 1877* was at once explicit and highly restrictive on the use of child labour, and it appears that management saw only limited opportunities in its use

19 Refer to fn 1 above.

20 B.C. Min. of Mines *AR*, 1874, *passim*. See tables this chapter for details of workforce compositions.

despite the ever-growing local population of adolescents.²¹

One local source of experienced men always worth pursuing were the more experienced gold miners. By 1864 the Cariboo mines had evolved to the point where both underground work and steam machinery were commonplace. Yet the goldfields were becoming exhausted, forcing many miners to leave the Interior.²² VCMLC officials aimed newspaper advertisements at these men, offering free passage and good wages to those who considered themselves qualified miners. Similar appeals were directed to "returning Ominecans" early in the next decade.²³ As late as 1882 no more than 250 men were employed as miners in B.C.'s coal industry and of this number, only about twenty percent were local inhabitants. Another large proportion were Orientals who worked as miners' assistants, making it fair to say that the total number of imported miners in all B.C. collieries was somewhere between 125-150.²⁴ One reason why British colliers were in demand by Vancouver Island coal producers was the strong tendency shown by such men to remain in the coal trade, making for a low turnover amongst the industry's most valued tradesmen. Consequently, B.C.'s coal proprietors

²¹ *Coal Mines Regulation Act, 1877*, Revised SBC, 1877, No. 15, pp. 33-63.

²² A well-documented fact; see, for example, Ormsby, *British Columbia*, chap. 7.

²³ *Daily Colonist*, 5 Oct 1872, p. 3., viz "Miners who know anything about coal working will find steady and remunerative employment at Nanaimo. To men out of work an opportunity is offered to secure work for the winter. Returning Ominecans, instead of leaving the country, should try what they can do at Nanaimo."

²⁴ Min. of Mines, AR, 1882 gives a reasonably clear picture of the labour force's composition. As for the reference to 1874, this is an inference based upon the rates of growth in the workforce and the tendency to hire more Orientals after 1871.

could hope to develop with these recruits a stable, experienced, and disciplined force at the coalface. Had the industry's need for skilled miners been substantially greater, it likely would have been denied this opportunity since Britain's coal owners' own demand for labour was great at that time. Serious coal shortages there in the late sixties followed by a "coal famine" in the winter of 1872 occasioned the sinking of 1,401 new pits between 1871-75.²⁵ Migration within coal districts and even from one region to another by miners and their families had been growing annually from as early as 1800. Sometimes the cause was exhaustion of a particular mine, but more often it was due to high labour demand. Staffordshire especially became notorious as a region plagued by transient coal miners as more and more landowners brought mines into production. Indeed so fluid was the workforce, and so desperate the mine owners for reliable labour, that new systems of contracting and sub-contracting sprang up in that district, making labour's influence on the British coal industry stronger than ever before.²⁶ The opposite had occurred in Scotland where owners had managed in the seventeenth century to place miners and their families virtually in bondage and thus ensure for

25 W.W. Rostow, *British Economy of the Nineteenth Century*, Oxford (1948), pp. 74-75 and 85-90.

26 A.J. Taylor, "The Sub-contract System in the British Coal Industry", *Studies in the Industrial Revolution*, L.S. Presnell, ed., pp. 215-35 is essential reading for anyone attempting to grasp the nature of mid-nineteenth century labour relations in the English mines. One is urged to also consult Taylor's "Labour Productivity, 1850-1914" and Redford's *Labour Migration in England*.

themselves a steady labour supply.²⁷ Despite such wide variations in working conditions, mine labour of that time must be considered as a vast proletariat with extremely low social status and little hope for escape, either for themselves or their children who literally were bred into coalmining.

As yet there is no way of knowing precisely why British coal miners chose to emigrate to Vancouver Island before 1890; the number involved was small and no one appears to have done much at the time to record their reasons. Harsh working conditions and limited opportunity in Scottish coal districts like Ayrshire suggest escape was a strong motive amongst the HBC's first recruits. Boyd Gilmour might have been a case in point. Moreover, kinship undoubtedly played its part for Robert Dunsmuir and possibly others were attracted by their relatives' urgings. The Muirs came as a family of miners, and the *Princess Royal's* manifest listed several family groups amongst the Staffordshire men when that ship arrived at Nanaimo in 1854. Still, kinship ties alone cannot explain either their move or the arrival of later groups. From 1850 to 1900 coal miners' real income rose by more than one-third in the English coal districts, and legislation passed during the 1870's-80's

27 J.U. Nef, *The Rise of the British Coal Industry*, London (1966), vol. 2, pp. 157-64 and T.S. Ashton and J. Sykes, *The Coal Industry of the Eighteenth Century*, Manchester (1929), pp. 30-33. According to Nef, the Scottish owners' proprietary attitude towards their mines extended to their workers. Using their political influence, the owners forced a "legal slavery" upon colliers and their families since the law forbade workers to leave their employment. Living conditions for these people was abysmal: a hovel residence, meals to keep them from starving, fuel to keep them from freezing. This condition of bondage was mostly confined to eastern Scotland, though circumstances were not much better in western districts like Ayrshire. By 1799, the laws confining workers had been overturned, but the sharp divisions between owners and workers remained.

materially improved working conditions, giving much greater mine safety and job protection.²⁸ Nor do economic conditions alone appear as sufficient reason, since demand for coal and coal miners climbed sharply over this period. Exhaustion of Cornish tin and lead mines forced thousands of metal miners to emigrate to United States, but as shown above, no such upheaval had occurred in coal mining.²⁹ Probably adventure and wider opportunity seeking were the primary motives behind English miner emigration to Vancouver Island both before and after 1874 -- but this remains as yet unproven. Vigorous recruiting by HBC officials would help explain why the original Staffordshire miners came, but no such campaign appears to have been mounted later on. Although they welcomed the British miners, British Columbia's coal producers do not appear to have advertised overseas for labour, possibly because by the late 1860's they had another, less costly supply at hand.

Putting Orientals to work in Vancouver Island's collieries had both positive and negative effects upon production, though the benefits far outweighed any losses. As early as April 1867 the Vancouver Coal Company placed twelve "chinamen" in above-ground labouring jobs, and

28 Despite over expansion of the coal industry's labour supply between 1869-79 when 150,000 new workers were added and upwards of 2,000 new mines opened, (Rostow, pp. 80-92), the rewards of British colliery work generally advanced during the latter half of the 19th century. G.H. Woods "Real Wages and the Standard of Comfort Since 1850", *JRSS* vol. 73 (1909) reveals that coal workers' wages rose by 38% in this fifty year period, an increase that compared favourably with gains by workers in other sectors. Many important reforms were achieved in mine safety and hours of work, highlighted perhaps by the *Mines and Colliery Act of 1872* which severely limited the exploitation of women and children and which likely served as a model for B.C.'s 1877 legislation.

29 O.E. Young, *Black Powder and Hard Steel, Miners and Machines on the Old Western Frontier*, Oklahoma (1975), pp. 3-7.

other small groups of Orientals were hired from time to time during the next decade.³⁰ Initially the VCMLC's policy was to severely restrict the numbers of Orientals it employed. Had the company maintained this stance, and kept their numbers within tight bounds, white miners and labourers probably would have raised few complaints. But in the winter of 1870-71, during a wage strike, the VCMLC made moves to renew production by employing a large body of Orientals below ground. A swift and hostile reaction by the striking miners occurred immediately. What management had not predicted, however, was a similar response from the community at large. Even Victorians voiced strong opposition to the scheme, claiming outright that the fabric of colonial society would be at stake if Orientals were allowed to replace whites in the labour force. Having thus lost public support, the VCMLC relented, settled the strike and resumed production within days.³¹ From that point on, colliery owners

30 *Colonist*, 27 Apr 1867, p. 3. Orientals were to be paid \$1.00 per day for their work as labourers. A strong hint of trouble to come was published in the *Colonist* on 8 May: "THE CHINESE COLLIERS - Considerable excitement, we hear, exists at Nanaimo in consequence of the introduction of Chinese labourers. The colliers threaten with violence the first Chinaman who forgets his Celestial origin so far as to descend to the 'bottomless pit' of a coal mine We hope that an arrangement will be effected by which the white population of Nanaimo - which is numerous and thrifty - may be retained. A community of Chinamen would scarcely be the thing." Despite this concern, the threat of violence passed, mainly because the VCMLC confined the Orientals to menial-surface tasks. Still, labour's temper had been raised and a brief strike, ostensibly for higher wages, lasting about two weeks occurred. Management closed-down all operations, insisting the "miners come to their senses". (*ibid.*, p. 2). In this instance the Company prevailed.

31 According to Paul Phillips, *No Power Greater*, p. 5, the 1870-71 dispute at Nanaimo was the coal industry's first "protracted strike". In the sense that the walkout lasted 5 months, this certainly was true; most work stoppages to that time were over within days or at most 3 weeks. Phillips also notes that no formal union activity was present, though delegations of miners did appeal to Victorians, including government members, for assistance. On 6 Jan 1871, miners named Gough, Wall, and Tranfield were quoted in the newspaper as appealing to the citizenry

were cautious in their practice and timing when hiring Orientals. Experience had shown them resistance was minimal if small groups of Chinese were employed in haulage and other strictly manual tasks. Furthermore the owners found that for prospecting and hewing, white miners slowly could be won over to the idea of using Chinese as their assistants. Initially in this case, the colliery paid the Orientals' wages, but by the mid-1870's the trend was for miners to pay their own assistants, white or Chinese. In this way, the miners could expect greater gains since the Orientals were willing to work for half the salary a white worker would accept. Such practices served to improve mine productivity, insofar as the total labour force rose accordingly.³² Furthermore, by employing large numbers of Orientals in surface operations, the problem of labour shortages largely was overcome as early as 1874, and at an attractively low cost. Unquestionably this reliance on a large, relatively inexpensive, disciplined labour force had significant implications for the industry in its movement towards replacing men with machines. If Oriental manpower was reasonably cost-competitive with power equipment, and as effective as whites in its own areas of employment (as it appears to have been), then

for aid to "suffering families" in Nanaimo claiming "much distress" (*Colonist*, p. 2.). Six weeks earlier, the Provincial Executive had proclaimed anyone using force to interrupt the VCMLC's operations, (which were being run by strikebreakers and small groups of men who had refused to strike), would be "prosecuted with the utmost rigor of the law." (*Colonist*, 16 Nov 1870, p. 3.). This action had effectively isolated the strikers and their dependents, but when the *Colonist* reported on 20 Jan that 100 Chinese were about to embark from Victoria to Nanaimo, the tide turned. Public opinion was already sympathetic to the miners' condition, and a series of published letters and editorials urging settlement of the strike followed.

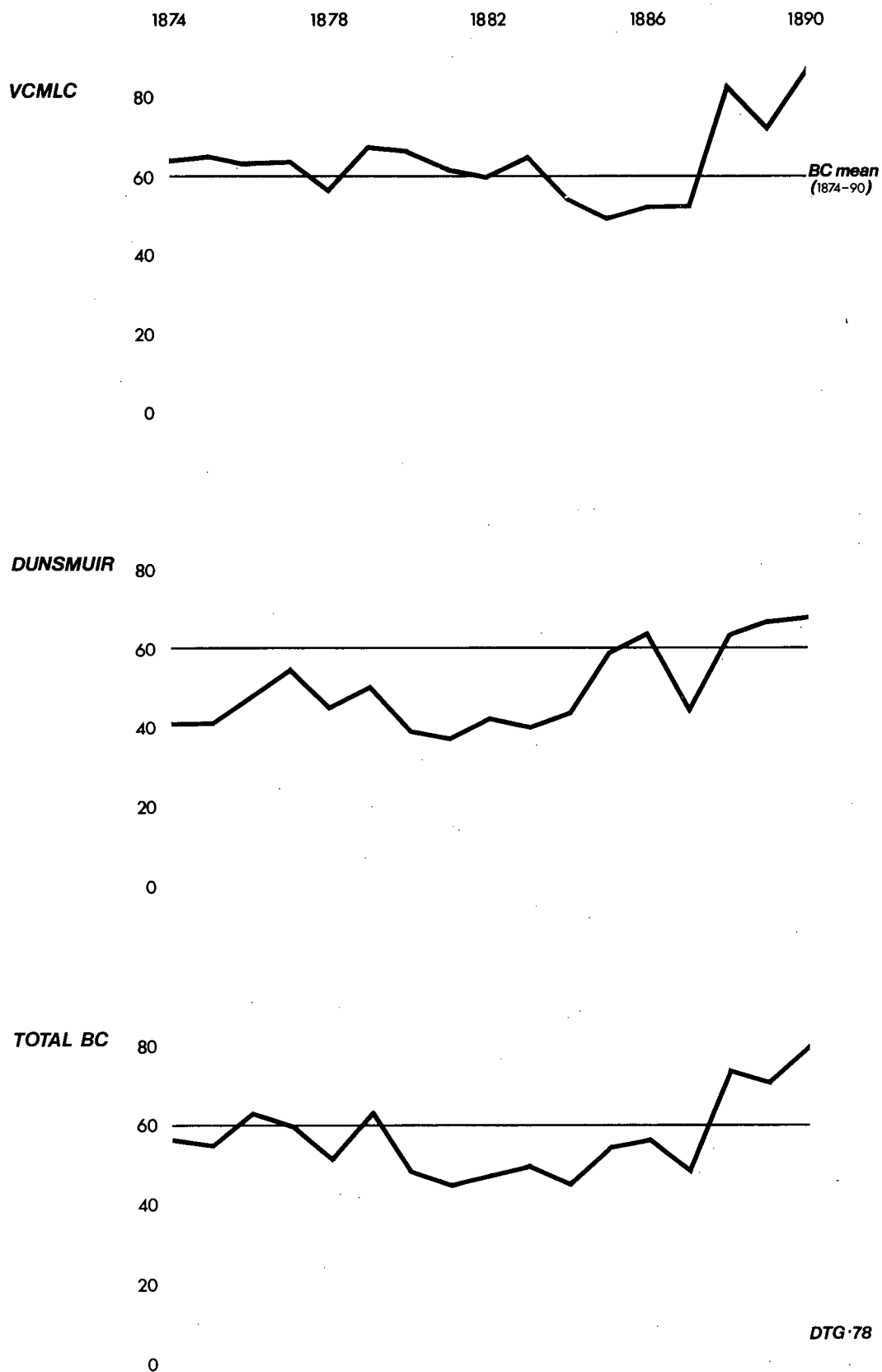
32 See Table 6-2 and Fig. 6-1.

Table 6-2. B.C. Collieries: Workforce by Employee Groups, 1874-90.³³

Year	VCMLC								DUNSMUIR								BRITISH COLUMBIA*							
	Whites		Orientals		Natives		"Boys"		Whites		Orientals		Natives		"Boys"		Whites		Orientals		Natives		"Boys"	
	no.	%	no.	%	no.	%	no.	%	no.	%	no.	%	no.	%	no.	%	no.	%	no.	%	no.	%	no.	%
1874	204	64.9	91	29.0	19	6.0	0	0	73	41.7	90	51.4	12	6.9	0	0	277	56.6	181	37.0	31	6.3	0	0.0
1875	272	65.7	99	24.0	43	10.4	0	0	124	41.8	165	57.1	8	6.5	0	0	396	55.7	264	37.1	51	7.2	0	0.0
1876**	304	63.6	109	22.8	47	9.8	18	4.3	140	48.3	140	48.3	10	4.6	0	0	538	63.1	249	29.9	47	5.5	18	2.1
1877	301	63.9	130	27.6	23	4.9	17	3.6	162	55.5	120	41.1	10	3.4	0	0	543	60.1	310	34.3	33	3.7	17	1.9
1878	237	56.8	136	31.9	25	6.0	20	4.8	165	45.9	194	54.0	0	0	0	0	419	51.7	345	42.6	25	3.1	20	2.5
1879	233	67.9	87	25.4	6	1.7	17	4.9	189	50.7	184	49.3	0	0	0	0	573	63.4	308	34.1	6	0.7	17	1.9
1880	229	66.9	91	26.6	7	2.0	15	4.4	259	39.7	399	60.6	0	0	0	0	488	48.8	490	49.0	7	0.7	15	1.5
1881	190	62.5	97	31.9	17	5.6	0	0	261	37.8	429	62.2	0	0	0	0	451	45.4	526	52.9	17	1.7	0	0
1882	187	60.9	102	33.2	18	5.9	0	0	316	42.5	427	57.5	0	0	0	0	503	47.9	529	47.9	18	1.7	0	0
1883	293	65.7	145	32.5	8	1.8	0	0	283	40.6	414	59.4	0	0	0	0	618	50.0	607	49.9	8	0.1	0	0
1884	348	54.7	286	45.0	0	0	2	0.3	361	44.0	448	54.6	0	0	12	1.5	649	45.8	753	53.2	0	0	14	0.1
1885	327	50.0	312	47.7	8	1.2	7	1.0	284	59.2	196	40.8	0	0	0	0	699	54.5	568	44.3	8	0.1	7	0.1
1886	304	52.9	255	44.3	8	1.4	8	1.4	351	63.9	198	36.1	0	0	0	0	803	56.9	592	42.0	8	0.1	8	0.1
1887	386	53.0	330	45.3	2	0.3	10	1.3	308	44.4	386	55.5	0	0	0	0	777	49.3	786	49.9	2	0	10	0.1
1888	819	83.1	120	12.2	16	1.6	30	3.0	675	63.7	375	34.4	0	0	10	.01	1634	74.3	510	23.2	16	0.1	40	0.2
1889	697	73.1	241	30.4	0	0	16	1.7	882	67.0	423	32.1	0	0	12	.01	1754	71.2	682	27.7	0	0	28	0.1
1890	1296	86.8	170	11.4	2	0	25	1.9	664	68.1	306	31.9	0	0	5	.01	2110	80.0	491	18.6	2	0	35	0.1
Mean	390	66.2	165	28.0	15	2.5	19	3.2	323	52.5	288	46.8	2	0	2	0	778	60.3	482	37.4	16	0.1	13	0.1

* includes all collieries reporting to B.C. Min. of Mines.
 ** data lacking for Dunsmuir; amounts approximate.

Fig. 6-1 ADULT WHITES: PERCENT OF COLLIERY LABOUR, 1874-90



little incentive would have existed after 1875 to replace men with machinery, especially in most surface operations.

III

LABOUR - MANAGEMENT RELATIONS AFFECTING PRODUCTIVITY Generally, B.C.'s collieries were free from serious labour-management problems before 1890, though a few sensational incidents have helped create an image of a strife-torn industry led by ruthless, heartless capitalists determined to plunder the coalfields without regard for worker comfort or safety. According to some writers, Vancouver Island's coal miners were amongst the worst-treated labour forces in Canada, and considering the record of severe measures taken from time to time by management in the latter's attempts to maintain discipline and hold down costs, it is hard to argue that this is a false view.³⁴ We know, for example, of the HBC's ineptitude and occasional severity in dealing with miners' demands, and we have seen how poor management under Mark Bate at the VCMLC served to break down labour discipline, often allowing minor complaints to become major issues. Repeated mine disasters, some of which included large losses of life, were taken as proof that management placed economy far above safety, while the prolonged strikes of 1877 and 1912-13, in which owners demanded and received militia protection for their interests, have been cited time and again by organized Labour as amongst the most high-handed, anti-workers actions on the part of business and government in

³⁴ See Myers, Bennett, Phillips, and Robin as mentioned in chap. 5 fn 3. To a lesser degree, J.T. Saywell, "Labour and Socialism in British Columbia: A Survey of Historical Development before 1903", *BCHQ* 15:129-50 (1951) can be considered in this light.

British Columbia's history.³⁵ Robert Dunsmuir's refusals to negotiate wage increases, coupled with his use of Orientals as strikebreakers, has strengthened the view that coal mining became a battleground for labour against management, and has aided those who have sought to portray the coal industry as the cradle of labour radicalism and solidarity in B.C.³⁶

From earlier chapters we know that managers did not always agree as to what was most needed from the workforce. All laid their first priority on production naturally, but the similarities in their views appear to have ended there. Robert Dunsmuir and Samuel Robins emphasized economy, discipline, flexibility, and inventiveness in that order. Charles Nicol's priorities seem to have been the reverse. Apparently, Mark Bate and the speculators had little idea of what qualities were most important, or how to make the best of them. Determining labour's expectations of management is not difficult: judging by the numbers of strikes and the reasons for them, income levels appear to have been the workers' chief concern, followed by job security, then mine safety. During the period 1849-89, ten strikes involving a majority of the colliery workforce occurred on Vancouver Island. In all but two cases, the primary cause was wage rates, though miners' delegations often cited job protection

35 Writer's interviews with Ray Haines, Larry Ryan, et al of B.C. Federation of Labour, Victoria and Vancouver, 1970-71. See, too, Phillips, *No Power Greater*, pp. 6-10.

36 See references in fn 34. As revealed in the "Select Bibliography" of J. Friesen and H.K. Ralston, *Historical Essays on British Columbia*, Ottawa, (1976), pp. 288-92, the province's commercial and industrial leaders (after Confederation) have largely been ignored by historians and other scholars. Until this is changed, and many more business studies are available, the pro-labour (or more precisely, anti-capitalist) viewpoint is likely to dominate much of B.C.'s historiography.

and income maintenance as important issues.³⁷ Colliery accidents were frequent occurrences both below and above ground, but neither management nor labour regularly accused the other of negligence or indifference in regard to safety. All parties, including government, eventually recognized their own responsibilities for improving safety conditions, and each put-forth considerable effort to minimize hazards. Coal mining was dangerous everywhere, and probably more so on the Island than most locations due to extreme geological faulting and the coal's high gas content.³⁸ Language barriers between whites and Chinese occasionally caused accidents, but this feature does not appear to have been a serious peril. Indeed, the Orientals' safety record as best as can be determined from the times they were involved in serious incidents is better than their white co-workers. In the Dunsmuir mines after 1879 where there were often more Chinese employed than whites, an average of only 1.7 percent of the Chinese workforce was injured per year compared to 2.5 percent for the whole staff. The Vancouver Coal Company's experience was similar, though its accident rate generally was much higher.³⁹

Several important conclusions can be drawn about mine safety and colliery productivity from the data below: First, only a small percent of the workforce were seriously injured in most years. Second, the Dunsmuir collieries generally had a better ton raised per accident

37 See Bibliography.

38 See chap. 1 for geological and minerological hazards of these mines.

39 See Table 6-3.

Table 6-3. B.C. Collieries: Major Accident Statistics, 1877-90.⁴⁰

Year	Vancouver Coal Mining and Land Company					Dunsmuir (all mines)				
	Orientals		Total Workforce			Orientals		Total Workforce		
	injured	% of Oriental workers	injured	% of workers	output rate per injury (tons)	injured	% of Oriental workers	injured	% of workers	output rate per injury (tons)
1877	*	*	10	2.1	9,481	*	*	13	4.5	3,749
1878	*	*	12	2.8	6,845	*	*	14	3.9	6,311
1879	*	*	10	2.9	10,429	*	*	25	6.7	9,482
1880	1	1.1	3	0.9	25,911	1	0.3	5	0.8	37,972
1881	0	0	10	3.3	4,731	0	0	11	0.1	181,048
1882	4	3.9	8	2.6	5,914	3	0.7	20	2.7	11,536
1883	1	0.7	55	1.1	7,133	8	1.9	17	2.4	10,080
1884	7	2.4	29	4.6	4,616	6	0.9	46	1.9	5,533
1885	6	1.9	13	2.0	10,643	4	2.0	16	3.3	13,750
1886	4	1.6	15	2.6	7,517	3	2.5	8	1.5	23,231
1887	56	17.0	166	22.8	837	5	1.3	20	2.9	11,961
1888	0	0	13	1.3	19,909	29	7.7	92	8.7	2,178
1889	0	0	13	1.6	17,221	3	0.7	22	1.7	13,845
1890	0	0	12	0.8	32,459	3	0.9	15	1.5	16,268
Mean (1880-90)	7	2.6	26	4.0	12,445	6	1.7	24	2.5	29,764

* no data available

⁴⁰ B.C. Inspector of Mines "Reports" 1877-91 (in Min. of Mines AR's). All major accidents are shown in Table 6-3; the accuracy of these figures is believed by the writer to be within 5%.

Fig. 6-2 COLLIERY ACCIDENTS: PERCENT OF WORKFORCE INJURED

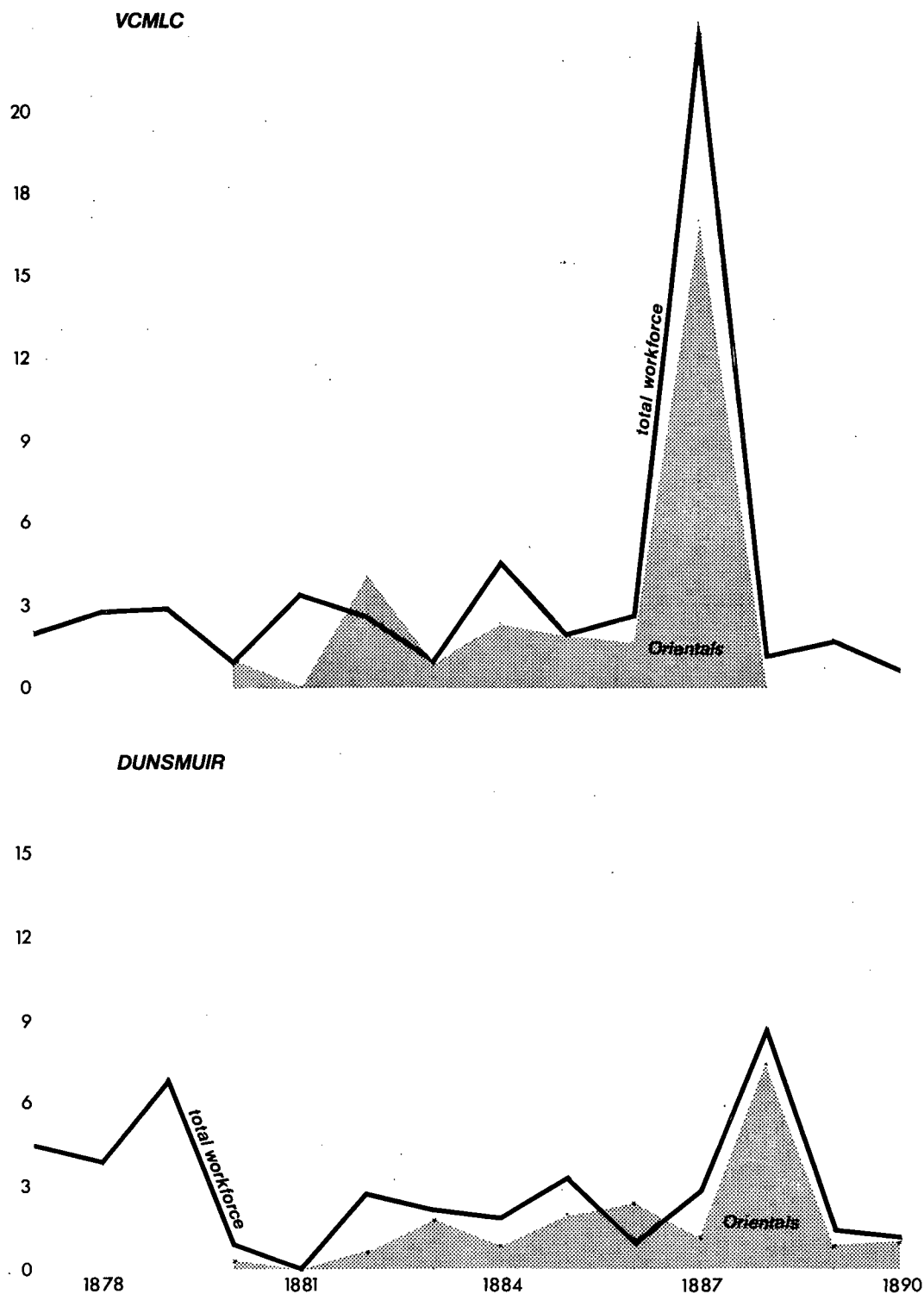
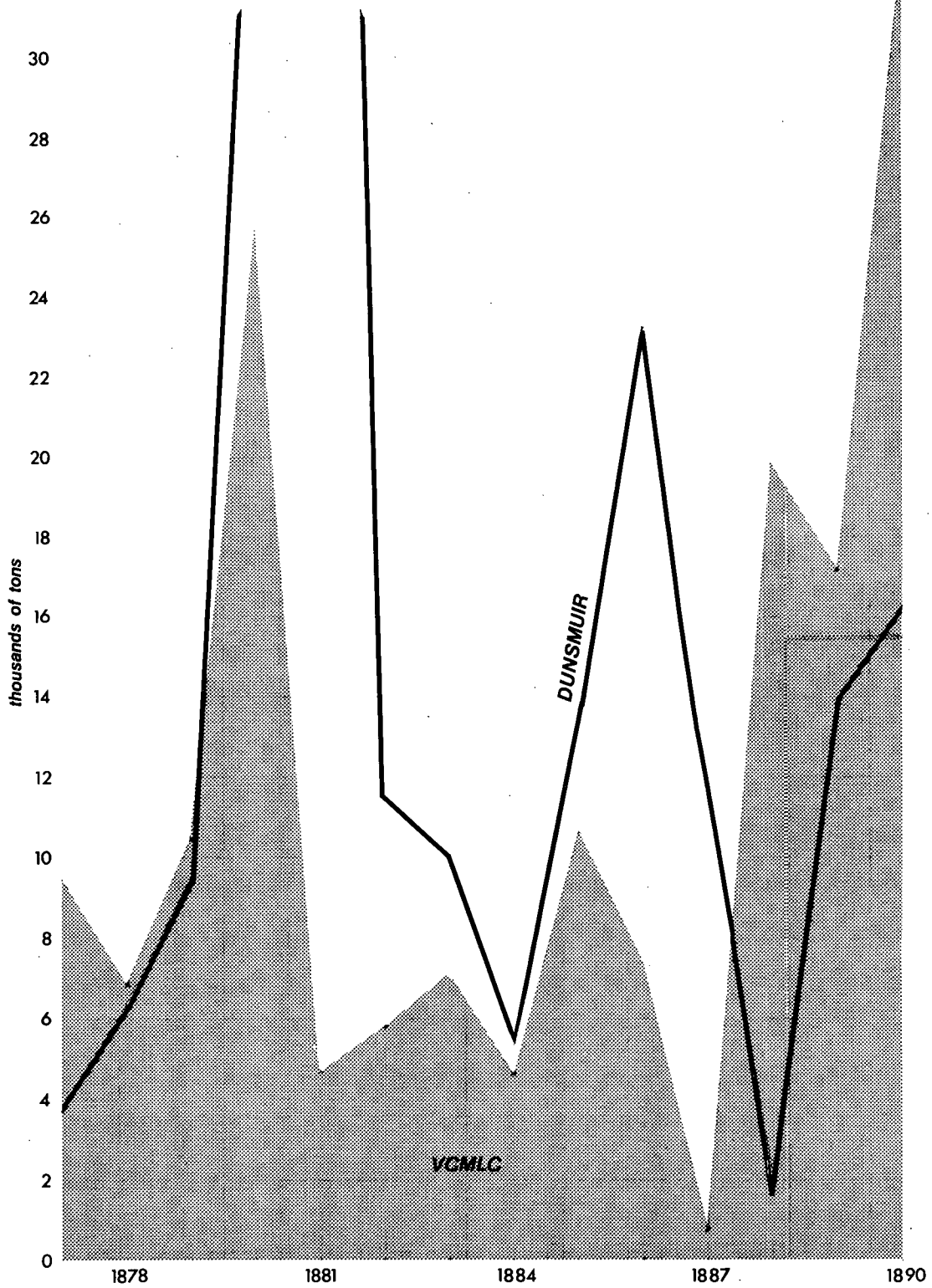


Fig. 6-3 COAL OUTPUT RATE PER INJURY, 1877-90



record than the VCMLC - a fact which appears more impressive when it is remembered that the former usually out-produced the latter during the period 1878-87.⁴¹ Next, Orientals cannot be considered the most inherently dangerous part of the workforce despite a legend that has grown to this effect.⁴² Fourth, the Dunsmuir mines were generally safer than their main competitor's. Both companies had at least one major disaster, taking a great many lives. The appointment of a provincial coal mines' inspector in 1874 did much to encourage more concern for mine safety among workers since in addition to regular government inspections, each colliery accident resulting in serious injury had to be reported to Victoria. This in turn meant some kind of medical attention, a circumstance bound eventually to impress workers of the seriousness with which inspectors took mine safety. For management, a bad injury meant at the least the temporary loss of a working hand, while in cases where several men were hurt, or where major damage was done to either shafts or equipment, there could be a significant if not severe loss of output. Hence, it was in the owners' best interests to maintain as safe a colliery as possible. It took years, however, for this lesson to sink-in.⁴³ While disasters like those in 1884, 1887, and 1888 crippled production, it is also clear that during the four decades after 1849, both labour and management had no wish to make safety an issue

41 See Tables 3-2, 5-3, and 5-4.

42 PABCvf for a considerable number of writers who have claimed Oriental workers were particularly hazardous in the coal mines. Chinese labour employed in building the CPR had a similar reputation.

43 S. Issacson, vice president of finance, Canadian Collieries (Dunsmuir) Ltd., Nanaimo. Interview with the writer, Feb 1978, transcript in PABC Aural History division.

between them, for invariably the mines were put back into operation as soon as possible. In other words, despite their attempts at reducing hazards, all parties appeared to have had a fatalistic view of coal mining, expecting accidents - some disastrous - to happen often.⁴⁴

If mine safety was not a significant issue between labour and management during the period of this study, what then of job security? Because the coal industry was in a process of expansion throughout the years 1849-91, mine closures inevitably were offset by the opening of new shafts. Consequently, the workforce rarely had to fear job losses stemming from the shutdown of a single pit. Even repeated failures in speculative ventures during the 1860's-70's meant little in this regard, as there was sufficient mining activity always going on for skilled colliery workers to remain optimistic. Still, there were occasions of prolonged unemployment for some worker groups. Native Indians, for example, had fewer and fewer opportunities for colliery employment as more and more manual tasks were taken-over by machinery. Orientals and whites who performed such work were similarly affected. The Chinese had one important advantage in that they constituted a large block of workers willing to perform all tasks at low wages. Management therefore tended to replace unskilled Indians and whites with Orientals whenever the owners believed they could do so without opposition from the white community.⁴⁵ The largest threat to jobs, however, came from depressions in the coal trade. As will be seen in a later chapter the state of the San Francisco market had a direct and powerful influence (after 1874 especially) on employment

⁴⁴ B.C. Min. of Mines ARS, 1874-91, *passim*.

⁴⁵ See Tables 6-2 and 6-4.

in British Columbia's collieries. Major and recurring recessions in the California economy from the mid-1860's to mid-1880's suppressed demand for all coal, including Vancouver Island's.⁴⁶ Competition from other suppliers was growing during this period, and B.C.'s colliery owners often were forced to cut-back on production as they could not afford to reduce prices substantially. Given the labour-intensive character of their collieries, it followed that management would have to overcome its own fear of layoffs, (which it had by the early 1870's thanks to a better supply of skilled labour), and periodically reduce its workforce in order to cut costs in the face of lower profits. With no collective agreements to protect jobs, labour suffered considerably over the short run. Owners sometimes relieved the pressure by allowing production to continue at regular levels, thereby increasing the inventories of unsold coal with hopes of a market upswing the following year. Often this worked, though if two bad years in a row occurred, men had to be laid off. Job security became a serious issue between workers and owners only on those occasions when it was clear that management clearly was indifferent to the impact on labour of falling markets, or when owners forced Oriental labour into the picture. As for labour productivity, there is no evidence to suggest that it was affected in the years to 1891 by unemployment or its threat.

Income levels appear to have had a significant effect upon productivity, though to what extent is not yet fully clear. During the four decades in question here, B.C.'s collieries were struck by large numbers of workers (often the majority) eleven times - eight strikes of which were wage-rate inspired. Sometimes months of production were lost,

⁴⁶ See Chap. 8 for marketing trends and details.

though a more important consequence was the growing division between labour and management caused by their joint inability to find a formula for establishing mutually acceptable salary levels linked to either productivity or some other index. Although wage-rates in the province's coal mines generally moved upwards between 1849-91, providing increases that compared favourably with those paid colliery labour elsewhere, workers' rewards were a source of labour agitation from the beginning of coal mining on Vancouver Island.⁴⁷ And worker dissatisfaction with their incomes, coupled with management's intransigence in the matter, probably dampened over time the rate of increase in labour productivity. Gathering evidence for this view is difficult, insofar as it is believed that quantitative analysis would show productivity gains can be accounted for - with high degrees of certainty - by all factors of production.⁴⁸ Hence it has been impossible through the use of this and other available methods to signify wage-rates along as a major determining agent in long-term productivity increases. Still, certain inferences can be drawn from various trends and events. By hiring large numbers of Orientals, colliery owners avoided the need to mechanize much of their operations. As we know this practice made for labour-intensive industry. In having to rely chiefly upon British colliers and ex-gold miners to work the coal, owners introduced articulate, sometimes radical elements into their workforces.⁴⁹ Notwithstanding any hostility these imported workers had towards Orientals, circumstances

47 See chaps. 2 and 3.

48 See BCPMmh research notes on "Coal Mining".

49 P. Phillips, *No Power Greater* (1967), pp. 4-65.

soon drew the Chinese and whites together as parts of a single working group so that by the early 1880's whenever the miners chose to strike over wages the Orientals (along with non-mining whites) invariably followed suit.⁵⁰ A corollary of the new link between the main labouring elements was the growing difficulty owners were having in attracting strikebreakers. Since the Chinese could no longer be relied upon to work independently of the whites, management's options for maintaining production in a strike situation were severely limited. In fact, their owners' only defence became the lockout, which they often used. Finally in this attempt to infer from events the effects wage-rates had upon productivity, it is argued below that the trend in labour-management disputes was more and more focused upon worker incomes alone.

Low wages had been only one of several complaints raised by employees in the HBC's mines. Isolation, poor management and even diet had received equal attention.⁵¹ Nanaimo Coal Company officials indirectly cut-into miners' incomes by placing a three pence duty on clay-bearing coal during October 1861. This action prompted a 100-man walkout lasting five days.⁵² By 1865, the VCMLC was paying miners \$1.32 per ton maximum - a rate resulting in about \$2.50 per day for twelve hours work. Since the pithead price per ton was \$6.00 the miners felt justified in demanding

⁵⁰ John Bryden "Letterbook", 1878-80, PABC MSS, *passim*. The breakdown of colliery proprietor control that effectively had separated the Orientals from white workers may well have been a main cause for the steady reduction in the numbers of Chinese employed after 1887. See Table 6-2.

⁵¹ Andrew Muir "Diary"; "Nanaimo Correspondence" (1852-53); "Nanaimo Journal" (1855-57) - all *passim*.

⁵² *Colonist*, 4 Oct 1861, p. 3.

raises of ten percent on the ton or fifteen percent per day, claiming their "grievances arise chiefly from not being able to make reasonable wages". When the company refused, the miners struck, adding demands for better accommodation and cheaper rents.⁵³ In May 1867 the Vancouver Coal Company was struck again for higher wages, but it was plain that several minor issues were at stake, too.⁵⁴ A prolonged strike over wage rates occurred at the VCMLC in the winter of 1870-71. Almost five months was lost with a production decrease close to twenty-five percent in each of the two years. It was a bitter dispute, requiring government action to curtail strikers from vandalizing property and intimidating company officials. Towards the end, appeals were made as far south as Victoria by Nanaimoites to assist destitute strikers and their families.⁵⁵ Similar troubles accompanied the strike-lockout at Dunsmuir, Diggle in 1877. Again the dispute was over wages, though the extremely hard line taken by Robert Dunsmuir from the outset, together with the provincial government's apparent willingness to support his demands for police protection, turned the matter into a class-conflict. One of the periodic market recessions had held wages at \$1.00 per ton, an amount hardly worth working for. Repeated requests for a twenty-five cent increase were refused, and as talk of a strike mounted, Dunsmuir reacted by closing his mines. Ultimately he broke the strike by outlasting his workers, and the miners returned for the

53 Letter from "A Miner" to editor, *ibid.*, 28 Jan 65, p. 3.

54 *Ibid.*, 8 May 1867, p. 3; see also fn 30.

55 *Ibid.*, 6 Jan 1871, p. 3; see also fn 31.

old rate.⁵⁶ Little improvement in wages was felt during the next six years, and another strike over incomes occurred at the Dunsmuir colliery in 1883. Again management held firm, and though three months production was lost, the workforce could not prevail upon the owner-managers for an increase. Even as late as 1889 the Dunsmuir's were able to withstand worker pressure for better rewards. No increases in wages had been granted by the Wellington Collieries since 1874. When the miners demanded a meeting with James Dunsmuir during January to negotiate wage-rates, he acted swiftly, doing "what was natural" according to the *Daily Colonist* which further claimed that Dunsmuir "anticipated them, and closed the works". In the editor's view, "if the men suffer they will have only to blame themselves and the agitators who have for some time been fomenting discontent among them".⁵⁷

SUMMARY OF LABOUR UTILIZATION AND PRODUCTIVITY In the period covered by this study, British Columbia's coal industry by and large was labour intensive. Up to the early 1870's a main aim of management was to reduce its large dependence upon labour by substituting technology for manual

⁵⁶ As discussed in chap. 5, this strike is among the two most referred-to in writings on B.C.'s coal industry. Its effect on Robert Dunsmuir's reputation as an employer has so far been devastating. For the fullest available account of the event, refer to J.N.G. Barlett, "The 1877 Wellington Miners' Strike", UBC, unpub. B.A. hon's essay, 1975. A fascinating and important feature of this strike was the use of militia troops in support of the sheriff responsible for evicting miners from company housing. For an assessment of the militia's involvement and actions, see R.H. Roy, "'... in Aid of a Civil Power', 1877", *Cndn. Army Jour* 7:3:61-9 (1953); for further details see "Report of the Dep. Adj. Gen - Mil. Dist. No. 11 - re: Wellington, 4 May 1877", PABC MSS.

⁵⁷ *Colonist*, 4 Jan 1889, p. 2.

Table 6-4. B.C. Collieries: Wage Rate and Payroll Statistics, 1874-91.⁵⁸

Year	VCMLC							DUNSMUIR						
	Wage-Rates (average dollars daily)				Payroll* (dollars)			Wage-Rates (average dollars daily)				Payroll* (dollars)		
	Whites	Oriental	Indians	Boys	weekly	annual	cost per ton of output	Whites	Oriental	Indians	Boys	weekly	annual	cost per ton of output
1874	2.75	1.19	1.38	-	3,959	205,861	3.98	3.00	1.25	1.25	-	1,854	96,408	3.23
1875	3.50	1.19	1.25	-	6,490	337,494	5.66	2.75	1.25	1.25	-	2,931	152,412	3.02
1876	3.00	1.13	1.25	-	6,448	335,278	4.54	2.80	1.13	1.13	-	3,164	164,528	3.10
1877	3.00	1.13	1.25	-	6,308	328,009	3.46	2.88	1.13	1.13	-	3,410	177,297	3.64
1878	2.75	1.13	1.25	-	4,864	252,953	3.08	2.25	1.13	-	-	3,100	161,206	1.82
1879	2.88	1.13	1.25	-	4,692	243,983	2.34	2.88	1.13	-	-	4,100	213,193	1.87
1880	2.88	1.13	1.25	-	4,536	235,856	3.03	2.88	1.13	-	-	6,279	326,508	1.80
1881	2.88	1.13	1.25	-	3,851	200,273	4.23	2.88	1.13	-	-	6,449	335,356	1.85
1882	3.00	1.25	1.25	-	4,079	212,110	4.12	2.88	1.13	-	-	7,393	384,425	1.67
1883	3.00	1.25	1.88	-	6,092	316,770	8.88	2.88	1.13	-	-	6,861	356,766	2.08
1884	3.00	1.13	1.88	1.25	7,574	393,847	2.94	2.88	1.13	-	1.38	8,265	429,796	1.69
1885	2.88	1.13	1.69	1.50	7,196	374,182	2.70	2.88	1.13	-	-	5,796	301,376	1.37
1886	2.88	1.13	1.50	2.00	6,598	343,081	3.04	2.88	1.13	-	-	6,960	361,932	1.95
1887	2.88	1.13	2.00	2.00	8,306	431,895	3.11	2.88	1.13	-	-	7,071	367,717	1.54
1888	3.00	1.13	2.00	2.00	15,836	823,493	3.18	2.88	1.38	-	-	13,359	694,668	3.47
1889	3.00	1.13	2.00	1.00	15,654	814,008	3.67	2.88	1.13	-	1.38	17,252	897,119	2.95
1890	3.00	1.13	2.50	1.38	28,837	1,499,534	3.85	4.38	1.25	-	1.75	23,780	1,236,560	5.52
Mean	2.78	1.15	1.58	1.59	8,312	432,224	3.87	2.75	1.17	1.19	1.50	7,638	397,182	2.50

* determined from official colliery returns to B.C. Min. of Mines only.

Table 6-5. B.C. Collieries: Labour Productivity Statistics, 1874-91.⁵⁹

Year	VCMLC			DUNSMUIR			BRITISH COLUMBIA		
	output (tons)	employees (no.)	tons raised per employee	output (tons)	employees (no.)	tons raised per employee	output (tons)	employees (no.)	tons raised per employee
1874	51,728	314	164.7	29,819	175	170.4	81,000	489	188.9
1875	59,603	414	144.0	50,542	289	174.9	110,000	711	176.6
1876	73,799	478	154.4	52,935	290	170.2	139,000	834	163.0
1877	94,809	471	201.3	48,743	292	167.0	154,000	903	173.9
1878	82,135	427	251.2	88,361	359	246.1	171,000	809	243.6
1879	104,233	343	304.0	113,787	373	305.1	241,000	904	251.8
1880	77,734	342	227.3	189,861	658	289.0	268,000	1,000	320.2
1881	47,308	304	155.6	181,048	690	262.4	228,000	994	278.4
1882	51,429	307	167.5	230,711	743	311.0	282,000	1,050	322.7
1883	35,665	446	80.0	171,364	697	245.9	213,000	1,233	203.4
1884	133,859	636	210.5	254,538	821	310.0	394,070	1,416	396.8
1885	138,353	654	211.5	220,000	480	458.3	365,000	1,282	338.9
1886	112,761	575	196.1	185,846	549	338.5	326,636	1,411	249.7
1887	138,713	728	190.5	239,217	695	344.2	413,360	1,575	308.9
1888	258,817	985	262.8	200,392	1,060	189.0	489,300	2,200	236.5
1889	223,870	794	282.0	304,587	1,317	231.3	579,830	2,464	258.0
1890	389,505	1,493	260.9	244,033	996	224.9	678,140	2,659	255.0
1891	527,457	1,464	360.3	459,974	1,342	342.8	1,029,097	2,995	343.6
Mean	144,571	621	208.0	181,431	657	265.6	342,913	1,385	261.7

⁵⁹ B.C. Min. of Mines ARs, 1874-90.

Fig. 6-4 COLLIERY PAYROLLS, 1874-90

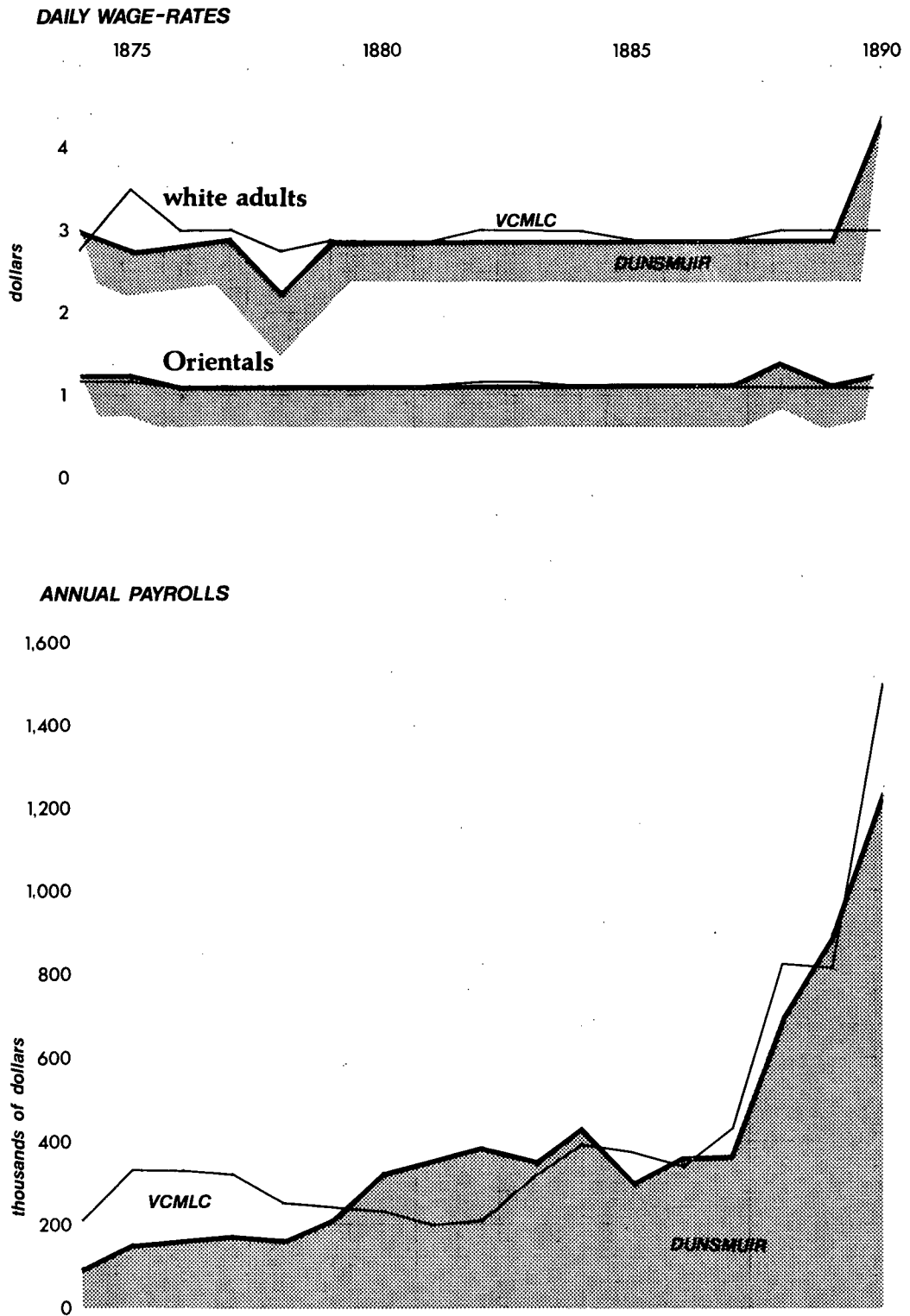


Fig. 6-5 PAYROLL COSTS PER TON OF OUTPUT, 1874-90

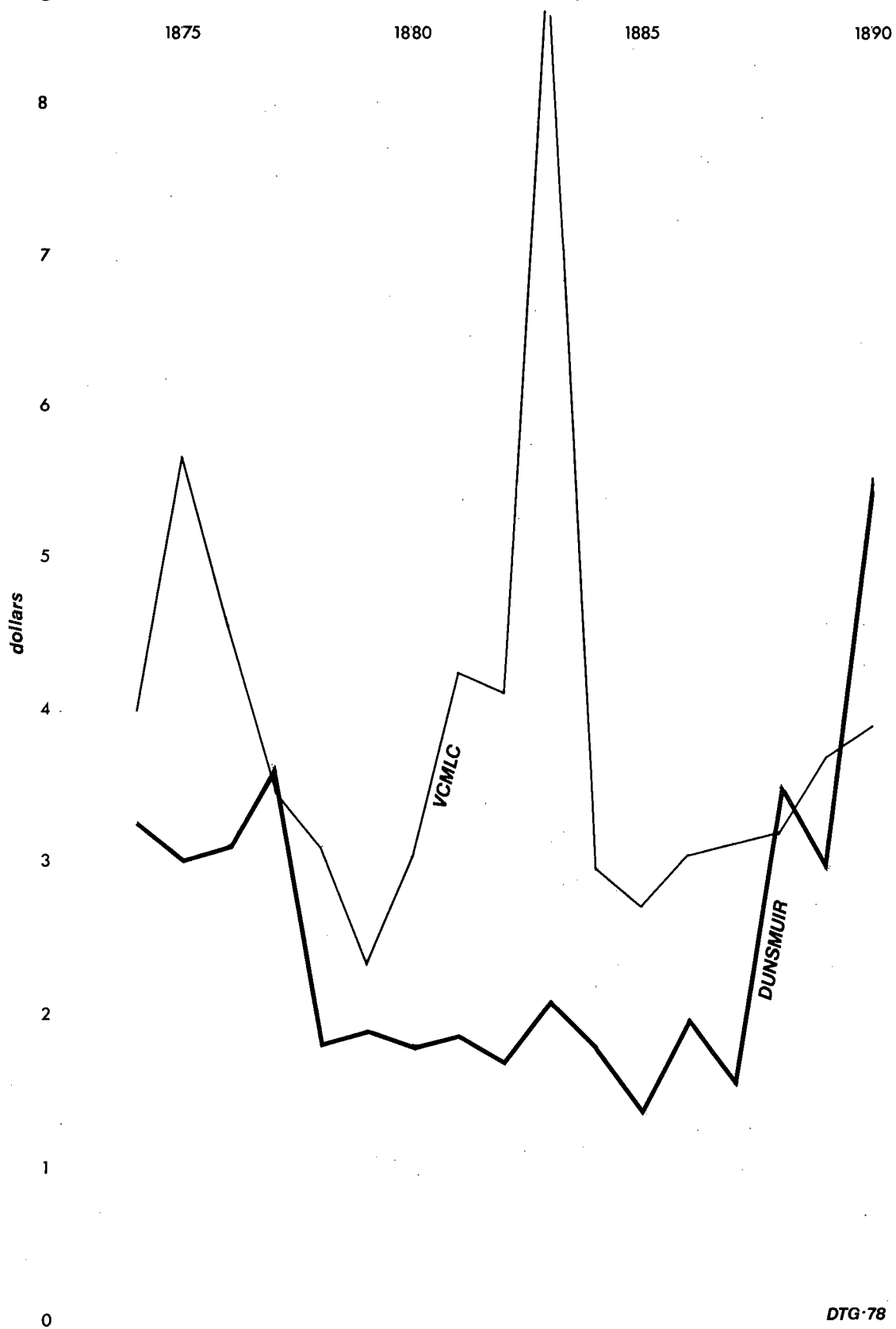
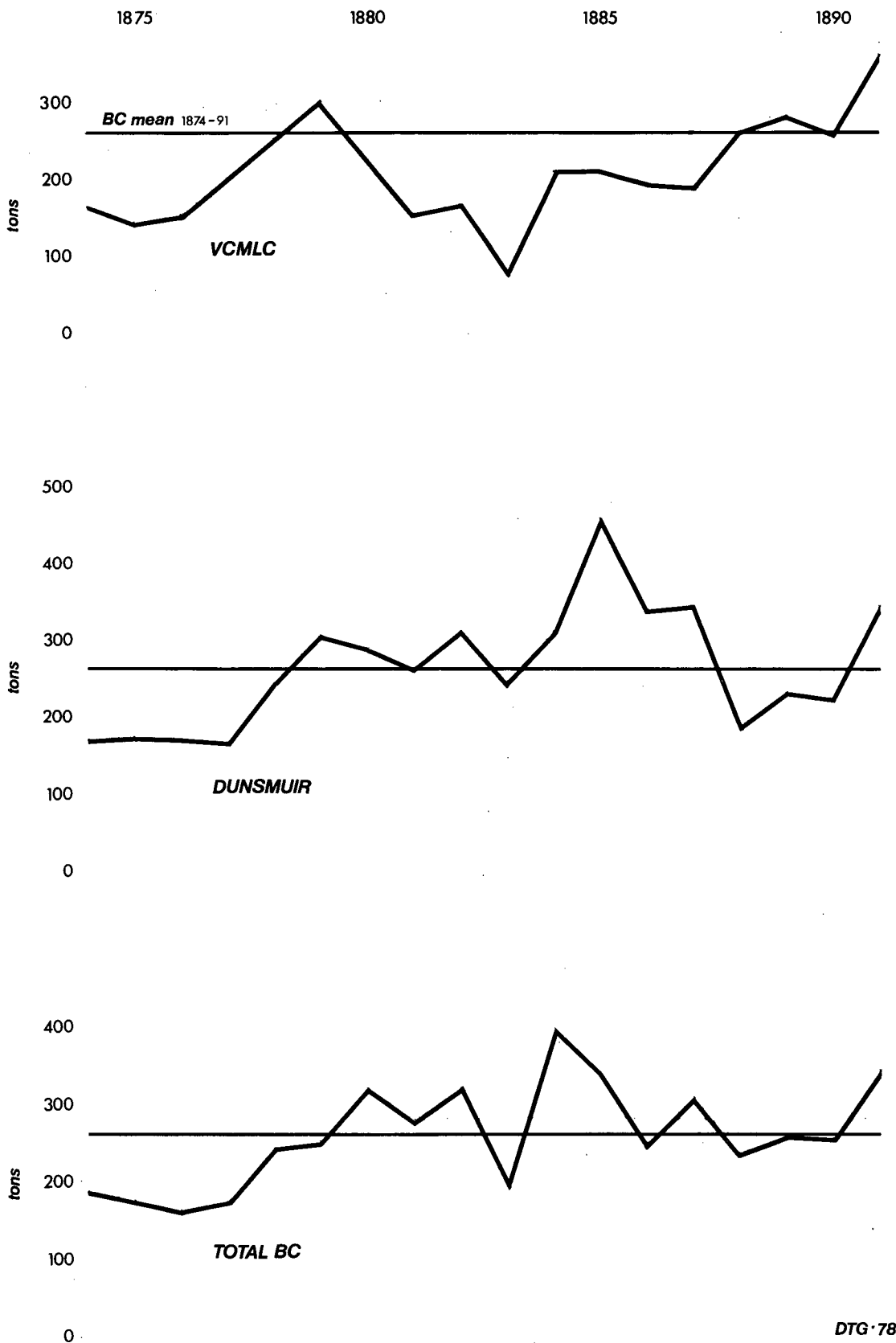


Fig. 6-6 COAL OUTPUT PER EMPLOYEE, 1874-91



work wherever possible. To a degree, the HBC was successful in this regard, and both machine and labour productivity climbed in the years that the Company controlled the Vancouver Island coalfields. Proportionately greater emphasis by the Nanaimo Coal Company and Charles Nicol of the VCMLC upon technology appears to have had the effects of cutting output-per-worker costs, increasing the value of fixed colliery capital, speeding the trend towards worker specialization, and reducing tensions associated with labour discipline.

Despite chronic labour shortages throughout most of the years 1849-91, coal proprietors managed to find sufficient numbers of skilled and unskilled hands to generally increase annual production. Colliery labour in the seventies and eighties was comprised mainly of British-trained coal miners, experienced gold miners leaving the B.C. mainland, and Chinese immigrants. Robert Dunsmuir's extensive use of Oriental labour, at rock-bottom wage-rates, had a major impact upon the industry, in that he showed both greater profits and productivity were possible in a labour intensive colliery than owners had been led to believe. Other proprietors followed suit, and the industry settled-in to being labour dominated for production purposes.

With more workers came more demands for wage increases, more injuries through colliery accidents, and more dangers to job security. Each of these had an effect upon productivity, especially wage-rates which were the greatest cause of labour-management disputes, and which periodically resulted in strikes and lockouts. Management appears to have understood partially the mechanism and value of wage incentives *vis-a-vis* production, as it early-on followed the advice of the oversmen in placing

miners on tonnage rather than daily rates.⁶⁰ It did not, however, grasp the idea that by allowing workers to share in the profits from greater output through correspondingly larger wages, production itself likely would increase. Over the long-term, both annual gross output and the tonnage-raised-per-worker-employed climbed, but wage-rates advanced very little. A variety of factors, including improved techniques, better coal deposits, and a greater concentration of workers at the coalface could explain the generally steady increases in both production and productivity, but it is worth wondering how much better these might have been had wage levels moved ahead in tandem with profits.

Finally, from the statistics, it is clear that the Dunsmuir collieries were, on balance, at once more productive and more efficient than its chief competitor's. In each labour index studied to this point - gross output, tonnage-raised-per-colliery-employee, workforce composition, output-rate-per-serious-injury, wage-rates, annual payrolls - every one shows itself to have been a favourable advantage for the owner-managers. In short, the Dunsmuirs, despite their lasting reputation as harsh employers, were unquestionably the most adept at labour utilization. In the next two chapters it is revealed that they were also slightly superior to the VCMLC management in their handling of technology and markets.

⁶⁰ HBCA (PAM) A11/72-74, *passim*; "Nanaimo Correspondence", 1852-53, PABC MSS.

Chapter Seven

MACHINES

INTRODUCTION At the time coal mining was begun at Nanaimo, colliery technology elsewhere had reached high levels of efficiency and sophistication. Steampower, introduced to coal exploitation in the eighteenth century, had done much more than complement manual labour - it revolutionized coal mining. In the earliest collieries coal was surveyed, extracted, and handled by manpower alone. Horses and other livestock were often used to transport coal (both below and above ground), but this innovation had only limited impact upon productivity, insofar as animals merely hauled what man already had raised. As surface coal deposits became exhausted, and deeper mining was attempted, colliery owners sought means to overcome many seemingly insurmountable physical obstacles, including flooding, shortages of fresh air, rock barriers, and the increasingly greater depth from which coal was to be removed. Primitive steam engines working as pumps were the first power machines installed in collieries, though they did little more than hint at future solutions. Of more consequence were the advances being made in railway technology. Land transport by rail had its genesis as much in the desire to link inland collieries with tidewater as for any other purpose.¹ Coal owners adapted designs originally prepared for constructing steam locomotives in order to build stationary engines suitable for a wide variety of sub-surface and upper-works roles. Hence colliery and railway requirements to extract and

¹ J.U. Nef, "Coal Mining and Utilization", *History of Technology*, Oxford, (1958) vol. 3, pp. 72-88.

transport coal respectively made for a mutual coincidence of needs that resulted in a completely new colliery technology, the existence of which eventually was of great benefit to British Columbia's infant coal industry.

In this chapter discussion centres upon both the nature of colliery machinery (as used on Vancouver Island to 1891) and its effects upon coal production. Descriptions of the most important equipments are given, and the application of machines to achieve new output levels is outlined. Further, it is argued that among the benefits realized by those Island coal proprietors who successfully introduced and maintained modern colliery machinery were the removal of major physical bottlenecks, a significant countering of the effects of labour shortages, substantial gains in the rate of proving new coal discoveries, large increases in the amount of fixed colliery capital, and important gains in production and productivity.

It is not a purpose of this chapter to produce a definitive treatment of colliery technology in B.C. from 1849-91. Such a study would be extensive, highly detailed, and surely would distract from the main goal of comparing the relative impact of technology as a production agent *vis-a-vis* other factors of production. Thus only those descriptions of machines, methods, and other technical data believed essential for a basic understanding of how technology was acquired and how it was integrated with other elements to speed coal production and transport are given. This constraint should in no way give the impression that technology was a minor factor in colliery operations as the opposite was true. Rather it is imposed simply to keep this thesis within reasonable bounds.

I

COAL MINING IN THE MID-NINETEENTH CENTURY Steampowered machinery and the techniques needed to maximize its use were a vital part of colliery operations long before coal mining began in British Columbia. Britain's coal industry in particular had come to rely greatly upon steam power during the last two decades of the eighteenth century. And since Vancouver Island's coal mining operations throughout the years 1849-91 were conducted almost wholly by British-trained managers and miners, it was natural that British colliery technology would be the kind used in B.C. Specifically, technology is defined here as the factor of production consisting of the manual- and machine-powered efforts used in coal exploration, extraction, and preparation for distribution and ultimate sale. More generally, coal mining technology is a combination of many different equipments and techniques linked together in greater or lesser degrees to become vital processes. (Thus we would speak, for example, of exploration technology, mining technology, transport technology). For colliery operators intent upon improving the overall coal mining process, a sound grasp of many types of technology was needed, as was a clear understanding of the critical relationships the various technologies had to one another. Owners could create bottlenecks simply by improving their extraction technology while ignoring the need to upgrade their techniques in, say, sorting and grading. Hence, a seemingly obvious advance could turn out to be a retrograde step if it burdened down other parts of the operation. An example of this phenomenon was the introduction of blasting powder to hewing in the 1850's whereby much more coal than could be produced at

the face by the same number of men.² Yet until means were found to boost the rate at which the coal was hauled, then hoisted, the amount of coal reaching the surface could not increase, the underground stockpile of coal would grow, the need for cutting lessened, miners were idle, and actual productivity remained constant. In truth no technological advance had been made due to this dramatic advance in cutting technique - other steps were required to take full advantage of this innovation.

Still, in the long run it tended to be good management to increase the amount and sophistication of technology in use. It is, after all, axiomatic that for heavy industry, (including resource exploitation), employing power machinery combined with skilled operators normally is more productive, (once installed) and less costly than manual labour alone.³ This fact had long been known in the British coal industry, and all those who had planning responsibilities in even modest-sized collieries, (which included those on Vancouver Island), showed a marked tendency to opt for power equipment whenever it became available. Moreover, as implied above, the very act of introducing a new technology to one process became a major incentive to find similar means that would forestall the creation of bottlenecks elsewhere in the colliery operation.

2 J.A.S. Ritson, "Metal and Coal Mining, 1750-1875", *ibid.*, vol. 4, pp. 64-98. Blasting powder was not in common use in B.C. collieries until the late 1860's.

3 For verification of this theme consult H.J. Habakkuk, *American and British Technology in the Nineteenth Century. The Search for Labour-Saving Inventions*, Cambridge, (1962) chap. 6, pp. 189-220. Also worth noting is C. Wilson, "Technology and Industrial Organization", *History of Tech.*, vol. 5, pp. 799-813.

There was another good reason for owners to emphasize technology: If thanks to technical advances a neighbour colliery dramatically increased its productivity, its competitive position likely improved, too. Consequently, owners always had to be alert to technological changes elsewhere or face the danger of falling behind, their colliery becoming a backward and increasingly vulnerable operation. By responding to such pressures, (in that the larger firms did imitate each other in acquiring and adapting new machinery and methods), the coal mining technology of B.C. never stopped moving steadily ahead. Finally, it must be remembered that our interest in coal mining technology is well-placed also because the coal trade's survival depended largely upon advancing technology to combat the retreating nature of the resource. Technology, then, like land acquisitions, was a vital factor of production, though its application tended to have a more immediate impact upon productivity and profits than new coal finds. To understand more clearly why machine technology was so much preferred over manual labour in B.C.'s coal industry (at least to the mid-1870's), and to know why they were so critical to colliery survival, it is necessary to realize how far coal mining technology had evolved by 1850.

From ancient times coal regularly had been taken by "stripping", a method that removed overburdens of soil and rock to expose the coal seams. Coal then was cut out in sections not unlike stone taken from a quarry, and as long as the seam lay close to the surface, this method sufficed.⁴ Considering the relatively low demand for coal - it was used principally as a fuel for heating, cooking, laundering, salt-making,

⁴ Nef, "Coal Mining and Utilization", *passim*.

chemical processing, smelting - for centuries even small collieries at or close-by tidewater could and did supply coal to domestic and foreign users. With low demand, output was low. And a technology based upon hand tools such as picks, shovels, sledges, and boring rods, together with sacks, sleds, wagons, and winches was adequate for stripping-type operations.⁵ It is worth noting that because coal is about as low-valued a commodity in relation to its volume as exists, it was ludicrous for owners to think of opening inland coal mines to supply anyone but local buyers; indeed only those collieries located on or near the sea could hope to have distant markets.

Progress in mining was further constrained by the inability of miners to work effectively at low levels. Flooding was commonplace in coal mines, but there were real limits to the pumping capacity of men and animals. Unless means could be found adequately to clear water from the workings, the deeper mines were useless. Similarly, new methods to increase and purify the air supply at increasingly lower depths were urgently needed. Various dangerous gases were present below ground, some of which both displaced oxygen and enlarged the possibility of explosions. Only by drawing huge volumes of fresh air into the mines could these gases then be exhausted to the surface. Finding new ways to hew, haul, and hoist the coal was even more problematical.

⁵ T.S. Ashton and J. Sykes, *The Coal Industry of the Eighteenth Century*, Manchester U. Press, 1929, *passim*; for details on such equipment, its maintenance, and its uses see Wm. Morgan, *Mining Tools for the Use of Mine Managers, Agents, Students, Etc.* (London: 1871, 1871) (copy of latter inscribed as property of Mark Bate - VCMLC - held in BCPMmh).

Muscle-power was insufficient to perform these tasks at and below about 600 feet, making it essential for proprietors to find new lifting methods if their mines were to survive.⁶

Such difficulties provided the impetus for one of history's most remarkable transformation in the co-realm of science and economics: By their great need for technical solutions, colliery owners stimulated invention on a scale rarely witnessed. As early as 1712 Newcomen's atmospheric engines were put to work pumping water from Cornwall's tin and coal mines. Fifty years later James Watt installed the first separate condenser and followed this in 1782 with inventions of the double-acting piston and the shut-off valve, each of which markedly increased the steam engine's efficiency. With steam pumps in place and effectively coping with flooding, owners then focused their attention on haulage and hoisting. Steam winches were the key to overcoming delays in these activities, though they tended to be more useful in removing coal from the depths than moving it to shaft-bottom. The chief improvements in haulage methods came with wheeled vehicles, first barrows then wagons and finally coal cars running on tracks. To further relieve the bottleneck

6 According to J.A.S. Ritson (1958), ventilating fans were installed in English collieries as early as 1830; further data on the problems of and solutions for fresh air supplies is found in J.U. Nef, *The Rise of the British Coal Industry*, London, F. Cass, 1966, vol. 1, pp. 359-60 and vol. 2, pp. 168-74. Specifics on the technology are in Chas. Tomlinson, *A Rudimentary Treatise on Warming and Ventilation*, London, Virtue Bros., 1864. For hewing, hauling, and hoisting, consult Thos. Tate, *Exercises on Mechanics and Natural Philosophy*, London, Longman Green, 1846, pp. 9-11 and 37-57; Morgan (1871); *A Textbook on Coal Mining*, Scranton, Ill., Int'l Textbook Co., 1896, pp. 13:1-3 and 15:1-16; Ashton (1929); Nef (1957); Ritson (1958); A. Stowers, "The Stationary Steam Engine, 1830-1900", *Ox. Hist. of Tech.*, vol. 5, pp. 124-40; and O.E. Young, *Black Powder and Hand Steel. Miners and Machines on the Old Western Frontier*, U. of Okla. Press, (1975) *passim*.

in haulage, more vertical shafts were sunk, a task made easier and quicker by blasting followed by clearing away the debris with steam hoists. Once on the surface, the coal was cleaned, sorted, graded, and at that time, barrelled for shipment.⁷ Yet even in these operations steps were being taken to mechanize as much of the handling process as possible since using hand labour alone was slow, creating another bottleneck. Because quality control was crucial at this point of the operation, there were few alternatives to relying upon human judgment. Changes in handling methods were minor, therefore, being mainly a case of installing mechanical screens, chutes, and storage bunkers. Eventually, though, steampowered conveyor belts on the picking tables and steamdriven colliery railroads between pithead and bunker and from bunker to transport were introduced thereby matching the speed with which coal could be handled to the rate at which it was being mined. Ventilation was also vastly improved by steam machinery. Hitherto coal-burning furnaces located in the shafts created moving air currents that brought cooler air down from the surface which forced the warmer stale air out through the pithead. The actual volume of air so circulated was pathetically small, however, until steamdriven fans were installed to speed this process, too.⁸

On balance it might seem that technical advances in the coal industry occurred as they were needed, that collieries were particularly favoured by the technical advances of the Industrial Revolution. Possibly, but it must be realized that the gains described above occurred over a period of two centuries, that desperation often was a primary

⁷ Stowers, *loc. cit.*, and Ritson, *loc. cit.*

⁸ See fn 6 above.

motive in pursuing technology, and that even by 1850, no end was in sight of the need for more technical innovations. There was a tendency to have several outstanding problems remaining for every physical obstacle cleared. A case in point was the shortcomings associated with the "room and pillar" method of coal extraction. By leaving large columns of uncut coal in place, the mine roof could be supported. But as the mines went deeper, even the largest columns could not stand the overbearing weight. Hence, increasing amounts of timber for shoring were necessary with steampower being the key here, too, as it alone could provide the means for producing large quantities of sawn wood. It meant, of course, that more men were needed, both in the sawmills and the mines, but it was a price that had to be paid. When eventually it became plain that no amount of shoring would hold-up the roof, (a circumstance reached at about 1,500 foot depth), the experimental "longwall" method had to be adopted. This was a system that turned out to be less wasteful of coal than the room and pillar approach, but it was harder on the miners as it required much more packing and hauling. In practice long-wallling had the effect of creating a narrow aisle at the face, advancing with each cut while the coal was taken back and the debris used for roof support was moved forward.⁹

Introducing these vital devices and methods created several major problems for both owners and workers. The latter, mostly uneducated, had to master and then maintain many new techniques and skills. Operating power machinery, particularly equipments with little or no regard having been given to safety features, was a new hazard and one that

⁹ *A Textbook on Coal Mining* (1896), pp. 15:1-16.

caused innumerable accidents, often fatal. For the owners the principal issues were finding and retaining good managers on one hand and training operators on the other. As the collieries grew in size and sophistication so did the workforce, making leadership as critical an agent of productivity as any other. By the middle of the nineteenth century this issue was solved in Britain through the use of resident managers who in turn were supported by oversmen who supervised teams of specialized workers. Indeed, by the 1850's upwards of twenty separate trades were required to operate the large collieries.¹⁰

Technology had another highly important role to play in the progress of coal mining, for the one remaining obstacle to the latter realizing its fullest potential as an industry was in the need to move beyond its place as a supplier of domestic heating source to a position in which coal would be the basic fuel of manufacturing and transport. With technical breakthroughs in iron and steel manufacturing, the metallurgical uses of coal increased rapidly.¹¹ The connection between railway and colliery technologies has been mentioned; it is worth noting that manufacturing itself became inextricably linked to the coal supply when new industrial enterprises were started on or near the coal fields. And with this activity came the new industrial towns and cities.¹² How

10 *A Textbook on Coal Mining* (1896), *passim*. See also chap. 6.

11 Nef, "Coal Mining and Utilization", pp. 82-3.

12 Ashton, *Coal Industry of the Eighteenth Century*, pp. 112-30; Nef, *Rise of the British Coal Industry*, vol. 2, pp. 418-48. For a wider view of the coal industry's impact upon manufacturing centres, see A. Redford, *Labour Migration in England, 1800-1850*, Manchester (1964) pp. 436-59. 36-59.

much these technological events and trends affected the rise of British Columbia's coal industry shortly will be seen, but it is important to remember that by the time coal mining began on Vancouver Island, colliery technology had progressed to the point where most of the major physical obstacles to exploration, extraction, handling, and distribution had been overcome in Britain.

II

REMOVING WHARF~~SIDE~~ AND SHIPPING BOTTLENECKS Colliery-building by the HBC did much to establish reasonable work-flows in exploration and extraction, but little to speed loading and transport. Actual production was still sufficiently small at this time as not to be affected by bottlenecks in handling and distribution, though it was obvious to Charles Nicol, especially, that as the directors moved ahead with their plans for expanded markets, the colliery would need a new and substantial transportation network to ensure sales kept pace with production. In view of the short time these mines had been operating, why was Nicol so concerned? Although the original pits were at tidewater, by the 1860's the nature of the Nanaimo coalfield necessitated the opening of mines several miles inland from the harbour. Moreover, the Nanaimo Coal Company's ship loading facilities were totally inadequate. Nicol was fully aware of this, as was the Royal Navy officers, one of whom wrote, "the appliances for delivering the coal [at Nanaimo] are so faulty that a ship had to lie three or four weeks before she could take in a load".¹³ Nor should it be

¹³ Cmdr. R.C. Mayne, *Four Years in British Columbia and Vancouver's Island*, 1864, p. 372.

forgotton that the VCMLC's optimistic view of the coal trade made it imperative that production should increase annually, and in the resident manager's view, this meant continuous upgrading of the whole mining apparatus. By the mid-Sixties a reasonably effective coal loading facility had been installed on his orders, thereby making it possible to reduce loading time for even the largest ship from twenty days to one - once the vessel was alongside the jetty.¹⁴ Nicol also greatly improved the speed with which coal was transferred from pithead to wharfside by installing a colliery railway. On 21 August 1865 the VCMLC began operating a British-built steam locomotive (the 20 hp *Pioneer*) which pulled a dozen five ton coal hoppers along a one mile track between the mines and the sea.¹⁵ This innovation alone doubled the rate at which coal could be transported between the mines and the harbour, and it became Nicol's policy to extend railway trackage to each new pit as was opened.¹⁶ A second but smaller locomotive arrived from England in 1866, followed by a third, the *London*, largest yet, in 1874.¹⁷ By this time the Vancouver Coal Company had six mines (half of them working) within a three mile radius of the harbour. About two miles of track had been laid overall, and all three locomotives were in daily use, one on the wharf, and

14 See chap, 3, pp. 101-06 above.

15 *Nanaimo Gazette*, 21 Aug 1865, p. 1. According to R. Turner, *Vancouver Island Railroads*, San Marino, (1973), the *Pioneer*, ultimately arrived from England in 1863 (p. 14). See also pp. 101-03 above.

16 See chap. 3, pp. 106-08 for details of Nicol's plans to develop the VCMLC properties.

17 Turner, *op. cit.*, pp. 14-5, and G. Wellburn "research notes" on B.C. logging and coal mining histories (copy held in BCPMmh).

others inland.¹⁸ As for shipping itself, the VCMLC relied almost exclusively upon outsiders. Experiments with the S.S. *Fideliter*, a small steamer purchased by the company to transport passengers, freight, and coal between Victoria, New Westminster, and Nanaimo had shown the value of light communications between communities, but proved little regarding the bulk carrying of coal.¹⁹ The vessel sunk by accident in 1865, and no further attempt was made by the VCMLC either to participate in the coasting trade, or to create a deep-sea collier fleet of its own. This made good sense since on the average fifty vessels per month called at Nanaimo for coal.²⁰ In view of the cost involved in purchasing, operating, and maintaining colliers, especially when adequate shipping already existed and when all available funds were needed for colliery expansion, a small operation like the VCMLC was in the 1860's could not afford to experiment much with ships of its own. Instead, it did well to focus its main attention on improving its shore transport and harbour facilities/

IMPROVED DRILLING AND PROVING METHODS. Major changes in mining techniques and equipment were less common in B.C.'s collieries after 1870 than before. Some important innovations were made during the second period, but most often it was a case of making small improvements to existing methods and machinery. A significant breakthrough in exploration activity was achieved by the introduction of diamond-drilling. Prior to the 1860's the best available method for sinking bore holes was pounding steel-tipped

18 B.C. Min. of Mines, *Annual Report*, 1874, p. 19.

19 *Nanaimo Gazette*, 10 Jul 1865. See chap. 8 for a discussion on shipping and the coal trade. For more details on the *Fideliter* see p. 100 fn 27 above.

20 *Daily Colonist* monthly shipping reports, 1860-70.

iron rods into the ground. Originally this was a two man task; one holding the rod, the other hammering.²¹ Eventually small steam hammers called "monkey" engines were employed, but gains were small in that drilling speed was bought at the expense of more rod breakage and more time needed to haul the heavier equipment from site to site.²² Early in 1875 the Vancouver Coal Mining and Land Company headquarters purchased a Beaumont and Appleby diamond drill in Britain and sent it to Nanaimo along with an English engineer hired expressly to install, operate, and maintain the new equipment. Apparently, the VCMLC management then formed a subsidiary called the Diamond Rock Boring Company which acted as an exploration contractor to the parent firm.²³ When in place, the equipment consisted of a wrought iron head frame holding a hollow "quill" into which iron rods were inserted. A steel crown imbedded with industrial diamonds was attached to the lower rod, and this vertical apparatus was set to rotating by a belt connected to a small steam engine. Downward pressure varying between 400-800 pounds was applied by a carefully balanced weight-pulley system.

By so combining hardness, weight, and circular cutting motion it was possible to penetrate sandstone at the rate of four inches per minute, limestone at three, granite at two, and quartz at one.²⁴ Percussion methods by comparison penetrated only fractions of an inch per

21 Morgan, *Mining Tools*, pp. 42-71.

22 M. Bate, "Reminiscences", *Nanaimo Free Press*, 16 Feb - 13 Apr 1907.

23 B.C. Min. of Mines, *AR*, 1875, pp. 20-1.

24 *Ibid.*

minute. Additionally, because impact technique quickly damaged and soon destroyed cutting rods, a large blacksmith shop was needed to maintain a steady supply of prospecting tools. Circular drilling, however, was less wasteful of gear, and offered other major advantages, in that the rods need not be solid, thereby allowing water to be pumped down for lubricating and cooling. Equally important, a rock core automatically was forced up the rod's interior as the crown cut deeper. This in turn revealed precisely what each strata held, making it possible for the first time to accurately map the whole coalfield. Within three months of starting, the diamond drill had cut a six inch, 500 foot bore hole, inspiring the VCMLC resident manager to say, "the diamond drill will probably lead to the opening of other new mines and a still further enlargement in the supply of Nanaimo coal".²⁵ As significant a technological advance as the diamond drill was, it proved to be of little immediate value. The VCMLC was plagued by so many problems - technical and managerial - that the information gained from the new boring equipment had no influence upon productivity; it helped reveal the colliery's potential, but nothing more. The Dunsmuirs acquired a diamond drill in 1887 for exploration of the Comox coalfield. Naturally it was put to work in surveying, and in view of the owners' policy of rapid expansion, the bore-hole results were applied immediately to both planning and operations.²⁶ Of all the Island's coal lands to 1891, the Comox deposits were the most systematically and efficiently worked, largely

25 B.C. Min. of Mines, *AR*, 1875, p. 20.

26 *Ibid.*, 1888, p. 394.

because management, on the strength of effective exploration, was determined and able to begin with a logical extraction plan.

INNOVATIONS IN DEEP MINING Much of the Wellington Colliery's success with technology stemmed from its apparent ability to learn from its own and others' experience. Mine explosions in 1879 and 1884 showed the need for improved ventilation. By 1886, Dunsmuir had sunk a third air shaft and had installed a thirty foot ventilating fan driven by two engines. A twelve foot fan also operated continuously while below ground several furnaces driving stale air and gas to the surface burned "round the clock". An elaborate system composed of parallel pathways - one for working, one for air - interrupted periodically by movable brattices to regulate air flow - was put in place.²⁷ Government safety regulations regarding fires and explosions were generally observed, particularly with regard to the use of safety lamps which were standard issue in all mines - though open flame lamps were used once an area was declared safe for mining by the fireman at the start of each shift. In fact, all collieries permitted the use of whale-oil lamps, and this continued after carbide and even electric lighting were introduced.²⁸

As the coalfaces retreated deeper the requirement for timber and lumber grew accordingly. The VCMLC especially had a large need of

27 B.C. Min. of Mines, AR, 1886, p. 249. Repeated references, some highly detailed, of air supply systems in operation are found in this source for the years 1877-89.

28 BCPMmh coal industry artifact collections. Electrification of the Island mines occurred early in the 20th century. By 1913, the Dunsmuir collieries were fully equipped with modern electricall systems. For a description of these mines in operation, see F. Sawford, "Electrically Operated Coal Mines. Equipment at the Mines of Canadian Collieries (Dunsmuir) Ltd." *CIMM Transactions* 25:421-45 (1922).

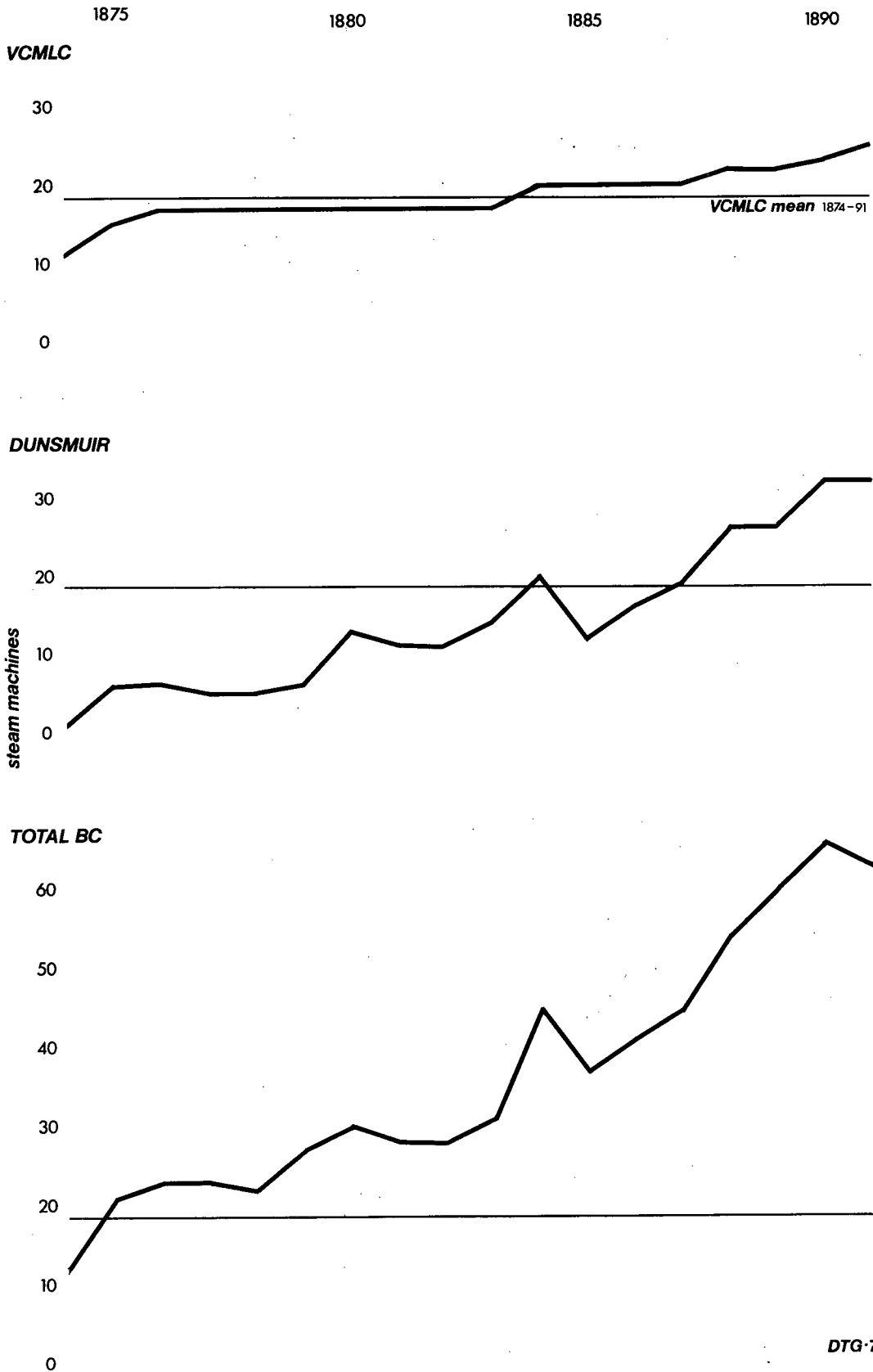
timber when it was forced to begin submarine mining in the 1880's. And in fact, the availability of shoring materials like timber and rock was a critical factor in most cases of flood prevention in mines located under or near the sea. Shallow riverside and lakeside shafts were similarly affected.²⁹ By the late 1870's all large collieries operated their own sawmills, though timbering was also contracted-out. While this requirement for wood products by the mines had the effect of stimulating logging and millwork on Vancouver Island, it would be too much to claim that the rapid rise of B.C.'s forest industry after 1890 was due to its earlier links with coal mining. No colliery owner became a lumber baron, too. Lumbering developed as a resource industry in its own right, obtaining its factors of production from other sources. Coal mining also contributed markedly towards the growth of transportation on Vancouver Island. Collieries continued to make harbour improvements well into the 1890's, and their work in road building served to improve local communications both in the Nanaimo and Comox districts.³⁰ Construction of the Nanaimo and Esquimalt Railway between 1884-86 was an enterprise born as much out of Robert Dunsmuir's desire to acquire large grants of coal lands as it was to develop a punctiform land transport system between the coal mines and the nearest urban market.³¹ In any event, the new railway

29 According to A.F. Buckham ("Research Notes" BU C 110, *passim*), the VCMLC was forced to keep pace with demand for coal by developing mines on its properties south of Nanaimo. By 1880 its original holdings were exhausted, forcing the company to buy more lands and to start submarine mining. See also Dickson (1935).

30 Sundry maps in B.C. Topographical Series, Nanaimo and Comox Districts, 1870's-90's, PABCmd.

31 The best available account of the E & N's construction is Turner, *Vancouver Island Railroads*, pp. 39-76. For some detail on the coal lands acquired by R. Dunsmuir see chap. 5 of this thesis.

Fig. 7-1 BC COLLIERIES: No. OF STEAM MACHINES (excluding locomotives)



stimulated the Island economy further, as did Dunsmuir's ship-building programme that he designed for the purpose of creating his own colliery fleet. By the mid-Eighties, Wellington Collieries had amassed through construction and lease five vessels for their coal trade to California.³²

Surface arrangements at all collieries were also upgraded during the years 1874-91. All main shafts were topped by headframes, most of which included "tipples" and large conveyor belts. Railway trackage grew from two miles to a total of thirty-eight. There was a threefold increase in the number of working locomotives while the amount of colliery rolling stock more than doubled. Forty-eight steam engines (most of them stationary) were added to the collieries in these years, and the available horsepower from steam equipment climbed at least ten times.³³ As will be seen in the next section, these technological changes contributed directly and vitally to productivity increases.

UPGRADING THE PHYSICAL PLANT In the previous chapter it was shown that until Robert Dunsmuir proved otherwise with his emphasis upon low-cost Oriental labour, colliery managements believed both production and productivity increases could most easily be achieved through corresponding rises in the amount of fixed capital in place. In other words, men like

32. *Lewis & Dryden's Marine History of the Pacific Northwest*, 1895, pp. 303-26. Given the Dunsmuir's tendency to build, purchase, and lease vessels, the figure of 5 cannot be considered reliable. It is, however, reasonable to say that it fairly represents the scale of their fleet at its height. *Lewis & Dryden* is not definitive, and a wide variety of other sources were checked for clues as to the Wellington Collieries' ships.

33 B.C. Min. of Mines, *AR's*, 1874-89, *passim*.

John Muir, Joseph McKay, and Charles Nicol held the view that output levels were linked more directly to the size and sophistication of the colliery's physical plant than to any other factor. Two circumstances appeared to strongly support this kind of argument: First, in the earliest years British Columbia's coal mines had so few machines that whenever new power equipment was introduced - like steam pumps, hoists, locomotives - the impact upon operations was immediate and impressive. Second, labour, skilled or otherwise, was chronically in short supply, making the influence of any new machinery seem more essential than it need have appeared had there been sufficient hands available to perform the work. Whether or not such views were correct for the time is probably less important than the long-term effects they had upon the province's coal industry. By strongly emphasizing technological improvements, even to the point of jeopardizing profits, these men and others accelerated the modernization of B.C.'s collieries. Being a latecomer, Dunsmuir had a greater pool of cheap labour to draw from than his predecessors had, but he, too, was forced to upgrade the physical assets of his colliery in order to sustain underground operations and remain competitive with the Vancouver Coal Company. Since his mines were located further inland than the VCMLC's, Dunsmuir had to lay longer stretches of railway track to reach the sea. This in turn prompted him to increase rapidly the amount of rolling stock he used. Dunsmuir also had more extensive wharfage than any other coal company, and he was the only owner to build his own collier fleet. For a time he had a higher declared plant value than the VCMLC, (normally as good a measure of any of a proprietor's emphasis upon technology), but it must be noted that in Dunsmuir's case it was a matter of placing

proportionally more capital into transport facilities than did the Vancouver Coal Company which, until the late eighties, led the industry in the numbers of stationary steam engines and other major pieces of equipment used in the mines and upperworks.³⁴ Both of the province's largest coal companies increased the declared value of their plants between 1874-91, though only gradually so. Dunsmuir edged ahead of the VCMLC in the mid-1870's in this regard, but when Robins became resident manager of the latter, he insisted upon and was given authority by the company administration to invest \$200,000 in one year on upgrading the plant - an amount that enlarged the VCMLC's fixed capital by 233 percent!³⁵ Yet even at that the VCMLC's declared plant value was only \$350,000, a rather unimpressive figure in light of either the workforce size or the level of annual production. A better indication of the rate at which technology had been introduced to the industry is seen in the whole province statistics which shows a slow rise in declared plant value from \$183,000 to \$652,500 between 1874-91.³⁶ The slope of the B.C. graph is greater than either the VCMLC's or Dunsmuir's, however, and infers that the industry generally was advancing in technology at a fairly impressive rate despite the apparent tendency of the largest collieries to place low dollar values on their respective collieries.

34 See Table 7-2 below.

35 B.C. Min. of Mines, AR, 1884, p. 435.

36 See Table 7-1 and Fig. 7-2 below.

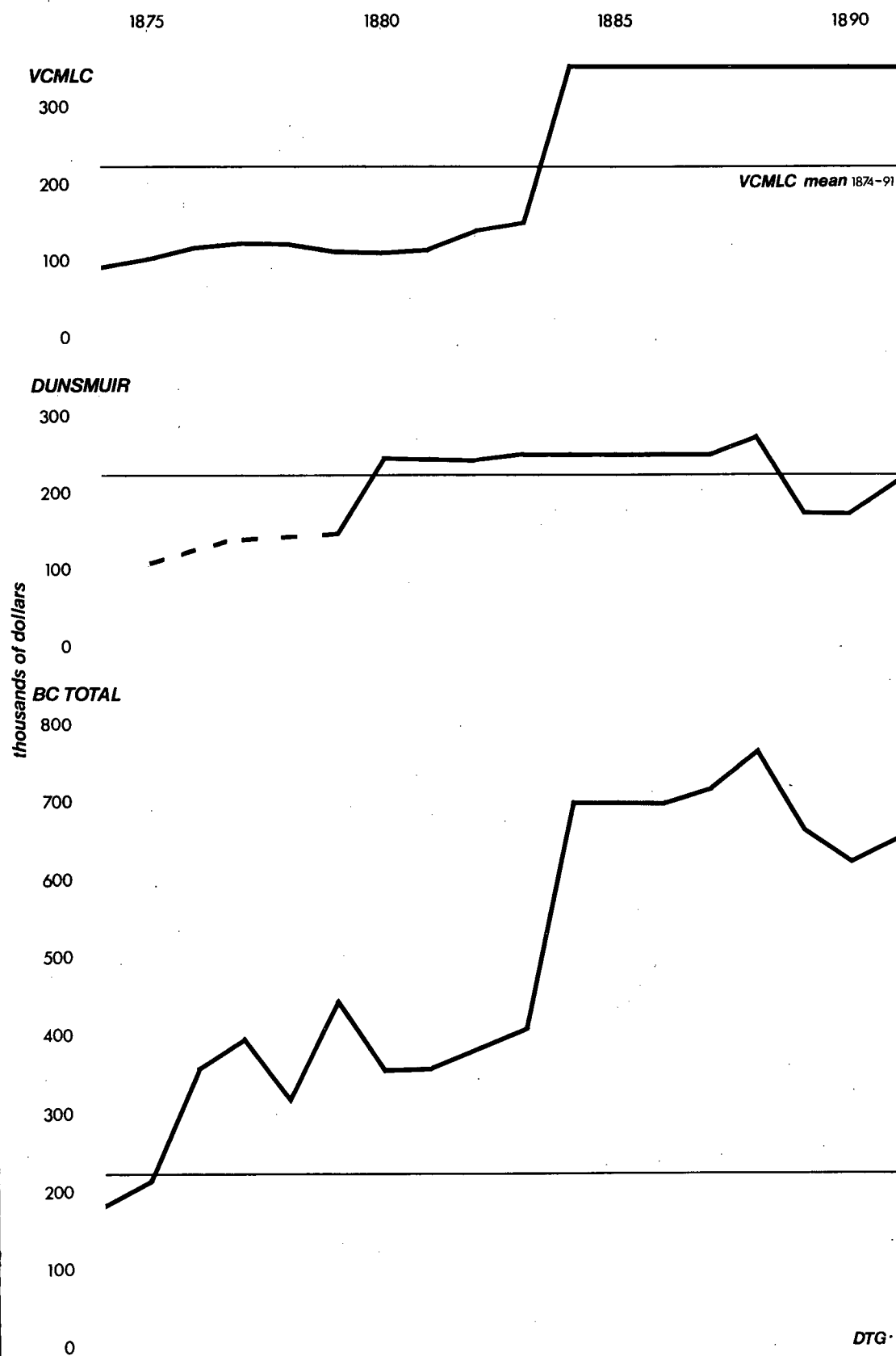
Table 7-1: B.C. Collieries: Plant Value Statistics, 1874-91.³⁷

Declared Plant Value (dollars)				Tons Raised per Dollar of Declared Plant Value		
	VCMLC	Dunsmuir	B.C.	VCMLC	Dunsmuir	B.C.
1874	93,657	-	183,657	.55	-	.44
1875	102,398	110,000	212,398	.58	.46	.52
1876	118,000	-	358,000	.63	-	.31
1877	123,000	140,000	397,000	.77	.35	.39
1878	120,000	-	322,000	.26	-	.53
1879	112,000	145,000	447,000	.93	.78	.54
1880	110,000	245,000	355,000	.71	.77	.75
1881	115,000	245,000	362,000	.41	.74	.63
1882	140,000	245,000	385,000	.37	.94	.73
1883	150,000	250,000	410,000	.24	.69	.52
1884	350,000	250,000	700,000	.38	1.02	.56
1885	350,000	250,000	700,000	.40	.88	.52
1886	350,000	250,000	700,000	.32	.74	.47
1887	350,000	250,000	719,000	.40	.96	.57
1888	350,000	275,000	765,000	.74	.73	.64
1889	350,000	175,000	665,000	.64	1.74	.87
1890	350,000	175,000	625,000	1.00	1.40	1.09
1891	350,000	212,500	652,000	1.51	2.16	1.58
Mean	221,336	214,500	497,670	.59	.96	.65

MACHINE PROFITABILITY AND PRODUCTIVITY. Again because of the available statistics, only the coal industry's two largest producers can be compared to one another (and to the whole province) when assessing performance. Determining the effect technological improvements had upon colliery profitability through a comparison of the tons of coal each company raised per dollar of declared plant value is admittedly subject to question, but the comparison, when made, does fit the general pattern already revealed in this thesis that Dunsmuir's performance rose as the VCMLC's fell, and vice versa. In 1875, for instance, the Wellington Colliery raised only 46 tons

³⁷ B.C. Min. of Mines, *AR's*, 1874-91.

Fig. 7-2 BC COLLIERIES: DECLARED PLANT VALUES



of coal per dollar to the Vancouver Coal Company's 52 tons. But in 1883, the year when the VCMLC's output had fallen to a mere 16.3% of the provincial total, Dunsmuir's tonnage to dollar ratio was .69, the VCMLC's .24 or just more than one-third. In 1888, under Robin's management and with a much greater declared plant value, the Vancouver Coal Company had risen to become virtually equal to Dunsmuir in this category. In short, there is a clear parallel between machine profitability, (as inferred by declared plant value), and other performance indicators discussed so far in this study. And the pattern holds in regard to machine productivity.

Excluding locomotives, rolling stock, trackage, and wharves, those types of colliery machines which can be identified for comparison purposes are those found in the mines and upperworks. These include steam driven engines, pumps, drills, and fans. Such equipments as lathes, presses, bench drills, and other small machines as used in repair shops are not considered.

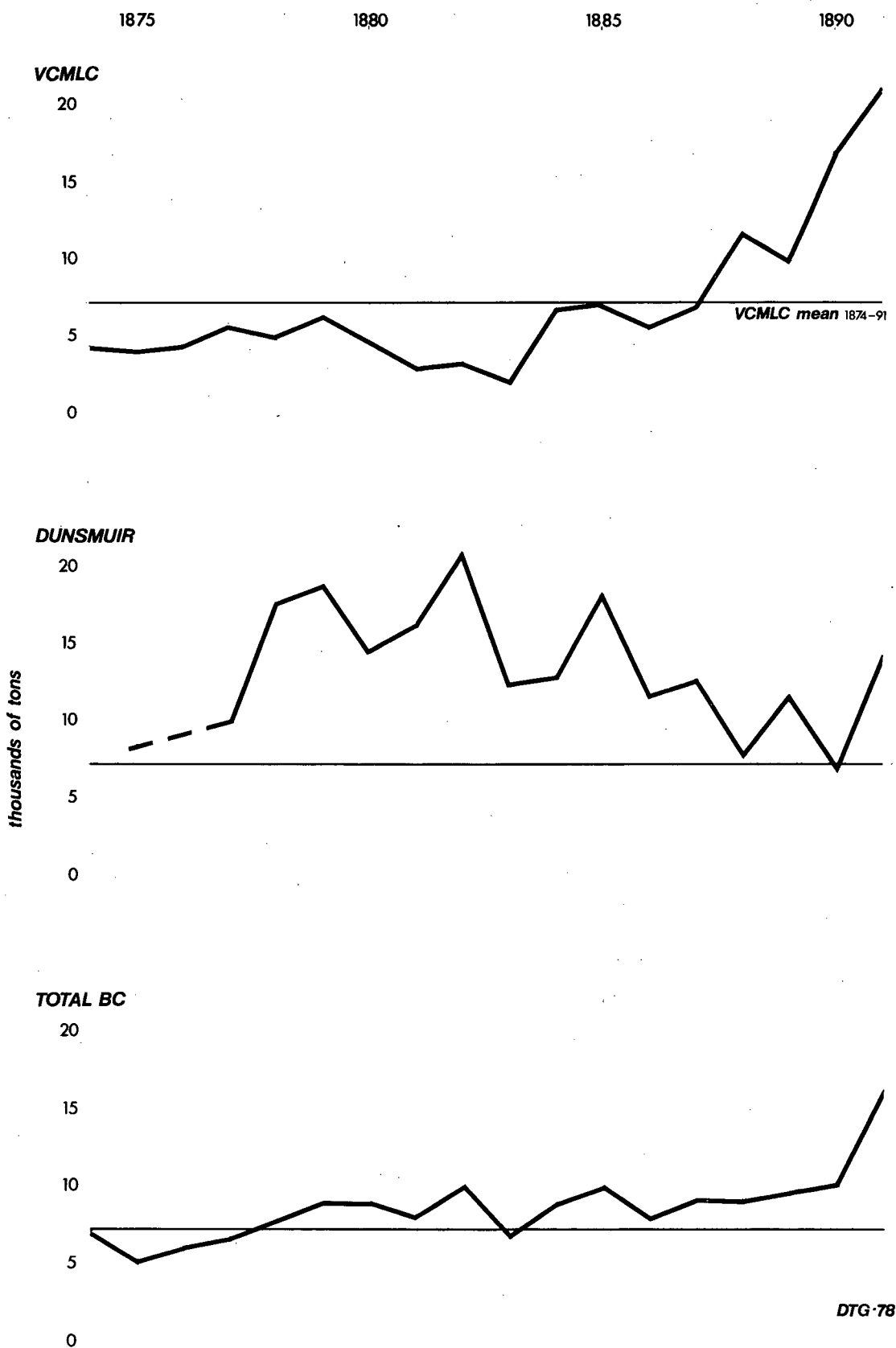
Table 7-2: B.C. Collieries: Large Steam Machines in Operation and Machine Productivity, 1874-91.³⁸

Machines				Tons Raised per Machine		
	VCMLC	Dunsmuir	B.C.	VCMLC	Dunsmuir	B.C.
1874	11	—	12	4,702	—	6,750
1875	15	66	21	3,973	8,424	5,238
1876	17	6	23	4,341	8,823	6,043
1877	17	5	23	5,577	9,749	6,696
1878	17	5	22	4,831	17,672	7,773
1879	17	6	27	6,131	18,965	8,926
1880	17	13	30	4,573	14,605	8,933
1881	17	11	28	2,783	16,459	8,143
1882	17	11	28	3,025	20,974	10,071
1883	17	14	31	2,098	12,240	6,871
1884	20	20	45	6,693	12,727	8,757
1885	20	12	37	6,918	18,333	9,865
1886	20	16	41	5,638	11,615	7,967
1887	20	19	45	6,936	12,590	9,186
1888	22	26	54	11,764	7,707	9,061
1889	22	26	60	10,175	11,715	9,664
1890	23	32	66	16,935	7,626	10,275
1891	25	32	63	21,098	14,374	16,335
Mean	19	15	36	7,122	12,806	8,697

These statistics almost speak for themselves; both companies follow our now established pattern in which Dunsmuir's collieries' overall performance is considerably greater than the VCMLC's and in which a rise of one firm's fortunes is met by a fall in the other's. Equally important, the industry's performance, while less dramatic in its rate of change than either of the two largest collieries, tends to improve gradually over the period in question. Machine productivity for B.C.'s coal industry to 1891 increased as did labour productivity. Undoubtedly there were many reasons for this, the strongest of which

38 B.C. Min of Mines, AR's, 1874-91.

Fig. 7-3 COAL OUTPUT PER STEAM MACHINE (*excluding locomotives*)



is bound to be a combination of having sufficient machines in place to be a modern apparatus and enough experience (by both management and labour) to use a wide range of equipment effectively. There are other important conclusions that can be made from comparing these companies' assets: On balance, the VCMLC enjoyed a marginal advantage over the Dunsmuir operationssin the numbers of steam machines installed; yet on the average, the former's tonnage raised per dollar of fixed capital was little better than half that of its chief rival and its tonnage to machine ratio, just more than two-thirds. One must conclude, therefore, that the Dunsmuir collieries were substantially more efficient in their use of technology. Finally, in light of the fact that the mean amounts of plant value declared by these firms fall between three percent of each other, neither could be considered significantly more technology intensive than the other. Both certainly became more technology intensive over the years 1874-91, as did the coal industry itself, but not to a great degree. Indeed, the evidence points to the industry originating and remaining labour intensive throughout the period in question.

SUMMARY OF MACHINE USE AND PRODUCTIVITY British Columbia's coal industry started with no fixed capital. Chronic worker shortages, coupled with an early need to begin underground mining, forced management to seek labour-saving methods which could only be achieved through greater use of technology, particularly steam-driven machinery. Both the HBC and VCMLC managements attempted to substantially increase the size and sophistication of their respective collieries, to the point where their expenditures received harsh criticism from company administrators. Robert Dunsmuir's employment of large numbers of Oriental workers at very low wages,

together with the rapid rise in output from his collieries after 1874, revealed the province's coal industry could be both labour intensive and highly profitable though there was no question that the need for technological improvements remained. By the late eighties, when the coal trade was almost completely monopolized by the two largest companies, both labour and machine productivities were advancing at reasonable rates, indicating to us that both firms had a modern colliery apparatus in place which they were using effectively. The Dunsmuir operations made overall better use of their technology than the VCMLC, a conclusion that fits well with others made so far in our comparisons of these collieries' performances.

Chapter Eight

MARKETS and SALES

INTRODUCTION As W.S. Jevons' study (1865) of British coal reserves had it, Vancouver Island was "placed very favourably for the shipment of [its coal] product".¹ Located less than 700 nautical miles north of San Francisco, the fastest-growing port in the eastern Pacific, and only 90 sea miles from Victoria harbour, the tidewater coalfields of the Nanaimo district were indeed well situated to supply coal for a range of customers that ultimately included steamship lines, navies, wholesaler-retailers, manufacturers, households, and public utilities. Moreover, despite often vigorous competition from coal producers along the west coasts of the Americas and as far away as Britain, Australia, and the eastern United States, British Columbia's collieries eventually were able to capture and hold a significant portion of the Pacific coal market, mainly due to aggressive pursuit of foreign sales by B.C. producers. Marketing thus became a vitally important factor in Vancouver Island's coal industry, and it is argued in this chapter that coal sales significantly affected annual colliery production as well as accounted in large part for the way in which B.C.'s early coal companies were organized. This chapter also reveals the main market trends for coal in the northeastern Pacific to 1890, traces the important sales' events of B.C. collieries, and assesses the effects of marketing both upon production levels and management's broader goals.

¹ W.S. Jevons, *The Coal Question. An Inquiry Concerning the Progress of the Nation, and the Probable Exhaustion of our Coal Mines*, London, (1865) 1 p., 355-5, p. 355.

I.

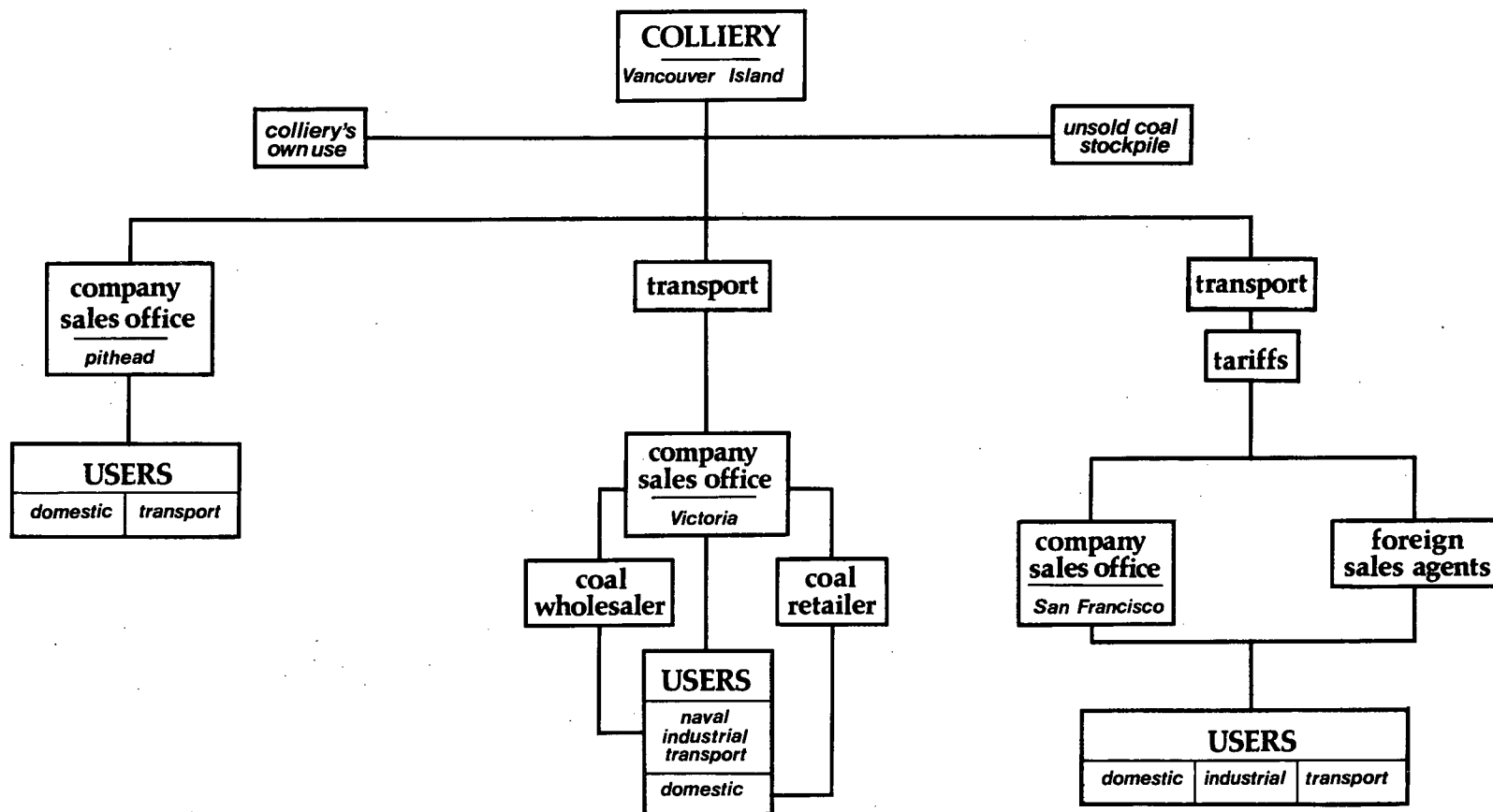
GENERAL CONSIDERATIONS ON COAL MARKETING Establishing and maintaining markets for natural raw materials consists mainly of developing policies and methods unique to the kinds of resources being produced. Unlike manufactured goods or even farm products, the extent and locations of raw materials like timber, fish, and, above all, minerals are fixed by nature. Hence their supply is not controlled by man, merely exploited by him. If luck is with coal producers, their lands are close to consumers, or located where adequate transport exists. Since coal is a bulky commodity relative to its value, there are limitations on the types of transport that can be employed to move the coal to market. For B.C. producers in the nineteenth century, maritime shipping alone provided the means of access to foreign markets, whereas a large portion of the local (or domestic) market came to be supplied by railway. In any event, the expense of transportation in all but pithead sales constituted a significant part of the total production cost. In the competitive eastern Pacific market, this cost rebounded sharply on producers, hurting their profits and pushed one major colliery to build-up its own transport service.²

Another important cost factor in coal sales is the channels of distribution required to reach the user.³ In some cases these are simplified by means of closely integrating the source of supply with the

2 The Wellington Colliery had its own colliery fleet; see chaps. 5 & 7 for details. Of background value in this study of coal markets was C.F. Phillips and D.J. Duncan, *Marketing Principles and Methods*, Homewood Ill. (1968) Part V, 1968, Part V.

3 See Fig. 8-1.

Fig. 8-1 BC COAL: CHANNELS OF DISTRIBUTION, 1859-91



consumer (or user). Nineteenth century steel companies and railways, for instance, often owned their own coalfields while in this century petroleum refiners and papermakers respectively possess oil fields and licenced forest tracts. The refineries also own pipelines, tank cars, tankers, and sales outlets which reduces the need for middlemen and thereby additional costs.⁴ For early B.C. coal producers, no opportunity for such integration existed. The local economy was too small for a large manufacturing sector, meaning neither backward nor forward linkages between coal mining and other industries were possible - at least on any major scale. American railway interests did appear interested in purchasing the Island's coal lands after 1880, but public opinion was so strongly against this possibility that the threat disappeared. Ironically, on the heels of the American failure, Robert Dunsmuir was urged by government to build an Island railway, which he did with the help of American sub-contractors, and for which he received massive land grants in partial payment.⁵

Finally, as part of this background to the coal industry's markets and sales, it is important to know that during the period 1849-91, the chief outlet for B.C. coal was a protected market. American coal producers enjoyed a high tariff which naturally further cut-into the

4 Phillips and Duncan, *op. cit.*, pp. 472-87. A.O. Hirshman, *The Strategy of Economic Development*, New Haven, (1958) Uisfwell, 1958 is worth consulting on this theme.

5 Public opinion was aroused in the early eighties to the possibility of the Northern Pacific Railroad building the expected Esquimalt to Nanaimo rail link. It was charged that Villard, president of the NP, was interested chiefly in the Island's coal lands. For some details as to the outcome of this affair, see chap. 1. *Colonist*, 24 & 29 Jun 1881.

competitive position of all foreign suppliers, including British Columbia. The Reciprocity Treaty of 1854-66 between British North American colonies and the United States, (which allowed Nova Scotia coal to enter the eastern seaboard duty-free), did not extend to either the west coast states or territories. In the words of one historian, the U.S. Congress "held the tariff sacred", and could not contemplate free trade beyond the concessions it made in designing the 1854 agreement, and in fact began planning for abrogation as early as 1857 - five years before Island producers were keen on developing a strong California market.⁶ Consequently, before 1892, B.C. collieries faced on the average a twenty percent "drawback" duty on their product. This tariff and high transport costs were constant constraints on profits from foreign sales. Yet as long as San Francisco's need for coal remained strong - as it chronically did - these downward pressures on production were easily offset by a demand-pull market.

WEST COAST MARKET TRENDS TO 1891 Recalling from an earlier chapter that the Hudson Bay Company's eagerness to "open a new branch of trade" was its main inspiration for developing Vancouver Island's first coal mines, and remembering the obstacles the HBC faced in attracting customers due to its exorbitant pricing policy, one cannot avoid the impression that the Company's marketing approach was a confused mixture of foresight and greed.⁷ While it is true that steam navigation in the Pacific was on the rise and bound to increase substantially with time, there were too few

⁶ The best account on this subject is D.C. Masters, *The Reciprocity Treaty of 1854*, Toronto: (1963) Island and Stewart Ltd., 1963.

⁷ See chap. 2 of this thesis.

steamships or any other coal users in the northeastern-Pacific before 1848 to cause high levels of coal demand. The California gold rush abruptly changed this picture by creating extensive demand for a wide range of goods that had to be supplied by maritime trade. Gold discoveries in Australia in 1852 and similar finds in British Columbia six years later further stimulated ocean commerce which by now was well served by steamers. The chief beneficiary of this economic activity was San Francisco which had become in addition to the west coast's financial metropolis, principal coaling centre for the region, importing and handling upwards of 168,000 tons of coal in 1862 alone.⁸

Still it should not be thought that this entrepot provided a stable market for Vancouver Island coal. In fact, San Francisco from the early fifties to the mid-eighties was a scene of constant business upheaval often as much in depression as in prosperity. Once the first boom had passed, recession set in causing among other problems a glut of unsold coal. In their eagerness to dump some of their own over-production, British coal suppliers contributed much to this state of affairs, and were largely responsible for similar occurrences during the next two decades. A more mature economy might have withstood such pressure, but California before 1885 had insufficient financial or industrial strengths to do so. Not untypical of the difficulties befalling

⁸ Mathew Macfie, *Vancouver Island and British Columbia*, London, (1865) pp. 141-51. Also, T.A. Rickard, "The Gold Rush of '49" *BCHQ* 14:41-60 (1950). For views of British coal marketing practices see H.S. Jevons, *The British Coal Trade* (1915), Newton Abbott (1969); P.M. Sweezy, *Monopoly and Competition in the English Coal Trade, 1550-1850*, Cambridge, Mass. (1938); N.W. Rostow, *British Economy of the Nineteenth Century*, Oxford (1948) pp. 74-85.

the new state were the events of 1855. In a year-end summary of local commerce, the *Alta California* reported the gold mines were "almost prostrate" from drought, though February rains had helped. More ominous for foreign suppliers, San Francisco consignees were well stocked and had not looked forward to the arrival of a large Atlantic clipper fleet in the spring. A lengthy monetary crises prevailed, forcing the two largest banks to fail which intturn caused a financial crash. By the beginning of the second quarter, too many vessels had arrived for normal trade, squeezing money sources dry. Unable to receive payment from consignees, the ships refused to discharge cargoes. Agricultural products from the interior mounted up because of a lack of shipping, causing a severe slump in exports. Pressured alternately by glutted stocks and a lack of cash, San Francisco merchants stood by helplessly while prices fluctuated wildly, causing them further troubles. One hundred and ninety-seven firms went into bankruptcy, immigration slowed by two thirds, (while emigration remained constant), and in August, when recovery should have began, the number of vessels entering port dropped dramatically.⁹ Although business conditions generally improved before the decade ended, California's economy wavered between good times and bad until the mid-sixties when in turn the discovery and exploitation of massive silver ore deposits, the American Civil War, and the building of the Central Pacific Railroad began to take their effect. A recession occurred in 1865-67, another in 1876, and a third in 1880. While each of these had serious effects on trade, they tended to pass quickly, making it possible for

⁹ Quoted in F. Soule et al, *The Annals of San Francisco through 1855*, Palo Alto, (1966) pp. 104-06, pp. 104-06

foreign suppliers to bide their time with hopes for better markets to come. The 1870's were disrupted by periods of high unemployment, labour strife, and political battles - often traceable to Oriental immigration and railroad subsidy policies. By the late 1880's, however, San Francisco had reached a level of maturity and prosperity that only could be encouraging to outsiders, including British Columbia coal producers, who had had little choice but to stay in the California market during its most tumultuous years.¹⁰

II

HBC MARKET STRATEGY AND SALES' POLICIES Officers of the HBC's Columbia District managing the newly-formed coal trade shared James Douglas' appreciation of the market which in part held that the Nanaimo mines not only had the potential of becoming the basis for an industrial community, but had the further promise of being a secure coal supply for the Royal Navy and British merchant steamers. In this they were joined by both the Admiralty and their London headquarters, with the consequence that whenever Vancouver Island coal showed signs of weakness in San Francisco the chief factor did not hesitate to promote pithead sales at the expense of exports. Douglas' argument usually hinged on the instability of the California market, but he was also disturbed by the low rates of return brought on by transport costs and drawback duties.¹¹ It would have been

¹⁰ Oscar Lewis, *San Francisco: Mission to Metropolis*, Berkley, (1966)-*passim*. 1966, *passim*.

¹¹ "Nanaimo Correspondence, 1852-53" and "Nanaimo Journal 1855-57", PABC MSS; W.N. Sage, *Sir James Douglas and British Columbia* (1930), p. 137; J.M.S. Careless, "The Lowe Brothers" (1969) - all *passim*.

hard to convince the HBC hierarchy that their preference for local buyers was not in the Nanaimo Coal Company's best interests, for the number of vessels calling at the pithead for coal climbed steadily after 1853. The Royal Navy, for instance, had been a regular customer since the NCC began operations. In 1855 the R.N. ordered 1,000 tons to be stockpiled at Esquimalt for ships engaged in its Crimean War raids, and by 1860 it was preparing plans for a coaling depot to be erected on Thetis Island in Esquimalt Harbour.¹² Concerned with the time lost in travelling to Nanaimo for coaling, Rear Admiral R.L. Baynes received his superiors' permission to erect a 1,500 ton coal shed and a 50 yard pier giving five fathom depth to ships alongside.¹³ A Victoria coal dealer, J.J. Southgate was awarded a naval contract to supply NCC coal at the newly built depot for 37s 6d per ton. Within weeks, Southgate delivered 500 tons, following with an additional 300 tons days later.¹⁴ With Victoria's population about 6,000 in 1862, a domestic market of some consequence had opened for the Nanaimo Coal Company, though management at the HBC subsidiary had chosen to allow middlemen like Southgate and Broderick to act as brokers in the wholesale - retail trade. By this time the pithead price of coal at Nanaimo had fallen from \$11.00 per ton

12 RAdm. Baynes to Sec. of Admiralty no. 9, 10 Jan 1860. Gt. Br., Admiralty Papers, II-14. (From typescript copy entitled "Royal Navy Coaling Procedures. Esquimalt and Nanaimo", 3pp., dated 7 May 1970, "Nanaimo" PABCvf).

13 Admiralty to Baynes, no. 81, *ibid.*, 30 Mar 1860.

14 Baynes to Admiralty, no. 149, *ibid.*, 9 Sep 1860.

to \$7.00, thus allowing these middlemen a profit of about twenty percent.¹⁵ They did not, however, make much of a road into the supplying of coal to visiting steamers as the bulk trade in coal and most supplies for ships' own fuel continued to flow through Nanaimo.

Most of the attention Douglas first gave to the Nanaimo Coal Company centred on its trading policies. Although he occasionally voiced concern over wage scales and other overhead costs, the chief factor was particularly anxious to avoid complex marketing practices which he believed would result from extending credit on coal sales to visiting ships.¹⁶ Partly this resulted from hard-won experience with defaulters generally, but mostly it stemmed from Douglas' eagerness to show that increasingly large amounts of mine development costs were being offset by cash receipts. By September 1853, NCC sales' policy had relaxed sufficiently to allow the *Active's* captain to purchase 100 tons of coal for \$500 in cash and a \$600 draft on William of San Francisco.¹⁷ In time a variety of payment methods were employed, but now extended credit lines appear to have been tolerated other than those to the British Admiralty and United States Navy Department, both of whose drafts were

15 Three coal wholesale-retailer firms were operating in Victoria in addition to Southgate at the time: R. Brodrick, Coal & Commission Merchant, Victoria Coal and Lumber Co., and Kavanagh & Co. All dealt in Bellingham Bay and English coal, but advertised prominently the Nanaimo product. Free delivery was included in the purchase price. After the VCMLC takeover, these firms continued to deal as before with the colliery. *Colonist*, 29-30 Dec 1862 and 26 Jan, 2 Mar 1863.

16 "Nanaimo Correspondence", *passim*.

17 McKay to Douglas, *ibid.*, 5 Sep 1853.

accepted without question. To encourage more domestic sales the NCC awarded Victoria merchants consignee status.¹⁸ These steps liberalized the coal trade to a degree, but for most foreign buyers, many of whom were first-time arrivals at Nanaimo, and at least a percentage of which were bound to be lost at sea, a cash-and-carry policy prevailed.

Despite the security and profits to be gained by the pithead and local coal trades, Douglas and his associates eventually were forced to acknowledge the fact that foreign markets were necessary if Nanaimo was to reach what they believed to be its full potential as the North Pacific's chief coal supplier.¹⁹ Overcoming their own conservatism by moving strongly into the California trade they knew had to be done, but their problem was not simply one of risk-taking in a competitive market. San Francisco's coal market was at its most unstable in the 1850's and highly unpredictable as to prices. Douglas had shipped 4,500 tons to that city in 1852 where he hoped to receive \$40 per ton. He had no way of knowing that English suppliers were planning to flood the California coal market at that time, and he was caught by their dumping practices which forced him to accept on this firstyoooccasion \$16 per ton for the NCC product.²⁰ The mid-fifties' California depression cooled his

18 "Nanaimo Journal", *passim*.

19 H. Labouchere to H.O.C. Select Cmttee (London), 1857, "Labouchere Papers", pp. 81-84, PAC MSS: J. Douglas to House of Assby (Victoria), 8 Jun 1857, *Van. Is. House of Assby Correspondence Book, 1856-1859*, PABC reprint 1918, pp. 17 & 28-9. See also Howay and Schölefield, *British Columbia* (1918), vol. 1, pp. 375-80.

20 Careless, "LowerBrothers" (1969), p. 6. This source quotes Thomas Loweras fearing that Douglas' disappointment with the "glutted" San Francisco coal market would stop further exports from Nanaimo. As the HBC's California agents, the Lowes had cause for concern, and in 1859 when trade generally was excellent, Thomas Lowe again complained of Douglas' caution, saying the latter's wariness of "gold booms" was preventing the NCC from making a "perfect little pile".

enthusiasm further; and even when San Francisco enjoyed an economic surge in 1858, (thanks, incidently, to the stimulus caused by gold discoveries in British Columbia), the HBC Was willing only reluctantly to increase its coal shipments to San Francisco, and at this no concerted action was taken by the Company to increase production specifically to meet the higher level of demand. In the sense that the California market finally opened itself to Nanaimo coal, rather than the HBC attempting to force its product in, Douglas' policy of caution appears to have been sound. After all, the Company had had no guarantee of stable prices at San Francisco, and this alone was sufficient reason for proceeding carefully.

Another obstacle to sales for the NCC in the mid-1850's was the low regard San Franciscans held for foreign coal. One source claimed there was:

a boundless supply of excellent stone [*sic*] coal, sufficient to satisfy all their demands Bellingham Bay now furnishes the great demand of the city. Hitherto, all the coal used was brought, *at great expense*, partly from Vancouver's Island and Chili, but chiefly from immense distances as Philadelphia, Liverpool, and other foreign parts.²¹

This early enthusiasm for a coal "near at home" folded once it became widely known that the Puget Sound product was inferior to B.C. coal, but for the NCC it presented a formidable hurdle to overcome, particularly since the Bellingham Bay supply was greatly assisted by the American tariff.²²

21 Soule, *Annals of San Francisco* (1966), p. 549; italics mine.

22 *Loc. cit.* Douglas was convinced that Nanaimo eventually would prove to be San Francisco's main source of coal despite the protection given by the United States to American producers. He mentions early in 1855 that the Bellingham Bay Coal Co. had "suspended operations due to difficulty in securing land and labour". He believed the American company had "expended \$60,000 without any return". He further believed the coal measures were poor, and noted the Bellingham operation had "neither pit nor engine". His views proved correct in time. "Douglas' Journal", 22 Mar 1855, HBCA (PAM) A11/75 fo 926.

Table 8-1. Prices of Nanaimo and Other Coal at San Francisco.²³
(dollars per ton)

	British	Peruvian	American	Australian	Nanaimo
1852	-	-	23	-	15-40
1853	-	-	23	-	28
1854	=	-	-	-	17-26
1855	-	-	-	-	13-18
1859	-	-	-	-	9
1860	20	15	-	13	15-16½
1862	30	-	13	-	12-15

The "drawback" duty on foreign coal applied by the United States to protect American producers was a serious impediment to B.C.'s coal sales during the period 1852-89, but worst perhaps during the industry's first years of operation when there were several competing demands upon its limited financial resources. In 1859 this duty amounted to twenty percent rising to twenty-four percent one year later.²⁴ Not only did the tariff give considerable advantage to American suppliers, but it cut sharply into the Nanaimo Coal Company's profit margin. One accounting in 1860 had it that on a ton of Vancouver Island coal sold at San Francisco for \$16.25, a duty of \$4 was to be paid and freight of \$5.25 was expected.²⁵ This meant only \$7.00 could be received by the NCC, some of which had yet to go to their American agent. In short, it was more profitable under these conditions to sell the coal at pithead,

²³ See bibliography.

²⁴ *Colonist*, 17 Jun 1859, p. 1 and 29 Dec 1860, p. 3.

²⁵ *Loc. cit.*

or in Victoria where it then retailed at \$11.00 per ton. If competition forced Nanaimo coal much below \$16.00 at San Francisco - as it did in several years - supplying large volumes to the California market would be a losing proposition and a risky venture for the Island's small coal industry.²⁶

San Francisco continued for many years after 1862 to exhibit unsteady demand for coal, though as will be seen, British Columbia collieries were fortunately placed, through the quality of their product and by their ability to sustain domestic sales, to both increase their coal trade with that city and maintain reasonably steady profits. Considering the uncertainty of its foreign coal markets, and the reliability of its local sales, it is fair to say that the Nanaimo Coal Company followed a logical marketing course during the company's brief existence. Given the small scale of NCC's operations and the low level of its annual outputs, (as well, incidently, as the unavailability of comprehensive statistics for the period), it is not possible to draw conclusions as to what impact sales might have had upon either productivity itself or any other factor of production. Such data as does exist (and which is contained in Table 8-2), suggests that foreign sales had some influence upon annual production though to what degree is not at all clear. Another question that cannot be fully answered is why HBC officials and their successors at the VCMLC persisted as tenaciously as they did in the California coal trade. Possibly they expected conditions would improve or at least stabilize, thereby assuring a steady if not spectacular

²⁶ Cmdr. R.C. Mayne, *Four Years in British Columbia and Vancouver's Island* (1862), p. 36.

market for Nanaimo coal. More likely, perhaps, on the basis of shipping patterns in the North Pacific, they realized there were definite limits to growth in the domestic trade, and if expansion in trade, and thus production, was to occur, it would have to be based increasingly upon exports.

Table 8-2. Nanaimo Coal Company: Coal Production and Sales, 1849-62.²⁷
(short tons)

	Output	Domestic Sales	Foreign Sales	% Foreign Sales
1849	1,000	1,000	0	0
1850	4,500	3,300	0	0
1851	6,500	-	1,840	28.3
1852	5,000	3,160	2,000	40.0
1853	6,240	4,240	2,000	32.1
1854	8,000	-	-	-
1855	11,000	-	-	-
1856	-	-	-	-
1857	-	-	-	-
1858	-	-	-	-
1859	11,989	-	-	-
1860	14,247	-	-	-
1861	13,774	-	-	-
1862	18,178	10,318	7,860	42.2

COMPETITION AND THE PURSUIT OF RECIPROCITY Among the recurring views affecting British Columbia's early coal industry none was as popular amongst local businessmen as the call for free trade with the United States. Ignored in the negotiations to bring reciprocity between British North America and her southern neighbour, the far western colony of Vancouver Island was thus subject to any tariff levies brought down by Congress.²⁸ A network of tiny settlements the Columbia District

²⁷ See bibliography.

²⁸ Masters, *Reciprocity Treaty of 1854*, p. 25.

had a modest need for manufactured goods, all of which tended to be supplied by British vessels arriving for pelt shipments. Occasionally the furtraders exported agricultural produce, seafood, and lumber to adjacent American settlements, and there was, of course, the beginnings of a west coast coal trade. After the gold rush of 1858, however, Vancouver Island's need for imported goods was much greater than before, and the declaration of Victoria as a "free-port" in 1860 went far towards raising American commercial interest in that city.²⁹ While this act ensured Victoria would continue to prosper as an entrepot, it did little to stimulate the Island's export trade, mainly since no reciprocal arrangements had been made with American centres. As the gold economy showed increasing signs of weakness, the two colonies were forced to concentrate their attentions on developing new export commodities. For Vancouver Islanders coal appeared to be by far the best prospect as long as a series of major hurdles could be overcome.

Thomas Lowe, onetime HBC servant now merchandizing in San Francisco, had urged as early as 1853 that the California coal market was highly profitable, and deplored Douglas' caution in pursuing sales there.³⁰ The depression of 1855-56 proved Lowe's prediction false, so much so that Douglas was forced in June, 1857 to admit to the Island's House of Assembly that no royalties had been paid by the NCC in the twelve months ending on 31 October 1856 because, as he claimed, there was no demand for its coal. The HBC had no intention of shipping its

²⁹ Ormsby, *British Columbia* (1958), pp. 138-39. Also note *Minutes of the Council of Vancouver Island, 1856-60*, PABC reprint (1918), pp. 35-6.

³⁰ See fn. 20.

product south where duty would have to be paid once it was unloaded if it meant the coal would merely sit at dockside. In a combative mood, Douglas took this occasion to decry "taxation of native produce", claiming it "ruinous" to commerce and "directly opposed to every sound principle of political economy".³¹ This attack on royalties set by the assembly might have relieved some of his frustration at sagging coal sales, but since the local 10 pence per ton tax was so small in comparison to the American tariff, he might better have directed his attentions at trying to reduce or even eliminate the latter. While the colonial governor complained of the royalties levied on his alternate employer, the HBC, others were beginning to call for changes in Vancouver Island's trade arrangements with America. Testifying before the select committee investigating the HBC, James Cooper claimed Nanaimo was "capable of supplying the whole Pacific", but until the U.S. drawback duty of 20 percent (occasionally 30) was removed, most buyers would continue to turn to American coal.³² The *Daily Colonist* added its voice in December 1860 by saying the coal trade "could become an important item in our commercial prosperity", if reciprocity was enacted.³³ Still, many believed the HBC, not the tariff, was

31 Douglas to House of Assby, 8 Jun 1857, H of A *Correspondence Book*, pp. 28-9. Douglas had maintained careful track of coal royalties, and could show full figures even for the Fort Rupert days when records were harder to amass. He had noted, for example, that coal royalties of 2s 6d per ton were levied on the 12,822 tons exported from Beaver Harbour, - making attotal of \$1,489.50 (US). Douglas to Barkley, 29 Jan 1891, HBCA (PAM) A11/73 fo 38. Four years later, Douglas lent his support to the cause of removing tariffs between the U.S. and the British territories by saying he noted "with satisfaction" the [HBC] Board's decision "to pursue Reciprocity for Vancouver Island". "Douglas Journal", 17 Feb 1855, *ibid.*, A11/75 fo 926.

32 Cited in *Colonist*, 17 Jun 59, p. 1.

33 *Ibid.*, 29 Dec 1860, p. 3.

the main cause of delay in developing foreign coal markets. Despite Cooper's argument that only the Company had the means to operate a colliery, opinion as to its enthusiasm and competence was turning against the HBC. Matthew Macfie, for instance, claimed the HBC's "preoccupation with its accustomed investments" caused it to neglect the coal trade.³⁴ Considering the glowing newspaper accounts of both the Nanaimo product and the high esteem in which colliery managers were then held, Douglas would have been well advised to publicize more his marketing philosophy, backing his views with a complete set of facts, instead he stonewalled the issue, a stubborn refusal either to adequately inform the public or to place more emphasis upon opening new foreign markets.

Public confidence in coal mining rose when the VCMLC assumed control of the colliery, and rose further on learning that the directors had made contracts with the gas companies of Portland, Sacramento, and San Francisco on terms under which the utilities likely "would draw all their future supplied from Nanaimo".³⁵ Since actual production continued to climb at more or less the same rate throughout the sixties such pronouncements seem to have had no effect other than to encourage local investors, many of whom were convinced as one was that "the San Francisco market would make Nanaimo comparable to a Midland mining town with similar wealth".³⁶ This theme was pushed further by the *Nanaimo Gazette* which

³⁴ Macfie, *Van. Is. and B.C.* (1865), p. 145.

³⁵ VCMLC Directors' "First Annual Report" (London) cited in *Colonist*, 19 Nov 1863, p. 3.

³⁶ *Nanaimo Gazette*, 17 Jul 1865, p. 1; other comments in this article included "our almost inexhaustable coal field" and "the progress of Nanaimo hinges solely upon the coal trade".

in 1865 outlined an ingenious scheme to elevate Nanaimo from a "mining hamlet" to a "mercantile and manufacturing centre [for] the whole *British Pacific*". Accordingly, if given the opportunity, colliers ballasted with trade goods outbound from San Francisco would prefer to avoid a stopover at Victoria (then the only legal entry point) to discharge their cargoes, and proceed instead direct to Nanaimo. Should this occur, chiefly on the basis of attaining entry point status of its own, the coal centre was bound to have a brilliant future in commerce as well as coal.³⁷ Nothing came of this plan, but it indicated clearly the ambitions of Nanaimo, if not her colliery, whose resident manager was still concerned primarily with upgrading its facilities.

In the absence of a voice from either the coal industry or government on Nanaimo's hoped-for status as a port of entry and with no action by any authority to combat the persistent American duty on foreign coal, debate was left to the public which occasionally raised important points like the absurdity of allowing Bellingham Bay and Fuca Straits coals into Victoria duty-free while the Nanaimo product had to pass a tariff barrier or the argument of 1870 that Victoria's recently lost free port position should not be regained since it would ruin Vancouver Island's agriculture.³⁸ The counter, and obviously more correct view, was that the area's coal and timber resources offered infinitely greater chances for wealth than farming; besides, each could be more readily developed in

³⁷ *Nanaimo Gazette*, 11 Sep 1865, p. 1. See also the *Colonist*, 4 Oct 1865, p. 2.

³⁸ *Ibid.*, 8 Sep 1866, p. 2.

a climate of free trade.³⁹ Nonetheless, with the entry of B.C. into Confederation, this hope was lost, too, and the coal industry remained in essentially the same competitive position it generally had occupied.

For the next two decades appeals to negotiate free trade with the U.S.A. on at least some B.C. products, including coal, were raised from time to time. Complaints from colliery managers about the high costs of dealing in the American market, particularly at San Francisco, were taken further by local merchants who urged a variety of solutions from reciprocity to cuts in miners' wages.⁴⁰ In a round-about way, then, the Island's business community had accepted the problem of competition in foreign sales of B.C. coal to be their own, though it is doubtful that they realized how complex the matter had become. First, it was not simply an issue of trade between two nations. A large number of countries including the United States were in the California coal market, some with greater advantages than Canada, many with less. Second, the coal trade was subject to a wide range of financial, commercial, transportation, and industrial pressures that constantly worked on San Francisco. Third, the coal trade was seasonal, peaking in winter and tapering off dramatically in the warmer months. This in turn had important implications on prices and inventories as well as production. Finally, as shortly will be seen, the availability of shipping played a key role in the success of coal sales. With their more intimate knowledge of the coal trade and their willingness to take a longer-range view of the market, the colliery

³⁹ *Colonist*, 4 Mar 1870, p. 2.

⁴⁰ *Nanaimo Gazette*, 3 Nov 1866, p. 2; *Nanaimo Tribune*, 3 Nov 1866; *Colonist*, 11 Oct 1866, p. 2, 11 Jul 1868, p. 2; 30 Jul 1868, p. 2, 4 Mar 1870, p. 2.

owners were not as disturbed by downturns in foreign sales as local businessmen appear to have been. And in fact, as Table 8-3 reveals, by the mid-seventies coal proprietors had reason to be satisfied with their ability to deal competitively in the California market.

Table 8-3. Coal Entering at San Francisco, 1862=76.⁴¹

	Australia	Britain	B.C.	B.C. value
1862	3,833 tons	22,010 tons	6,015 tons	\$ 42,833
1863	-	-	3,413	23,258
1864	-	-	9,790	55,458
1865	-	-	21,937	112,962
1866	-	-	9,066	46,887
1867	-	-	14,653	166,792
1868	-	-	22,790	123,214
1869	-	-	16,779	97,781
1870	-	-	13,979	84,467
1871	-	-	16,004	92,093
1872	-	-	23,574	133,772
1873	-	-	32,327	178,504
1874	-	-	62,672	324,362
1875	-	-	62,119	326,588
1876	129,097	116,836	101,572	522,555

To these figures listed in the *Daily Colonist* on 17 February, 1877 was added the note that the receipts from other countries had "materially decreased" over this period, and it is plain that the B.C. returns were set back only in those years when recession had set-in at San Francisco.⁴² In short, the Island's coal exports were performing well in spite of the tariff and this probably accounts for the owners' seeming indifference to the drawback duties. What tended to concern

⁴¹ *Colonist*, 17 Feb, 1877 p. 3 citing annual review of San Francisco's *Journal of Commerce*.

⁴² See section on "West Coast Trends to 1891" above.

them more was the availability of vessels to ship their coal. As for the reciprocity movement only the Island's merchant community seemed interested in keeping it alive. In 1880, it flared-up for the last time when a dispute over pilotage fees that threatened an extended closure of the Wellington Colliery. This prompted the *Colonist* to urge that Britain negotiate a treaty with the U.S. to "unfetter" B.C.'s commerce, but again nothing happened, and the issue appears to have died once the harbour problem was settled.⁴³

SYNOPSIS OF FOREIGN SALES, 1874-91 By the early seventies, B.C.'s coal trade was shared almost exclusively between the Vancouver Coal Mining and Land Company and Dunsmuir, Diggle, Ltd. A brief examination of the volumes of their foreign sales from the time they were operating close to the same capacity (Table 8-4) reveals their exports rose or fell in direct relationship to their outputs. It further shows foreign sales increasing over the period 1874-91 by more than 1,000 percent.

⁴³ *Colonist*, 24 Sep 1880, p. 2. As late as 1885 the VCMLC directors still held hope that reciprocity between the U.S. and Canada (then currently under negotiation) would result in a major advantage for B.C. coal in the California market as neither Australian nor British coal (which again was being dumped in very large quantities) could then hope to successfully compete. The chairman, Galsworthy, admitted "it will be very unpatriotic to be pleased about that, but it makes all the difference if we can get the tariff [off] our coal". His audience, the shareholders, laughed. "VCMLC", *Mining Journal*, 14 Nov 1885, p. 1281d.

Table 8-4. B.C. Coal Exports, 1874-91.⁴⁴
(long tons)

	VCMLC	Dunsmuir	British Columbia
1874	32,319	23,719	56,038
1875	27,045	39,374	66,392
1876	61,871	-	107,000
1877	68,780	37,486	115,381
1878	81,699	82,983	164,000
1879	78,187	91,908	191,000
1880	63,181	162,668	225,849
1881	36,467	152,856	189,323
1882	48,843	188,569	232,411
1883	19,631	124,748	149,567
1884	104,813	196,931	306,478
1885	111,670	120,559	237,797
1886	79,637	144,526	249,205
1887	114,815	187,193	334,839
1888	215,253	124,649	365,714
1889	179,286	221,300	443,675
1890	292,809	180,329	518,270
1891	383,886	386,412	806,479
Mean	111,122	145,069	264,412

When reduced to percentages of production, or of the provincial total, the coal exports of the two largest companies show more vividly yet the contrast between their respective progress through the period in question. And it also reveals again the generally stronger performance of Dunsmuir.

⁴⁴ B.C. Min. of Mines *Annual Reports*, 1874-89, *passim*.

Fig. 8-2 BC COAL EXPORTS, 1874-91

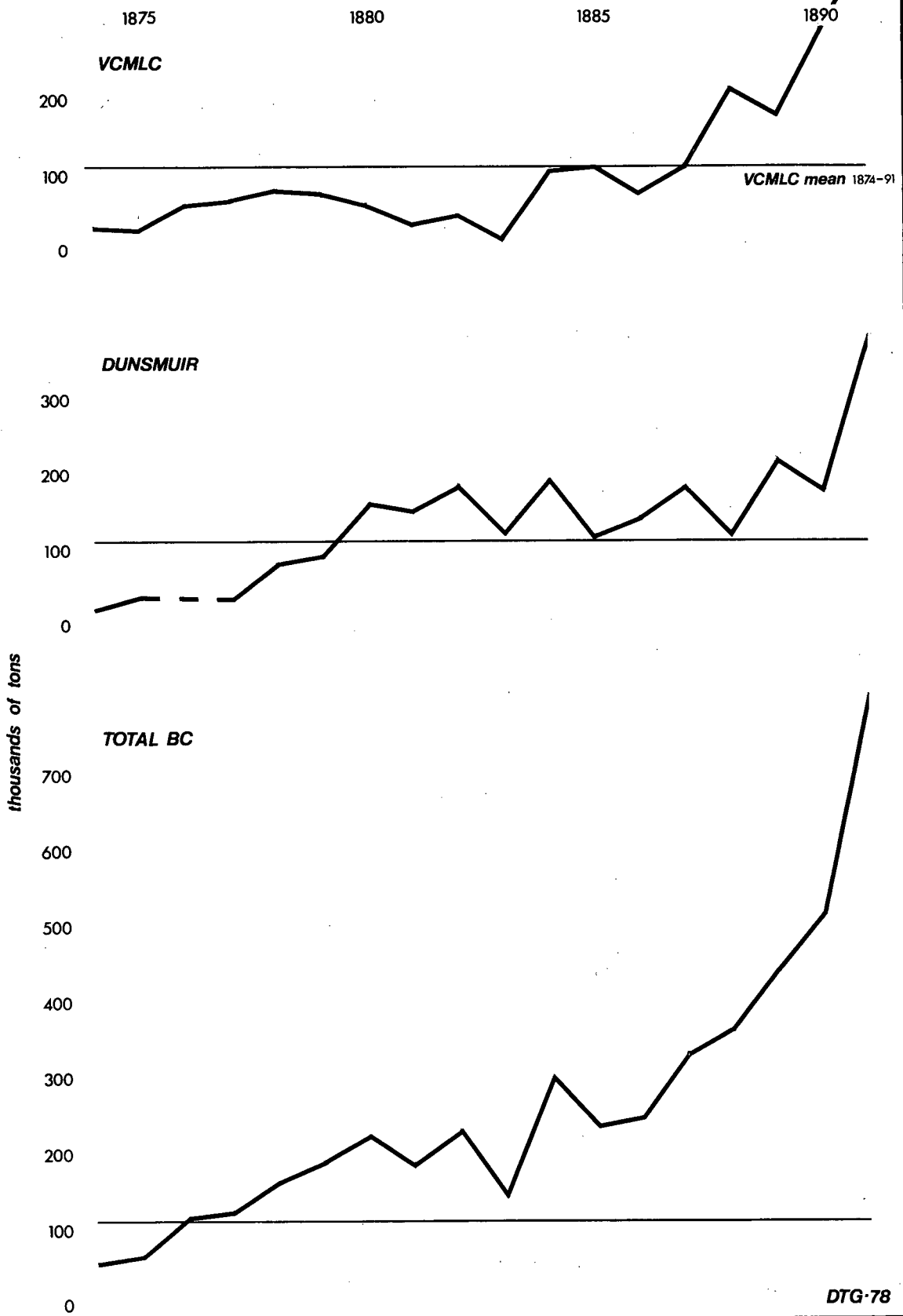


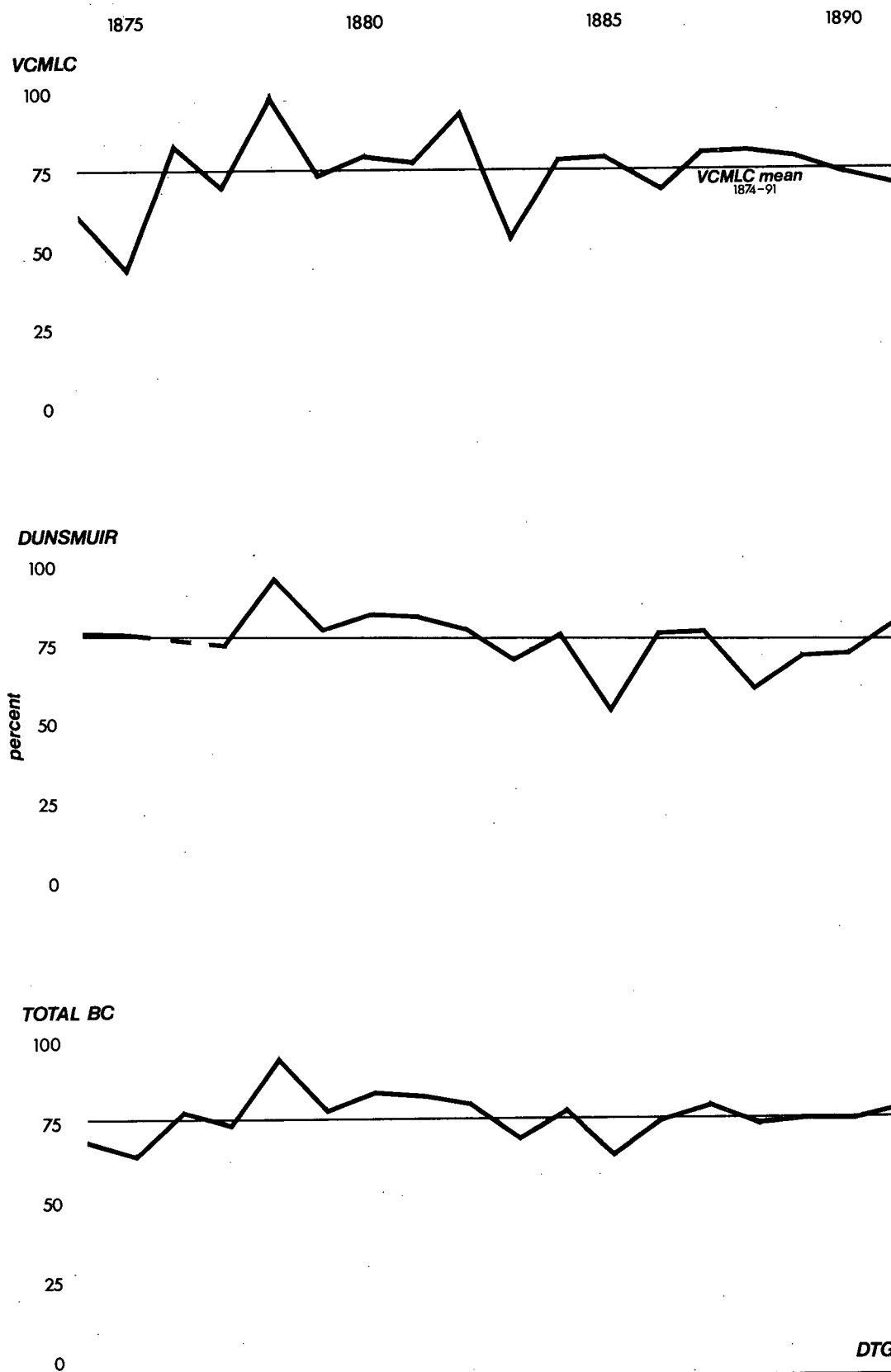
Table 8-5. Exports as Percent of Own Colliery Output⁴⁵
and of the Provincial Total.

% of Colliery Output				% of B.C. Exports	
	VCMLC	Dunsmuir	B.C.	VCMLC	Dunsmuir
1874	62.3	79.5	69.2	57.7	42.3
1875	45.8	77.9	60.4	40.7	59.3
1876	83.8	77.4	77.0	57.8	42.2
1877	69.6	76.9	75.0	59.6	32.5
1878	99.5	93.9	96.0	49.8	50.6
1879	75.0	80.8	79.3	40.9	48.1
1880	81.3	85.7	84.3	28.0	72.0
1881	77.1	84.4	83.0	19.3	80.7
1882	95.0	81.7	82.4	21.0	81.1
1883	55.0	72.8	70.2	13.1	83.4
1884	78.3	77.4	77.8	34.2	64.3
1885	80.7	54.8	65.1	47.0	50.7
1886	70.6	77.8	76.3	32.0	58.0
1887	82.8	78.3	81.0	34.3	55.9
1888	83.1	62.2	74.7	58.9	34.1
1889	80.1	72.7	76.5	40.4	49.9
1890	75.2	73.9	76.4	56.5	34.8
1891	72.8	84.0	78.3	47.6	47.9
Mean	76.0	77.3	76.3	41.1	54.9

Perhaps the most intriguing finding from the above figures is how close are the mean ratios of output to exports - the spread is only 1.3 percent. Dunsmuir obviously had the lion's share of provincial coal exports during those years, and it is also clear B.C. ratios of output to exports varies considerably over time. The foreign market - mainly California - was often unstable for Vancouver Island coal. The years 1875, 1879, 1883 and 1885 are noteworthy in this regard.

⁴⁵ B.C. Min. of Mines *Annual Reports*, 1874-89, *passim*.

Fig. 8-3 EXPORTS AS PERCENT OF COAL OUTPUT



III

SHIPPING CRISES IN THE 1860's AND THE 1880's Generally of more concern than tariffs to B.C. coal producers was the availability of cheap, reliable transport to deliver their product to market. With its emphasis upon pithead sales, and the serious inadequacies of its own loading facilities, the Nanaimo Coal Company's experiences in distributing its product cannot be taken as typical. Once the VCMLC began operating, and the industry's stance shifted more towards export sales, the picture regarding transportation changed, too. First, as seen in the shipping returns for 1863, 1866, and 1869, foreign markets had steadily overtaken domestic buyers as the main source of coal sales within that six year period. This trend of an ever-widening gap between foreign and local sales continued until 1878 when ninety-six percent of that year's total coal production was exported. By 1888-89 the figure had dropped to approximately three-quarters of all colliery output.⁴⁶

Table 8-6. VCMLC Coal Sales 1863-69.⁴⁷

Place	1863	1866	1869
Pithead (ships' own use)	1,995 tons	3,779 tons	8,914 tons
Victoria/Esquimalt	13,205	8,290	6,519
New Westminster	190	624	73
Portland	490	411	796
San Francisco	5,671	11,925	16,429
Sitka	0	0	2,746
Port Townsend	0	133	0
Hawaii	0	51	0

⁴⁶ B.C. Min. of Mines, *Annual Reports*, 1874-89, *passim*.

⁴⁷ Year end coal trade statistics as reported in the *Colonist*, Jan 1863-69.

Second, the carrying capacity of most vessels engaged in the coal trade varied greatly, ranging from sloops to steamers. To have some idea of the volume of shipping that the VCMLC had to cope with in its first full year of operation, and to realize what little returns were gained from the handling of most vessels, the following table is illuminating.

Table 8-7. Vessels Loading Coal at Nanaimo, March 1863.⁴⁸

Date	Vessel	Type	Coal Taken	Destination
2	<i>Caroline</i>	schooner	30 tons 5 cwt	Victoria
3	<i>Emily Harris</i>	steamer	65 15	"
4	<i>Hamley</i>	sloop	27 0	"
55	<i>Antelope</i>	schooner	26 10	"
66	<i>North Star</i>	"	70 10	"
7	<i>Alpha</i>	"	71 10	"
10	<i>Carolena</i>	"	30 10	"
11	<i>Hamley</i>	sloop	26 5	"
	<i>Alarm</i>	"	17 10	"
12	<i>Industry</i>	schooner	55 10	"
16	<i>Alpha</i>	"	72 -	"
	<i>Labouchere</i>	steamer	130 -	own use.
17	<i>Antelope</i>	schooner	10 -	Victoria
19	<i>Carolena</i>	"	30 5	"
21	<i>Alarm</i>	sloop	17 10	"
23	<i>North Star</i>	schooner	70 -	"
25	<i>Alpha</i>	"	72 -	"
	<i>Emily Harris</i>	steamer	64 10	"
26	<i>Carolena</i>	schooner	30 5	"
27	<i>Industry</i>	"	53 -	"
28	<i>Antelope</i>	"	25 10	"
	<i>Surprise</i>	"	51 10	"
29	<i>Alarm</i>	sloop	17 -	"
30	<i>Julia</i>	schooner	60 15	"
31	<i>Emily Harris</i>	steamer	64 -	"
	<i>H.M.S. Devastation</i>	"	155 -	own use.
Totals:	1. Vessels - 26 2. Tons of coal - 1,334.5		Mean shipment: 51.3 tons	

It is worth noting that almost all these callers were coasters. The heaviest months for exports were October-December when wholesalers built-up their winter stocks. During 1863 Nanaimo coaled 1 ship, 2 brigs, 10 barques, 58 sloops, 211 schooners, and 71 steamers for a total of 353 vessels, though their mean take was just over sixty-one tons.⁴⁹ Plainly, the low coaling capacity of available colliers contributed just as much to the bottleneck in transport as did the VCMLC's inadequate harbour facilities. Charles Nicol took steps to upgrade the latter, but could not hope to improve the other.⁵⁰ How much this first crisis in shipping affected production is not clear, but since the new owners were eager to expand their markets and sales, it is likely that consumers were hurt more by loading delays than was the producer - at least in the early sixties when demand generally was high. Most likely it was one or more bottlenecks in the production process - not the one at wharfside - that harmed productivity. Support for this view is found in a *Colonist* editorial that stated:

It is a sad commentary on the enterprise of the colony as well as on the enterprise of the London directors of the Vancouver Coal Company, to be, with our inexhaustible coal seams, unable to meet more than a tithe of the San Francisco demand. Nanaimo has no more adequate means of extracting the coal from her mines than she had when her export trade was limited to what a single ship could carry away . . . there are in her harbour . . . sixteen vessels.⁵¹

While there was much truth in this view, it understated the problem of wharfage, brought-on in large part by the lack of large

⁴⁹ *Colonist*, 8 Jan 1864, p. 3.

⁵⁰ See chaps. 3 and 7 for details of the VCMLC's early transport problems.

⁵¹ *Colonist*, 4 Oct 1865, p. 2.

colliers in both the coasting and ocean trades. Hopes for bigger vessels were set back hard in 1866 when many ships normally engaged in the Nanaimo - San Francisco route were diverted to carry California grains to Australia and the Orient. With 15,000 tons of coal accumulated at the pithead, the *Colonist* lamented that it "might almost as well be on the moon as at Nanaimo for all the chance there is of finding a market".⁵² Over the next few months, this Victoria newspaperspressed the VCMLC to charter the propellor-steamer *Ajax* which could carry 1,500 tons of coal three times between the Island and California every seven weeks. It also asked why the Vancouver Coal Company had taken no steps to open an agency of its own in San Francisco since that would help greatly to secure adequate shipping.⁵³ While the VCMLC did establish a California sales office in the late sixties, it chose not to purchase or lease colliers for a breakthrough had been made when Rosenfield & Bermingham of San Francisco bought the steamer *Prince Alfred* and placed her on a triangle route between the Bay city, Victoria, and Nanaimo carrying mail, passengers, and freight on the northern leg, coal on the southern.⁵⁴

Shipping problems continued to trouble the coal industry throughout the 1870's, but not to a serious degree. Even the entry and rapid growth of Dunsmuir, Diggle did not create much competition for vessels as the number of colliers in the Pacific had grown apace with

52 *Colonist*, 31 Oct. 1866, p. 3.

53 *Loc. cit.*; *ibid.* for 7 Jan. 1867, p. 2 and 12 Mar. 1867, p. 3. See also *Nanaimo Tribune*, 3 Nov 1866, p. 2 echoing the *Colonist's* urgings for VCMLC purchase of the *Ajax*.

54 *Colonist*, 20 Mar 1867, p. 3.

the region's demand for coal.⁵⁵ Dunsmuir chose to develop his own fleet between 1878-88, raising the number of vessels under his direct control to six.⁵⁶ Yet he, too, had to rely largely upon other vessels to move his coal to foreign markets. In 1882, foreexample, both the VCMLC and Dunsmuir, Diggle exported coal along the west coast from Alaska to Mexico and to Hawaii and China, too. Occasionally they had orders from Peru and Chili, but the bulk of their product continued to be sold at San Francisco.⁵⁷ For a time in 1880 ships were once again scarce, forcing Dunsmuir to shut down for several weeks, though his yearly production was up almost seventy percent over 1879.⁵⁸

By the late eighties shipping shortages - periodic or chronic - no longer affected B.C.'s coal industry. Its product was now well accepted and firmly established in the San Francisco market where, as Table 8-7 reveals, it had become that city's most popular fuel. Ironically, the American drawback duty on coal which then stood at seventy-five cents per ton, was rarely mentioned; instead it was the Canadian tariff on imported tools, powder, machinery, and the like needed for colliery operations that B.C.'s coal producers complained about. Additionally, much criticism was levelled by owners against the Dominion Government's harbour fees at Nanaimo and Departure Bay, for in their

55 Lewis & Dryden, *Marine History of the Pacific Northwest* (1895) *passim*. This is not always a definitive source, and requires careful handling.

56 *Loc. cit.* See also chaps. 5 and 7.

57 B.C. Min. of Mines, *AR*, 1878-82, *passim*.

58 *Ibid.*, 1880, pp. 431-33.

view, many American coasting vessels that would have purchased coal were turned away by the cost of landing.⁵⁹ As valid or as strongly put as the coal proprietors' arguments might have been, protection remained the policy of both countries with resulting increases in operating and marketing costs for B.C. coal.

Table 8-8. Coal Imports by Source at San Francisco, 1887-89.⁶⁰

	1887	1888	1889
B.C.	324,949 tons	345,681 tons	417,904 tons
Australia	155,649	271,612	408,032
England and Wales	91,248	126,167	32,890
Scotland	12,615	10,680	12,727
Eastern U.S.	24,102	30,118	18,950
Puget Sound	569,710	568,948	372,514
Other U.S.	39,155	81,194	87,600
Japan	-	13,808	1,340
Totals	1,217,428	1,448,208	1,351,957

RISE OF THE DOMESTIC COAL MARKET As with its foreign markets, B.C.'s coal industry shaped the basic pattern of its domestic sales early in its history. By the time of the VCMLC takeover of the Nanaimo mines, a firm if not extensive network of local coal markets had been established. Before selling its Nanaimo Coal Company, the HBC had organized coal sales to a variety of colonial enterprises among which were

⁵⁹ *Loc. cit.* Complaints about the Canadian tariff's and harbour fees' effects on B.C.'s coal industry were frequently voiced in the 1880's by the inspector of mines as well as writers to newspaper editors. These protective and revenue-producing measures remained in force throughout the eighties, however.

⁶⁰ B.C. Min. of Mines, *AR*, 1889, p. 295.

Fraser River steamboat companies, coastal steamers, and urban coal users such as utilities, laundries, foundries, institutions, business outlets, restaurants, and householders. These buyers increasingly preferred coal to wood in their uses of fuel for heating, washing, cooking, and light industry. As expected, sales' volumessvaried with the season and the current price of coal, though in the course of the 1860's, sufficient competition developed between local coal brokers to keep prices attractive. By and large British Columbians were loyal customers of Vancouver Island coal, despite attempts by American and British suppliers to gain footholds in the B.C. market.

Even with this assuring state of affairs, as time passed it became plain that the domestic market was simply too small to absorb the volume of coal being extracted at Nanaimo, far less Wellington and Comox, too. Purchases by local buyers accounted for the majority of coal sales to 1866, but became a smaller percentage of total sales towards the second half of the period studied here. Yet it must be stressed that the ratio of foreign to domestic sales tended to be quite constant over several years, and since, on balance, foreign trade advanced steadily (often strongly) in the years 1849-91, the local market has to be considered as having had a significant effect on the coal industry.⁶¹

⁶¹ The newly established port of Vancouver across the Strait of Georgia from Nanaimo eventually became the major domestic market for Vancouver Island coal, but up to 1891 it had little impact upon the coast coal trade. It is worth, however, quoting the VCMLC administration on its view as to future possibilities:

"... the Canadian Pacific Railway is now completed: they ran the first train as recently as yesterday. The first train from Montreal arrived at the town of Vancouver after a most successful journey; so now that that line is completed we hope to get considerable advantage from it. It saves great time in the route from Canada to Nanaimo over the whole course, and it will also save a great deal of time in transit of coal

Table 8-9. B.C. Coal Sold for Home Consumption, 1862-91.⁶²

	Volume (tons)	% total B.C. production	% increase over previous year's sales
1862	10,318	56.8%	0
1863	15,390	71.4	49.1%
1864	17,280	59.5	12.3
1865	15,733	47.9	- 8.9
1866	12,693	50.3	-19.3
1867	11,902	38.2	- 6.2
1868	13,254	30.3	11.4
1869	15,506	43.0	17.0
1870	14,196	47.8	-88.4
1871	14,906	41.9	2.9
1872	16,383	35.5	12.2
1873	16,919	36.9	3.3
1874	25,022	30.9	47.9
1875	31,252	28.4	24.9
1876	33,000	23.7	5.6
1877	24,311	15.8	-23.3
1878	26,166	15.3	7.6
1879	40,000	16.6	52.9
1880	46,513	17.4	16.3
1881	40,191	17.6	-13.6
1882	56,161	19.9	39.7
1883	64,786	30.4	15.4
1884	87,388	22.8	34.9
1885	95,227	26.1	9.0
1886	85,787	26.3	- 9.9
1887	99,215	24.0	15.7
1888	115,953	23.7	16.9
1889	124,574	21.5	7.4
1890	177,075	26.1	21.4
1891	202,697	19.7	-24.5
Mean	51,650	32.2	11.5

In the absence of large industrial users of coal at home, these figures undoubtedly reflect coal sales coinciding with patterns

from our district to China and in that direction, and we hope in time a large trade will develop." *Mining Journal*, 14 Nov 1885, p. 1281b.

⁶² Output figures from B.C. Min. of Mines, AR, 1874-89; *Colonist* year end coal trade summaries (Jan) for period 1862-73.

of urban and transport development on B.C.'s south coast. Both of the major collieries used middlemen to market their product in Victoria and New Westminster, though their own employees handled pithead sales.⁶³ Prices for domestic coal were particularly stable throughout the period, reflecting the costs of production, transport, and handling by wholesalers and retailers. Before its demise, the NCC had managed to bring the original pithead price down from \$16.50 to \$7.00 per ton.⁶⁴ By the 1870's coal sold at the collieries was averaging \$6.00 per ton and remained generally at this level into the 1890's.⁶⁵ City prices followed a similar pattern, dropping from \$16.00 in 1859 to \$8.00 by 1886.⁶⁶ The occasional price war between retailers disrupted prices, as did scarcities caused periodically by colliery strikes and other production stoppages. Generally, however, the tendency was for both pithead and city coal prices to move down steadily and in relative harmony. Moreover, as implied by tables in earlier chapters showing annual production levels, price cuts as they occurred appear to have followed in line with significant increases in output. Hence it is argued that prices as well as sales by and large acted with other agents to stimulate greater production.

SUMMARY OF MARKETS AND THEIR IMPACTS British Columbia's first coal mines were ideally located in tidewater locations close to a growing American

63 See Fig. 8-1 above.

64 E.E. Rich, *Hudsons Bay Company* (1959), p. 382 and *Colonist*, 29 Dec 1860, p. 3.

65 B.C. Min. of Mines, *AR's*, 1870's-90's.

66 From Victoria newspaper retail coal advertisements, 1859-89.

market and closer yet to domestic customers that included the Royal Navy's Pacific Squadron and the growing communities of southwestern B.C. The principal users of B.C. coal to 1891 were steamships, light industry, home and business owners, public utilities, and, eventually, railroads. Despite a severe tariff imposed by the United States Congress to protect the growth of America's own west coast coal industry, and the dumping practices of foreign coal producers (especially Britain), B.C.'s share of the California market increased steadily from 1852-91 when the province rose to be that state's largest coal supplier. British Columbia's coal producers might well have achieved that position sooner had they not been hampered by the periodic instability of San Francisco's own economy and the managerial and technical difficulties experienced by the VCMLC in the decade 1873-83. Occasional shortages of shipping also restricted B.C. producers in their foreign coal trade, prompting the Dunsmuirs to construct their own collier fleet. A long hoped-for reciprocity treaty that would remove tariffs on B.C. coal sold in the U.S. markets never materialized - nor did the major manufacturing centre that many Islanders believed would result at Nanaimo. The B.C. coal trade relied heavily upon foreign sales throughout the period in question, though domestic sales picked-up rapidly towards the end. Dunsmuir's collieries generally outperformed their chief rival, the Vancouver Coal Mining and Land Company, although both firms were aggressive in pursuing sales. These coal companies early on recognized the value of streamlining the channels of distribution for their products, opening their own sales' offices to deal directly with users. In cases where this was neither desirable nor possible, steps were taken to ensure a measure of control on consumer

prices. Since B.C.'s coal trade developed by and large in tandem with other economic activities on America's west coast, it appears that the coal industry operated in a demand-pull market. Most often collieries could sell as much as they produced, though in periods of recession year end inventories tended to be high. Nonetheless, it was rare to have two poor selling years in a row, and it is valid to conclude that market demand was a highly significant factor of coal production.

CONCLUSIONS

During the nineteenth century coal mining in British Columbia was confined to the province's south coast tidewater coal measures which were exploited mainly by two large collieries, the Vancouver Coal Mining and Land Company, successor to the HBC's Nanaimo Coal Company, and Dunsmuir, Diggle Ltd. (later R. Dunsmuir and Sons), which together advanced the coal trade at a rapid pace.¹

The Hudson's Bay Company, inspired by coal discoveries on northern Vancouver Island and eager to begin a new branch of commodity trade in the northeastern Pacific, opened a coal mine at Beaver Harbour in 1849. Through mismanagement and a lack of adequate resources, this venture failed, though not before another mining operation was started at Nanaimo. This second enterprise did not prove very profitable for the HBC, but it did establish coal mining as an industry having both foreign and domestic markets of some consequence. Coal mining's position was strengthened further by the VCMLC management between 1862-69 when it gave emphasis to modernizing the original mining apparatus. A limited liability company with its head office in London and its newly-acquired Nanaimo coal property an unincorporated branch operation of the parent, the Vancouver Coal Company was typical of pre-1914 British direct investments in Canada. Its directors' and shareholders' avoidance of unproven -

1 The East Kootenay coalfield which began production in 1898 is not considered by the writer to have been a significant nineteenth century producer. During the 1890's, the Dunsmuir coal operations were known as the Wellington Colliery and the Union Coal Co. Dunsmuir, Diggle's dates were 1870-83; R. Dunsmuir & Sons, 1883-89. See chap. 5.

indeed undeveloped - mining claims was fully in keeping with the trend of British capitalists to acquire working mines rather than speculative ventures.

Sales generally were good in this early period, stimulating local investor interest in the new industry. This interest grew as the mainland gold economy declined, resulting in many speculative coal ventures though most collapsed before reaching the production stage. Despite generous government licencing terms and increasing preference for Vancouver Island coal in the fast-growing California market, early coal promoters had great difficulty in gathering the factors of production needed to build and maintain viable collieries. Capital, labour, and machinery all were in short supply, as were experienced managers. Only Robert Dunsmuir, a shrewd, highly qualified miner and mines' manager was successful in taking his coal enterprise to the point where it became a worthy competitor for the VCMLC.

Partly because of the HBC's reluctance to aggressively pursue foreign markets, (preferring instead pithead and other domestic sales since the home price for coal could be more readily controlled), the coal trade did not develop during the 1850's and 1860's at the rate expected of it by Vancouver Island's business community which, by and large, had believed coal mining eventually would bring prosperity by drawing manufacturing and numerous settlers to the region. Other obstacles lay in the industry's path, not the least of which was the high tariff on foreign coal imposed by the United States Congress to protect infant American collieries on the west coast. For decades those who had invested in Vancouver Island coal mines sought to overcome such "drawback"

duties through reciprocal trade agreements with the U.S., but their efforts were in vain. Equally damaging to the Island's export trade was the British and Australian practices of dumping coal on the California market. Nonetheless, the relative closeness of B.C. coalfields to San Francisco, together with the failure of American west coast coal producers to find and develop significant coal measures, worked greatly to the VCMLC's and Dunsmuir's advantage in the Pacific coal trade. Both companies opened sales' offices in San Francisco (and Victoria), thereby streamlining their channels of distribution as well as placing them in positions to deal directly with consumers. Coal exports accounted for approximately seventy-five percent of the industry's gross sales between 1874-91, and even reached eighty percent in 1891, a time when domestic sales were surging thanks to fast-growing demand from the cities of Vancouver and Victoria.² Indeed, the market demand, particularly foreign, appears to have been the single most important factor in the rise of British Columbia's coal industry to 1891, though other agents like land, capital, labour, and technology were almost equally as significant.³

2 As the Canadian Pacific Railway's west coast terminus, Vancouver grew rapidly after 1885, but did not become B.C.'s largest city until 1901 when it overtook Victoria.

3 These market events and trade patterns have relevance for at least two major themes in Canadian history - staple theory and metropolitanism. As Caves and Holton (*The Canadian Economy*, 1959) have stressed, all of Canada's successful staples "have thrived on vigorous export markets", which, overall, the California trade surely was. Further in this line, demand at home was for "resource-intensive" products and technology for both extraction and transport. Finally, the "mainsprings of staple development" are upswings in market demand and greater efficiency in extraction - all of which definitely applied to B.C.'s coal industry to 1891 (pp.32-3). In short, coal was a B.C. staple, though as a singular and largely isolated commodity trade, it had no major influence on the wider provincial economy - unless it indeed drained capital away from

Hudson Bay Company officials generally had accepted the idea of balancing the growth of these agents, but were too inexperienced in colliery operations and too lacking in certain vital resources to achieve a harmonious advance. The HBC had sufficient coal reserves and funds to create a high output modern colliery, but it did not have enough skilled labour, steampowered equipment, or qualified management to round-out its operation. Under its first resident manager, the VCMLC greatly improved the original physical plant, but did not find a workable solution to chronic labour shortages. Robert Dunsmuir, discoverer and developer of the rich Wellington seam, was the first coal proprietor to engage large numbers of Orientals for both underground and surface operations - at half the white workers' wage rates - a strategem that worked well, for in addition to maintaining high production and productivity, his cost per ton of output remained markedly lower than his chief rival's. Eventually all collieries shifted towards a policy of hiring large number of working

either manufacturing or other locations as N.T. Naylor's (*History of Canadian Business*, 1975) view would suggest. (See "Introduction" of this thesis). The available evidence cannot support this kind of interpretation of capital formation in B.C.'s coal industry during the period studies here.

One need look no further than the link between Vancouver Island's coalfields and the city of San Francisco to see an important metropolis-hinterland relationship as would be defined by J.M.S. Careless ("Frontierism, metropolitanism, and Canadian History" *CHR* 35:1-21, 1954). For a succinct summary of metropolitan theory see C. Berger, *The Writing of Canadian History . . . 1900-1970*, Toronto, 1976, pp. 175-78. London was the other vital metropolis for the province's coal industry, chiefly in terms of its outward flows of technology, skilled labour, and direct investments (including major policy decisions for the VCMLC). As eastern Canadian centres figured very little in the early B.C. coal trade, the provincial economy growth model of a "classic triangular" trade involving B.C. resources, world markets, and Canadian manufacturers (as described by J.E. Peters and R.A. Shearer, "The Structure of British Columbia's External Trade, 1939 and 1963", *B.C. Studies* 8:34-46, 1970) does not apply to coal, at least for the period 1849-91, though it might well have had application in this century.

hands which seem to make industry more labour intensive than it earlier had been expected to be.

Labour itself was an unorganized body comprised of men with a wide variety of backgrounds and skills who tended well into the 1870's to move without much apparent cause from one mining operation to another. Worker incomes was the main source of conflict between labour and management, followed in turn by job security, mine safety, and working conditions. The VCMLC experienced more labour troubles than its main competitor, chiefly because of managerial incompetence. Robert Dunsmuir was severe in his treatment of workers particularly with regard to wage-rates. Furthermore, Dunsmuir did not hesitate to lockout his workforce whenever he thought the latter's demands were growing too great. Dunsmuir styled himself as the industry's leader, (which the more timid VCMLC management willingly allowed him to do), and he determined to show all that the owners' proprietary rights were absolute in any dispute with workers. Both government policy and public opinion backed his view, and he prevented labour from taking any greater rewards than he was prepared to give. Overall, owners fared much better than did labour from rising profits as the former grew wealthy while their workers did well to just maintain their incomes at steady levels.

Like the more skilled members of the labour force, colliery technology was mainly of British origin. The mountainous nature of Vancouver Island's coalfields made steampowered machines essential early in the industry's history, and although a great deal of the work was performed by hand labour, mechanical means were needed in the tasks of hauling, hoisting, ventilating, pumping, and transport. Competition

amongst coal proprietors for available equipment was vigourous, and it was not until the 1880's that any of B.C.'s coal mines could be considered to have been well equipped with modern colliery technology.

Financing both capital improvements and colliery operations was not easy for owners despite local enthusiasm for industrial progress. The HBC mines were supported exclusively by annual budget appropriations set for the Columbia District, resulting in demands by senior company officials that Nanaimo reach self-sufficiency as soon as possible. Once the Nanaimo Coal Company achieved steady production, separate accounts for its expenditures and revenues were maintained, but there is no evidence to show that profits from coal sales were applied directly to the costs of either improvements or operations. VCMLC administrators followed the course of appropriating funds from the company's general reserve to finance activities in Nanaimo, and maintained that reserve through a combination of issuing shares, selling bonds, and inserting profits from coal and land sales. Its directors' main headache was to ensure enough funds were available each year to pay attractive dividends, provide adequate operating capital, and maintain a reasonable reserve. Technical problems and rapidly falling production in the early eighties forced the VCMLC to cut-back severely on all payments, including dividends, and prompted them to replace Bate with the company secretary, Samuel Robins, who acted decisively to restore the colliery and its output. Very few of the coal promoters found sufficient capital either at home or abroad to begin mining far less sustain a working colliery. Robert Dunsmuir also had considerable difficulty in his first attempts at raising money. Initially he tried to work with short term financing through a San

Francisco firm which refused to extend him much credit. Later he attracted well-to-do naval officers into a partnership, and eventually bought-out each of their holdings with his share of the profits on coal sales.

Coal lands were in good supply during the industry's early rise. Many skilled and amateur surveyors were active during the period in question, and their discoveries of new coal deposits on Vancouver Island and across the southern part of British Columbia revealed the province was rich in coal. Government policy, both in the colonial and provincial years, favoured any serious coal entrepreneur. Chief amongst Victoria's aims in issuing coal prospecting and mining licences was its wish to support only those who were committed to bring mines into production and thus avoid a tying-up of coal lands by speculators who simply wanted to traffic in mineral claims. There is every reason to believe that this stance prevented some promoters from attracting investors; on the other hand the government's caution helped in the long run to promote orderly development in the industry, though more to the benefit of the larger operators which ultimately used their financial and technological resources to dominate coal exploration. Government further assisted the industry by regulating colliery hiring practices, working conditions, and safety measures. By insisting upon examinations for mines' managers, better accident prevention methods, and accurate colliery returns, the B.C. ministry of mines helped create an improved climate for both labour and machine productivity.

Throughout this study of colliery operations it has been argued that in spite of periodic setbacks - some crippling - British Columbia's coal industry advanced rapidly, particularly between 1871-91. The evidence

for this view is too strong to ignore, as is the now established fact that until the late 1880's, the Dunsmuir collieries invariably outperformed their chief rival, the Vancouver Coal Mining and Land Company. Indeed, as coal proprietors, the Dunsmuirs, who admittedly began operations with several important advantages, made the best of their opportunities, achieving excellent harmony in balancing factors of production during that first critical decade of their coal enterprise. This achievement alone attests to their superiority in management. It has also been argued that while all production agents were highly significant in relation to both output and productivity, market demand was more important to the growth of the province's early coal industry than any other factor except, probably, management itself. Finally, it is clear that coal mining had a significant impact upon southern Vancouver Island's economy to 1891, but there is no available evidence to suggest that the industry had a similar influence upon the whole province. Rather, it appears to have been an exports-oriented commodity trade begun and operated largely in isolation from other economic activity in British Columbia.

The industry's coal lands were located almost exclusively on Vancouver Island. It's technology, most of its skilled labour, and much of its investment capital were imported from Britain. The collieries' major market was California while their domestic sales outlets were predominantly in the south coast region. In developing along these lines, British Columbia's early coal trade was not unlike the province's coal trade of today in which the technology, labour, capital, and markets are mainly foreign. One cannot help wondering if the coal companies of the nineteenth century had a profound effect upon the shaping of B.C.'s

economy after all, insofar as the province historically has relied extensively upon exporting its natural resources. In this vein, too, it appears that highly successful native entrepreneurs such as Robert Dunsmuir are unusual in the province's business experience. In addition to his desire for local control over both administration and management, Dunsmuir, once his colliery was in place, was determined to finance his operations without calling for outside capital. Why there have not been many British Columbians like him in positions of industrial leadership surely is an important question - one that the ongoing debate on the nature and purposes of Canadian capitalism has yet to answer.

BIBLIOGRAPHY

INTRODUCTION In view of the wide range of available source material on British Columbia's early coal industry, it is surprising that so few scholarly works exist on the subject. It has, however, been the topic of innumerable popular articles, and many historians have made reference in passing to the coal trade and its leaders. In researching this dissertation several sources were of special value: Nanaimo Coal Company activities are well documented within the "Fort Victoria Correspondence" and "London Outward" series of the Hudson's Bay Company Archives (Provincial Archives of Manitoba). The NCC also figures prominently in various HBC and colonial Vancouver Island papers held in the Provincial Archives of British Columbia. The latter repository further contains invaluable original documents pertaining to many of the province's coal companies.

Government correspondence, studies, and published reports were plentiful and highly useful in the attempt to compile statistics. Of special significance were the British Columbia Minister of Mines *Annual Reports* for the years 1874-91 which, in addition to recording extensive data on the coal industry, describe in full detail most of the operational problems as experienced at the collieries. These reports also give considerable information on coal markets. Both the geology and minerology of Vancouver Island's coal measures are covered thoroughly by large numbers of technical studies and articles prepared by members of the Geological Survey of Canada, the provincial ministry of mines, and various geologists and engineers in the employ of coal companies - all of whom make some reference to mining activity, often in detail. The Alex Fraser Buckham Collection (PABC) is a 182 volume series of documents and notes pertaining chiefly to B.C.'s coal industry, and although its main strength

lies in the years 1896-1956, this archive has much original material for the earlier period not found elsewhere.

Newspapers, especially the *Victoria Daily Colonist*, reported regularly upon the coal trade, and the *Mining Journal* (London) published the minutes of the VCMLC's semi-annual meetings. Contemporary works, particularly those written in the 1860's, greatly helped to clear the picture of the coal industry's initial activities.

The following bibliography is organized mainly by subject heading for the convenience of readers, and it is a complete list of the materials consulted in preparing this study.

GOVERNMENT CORRESPONDENCE, RECORDS, REPORTS (general)

British Columbia, Economic Council, Research Department. "Statistics of Industry in British Columbia 1871 to 1934". Unpub. report. Victoria, B.C. November, 1935.

-----, Legislative Council. "Mineral Ordinance, 1869". 32 *Victoriae* 22.

-----, Legislative Assembly. "Mineral Ordinance Amendment Act, 1873". 36 *Vict.* 3.

-----, "Coal Mines Regulation Act, 1877". 40 *Vict.* 15.

-----, "Coal Mines Regulation Act.(1877) Amendment Act, 1878". 41 *Vict.* 11.

-----, "Coal Mines Regulation Amendment Act, 1883". 46 *Vict.* 2.

-----, "Coal Prospecting Act, 1883". 46 *Vict.* 3.

-----, "Coal Mines Regulation Act, 1888". 51 *Vict.* 21.

British Columbia, Inspector of Mines. "Correspondence, 1877-89". GR 184, PABC MSS.

-----, Ministry of Lands and Works. "Records" of Free Miners' Licences and Certificates, 1870-91. GR 86 and I-77, II-100 of the "Herald Street Inventory" (hereinafter HSI), PABC MSS.

-----, Minister of Mines. *Annual Reports*, 1874-91. Victoria Queen's Printer.

-----, Supreme Court. "Probate Records". Law Courts. Victoria, B.C.

Canada, Department of Militia and Defence, Military District 11.
"Letterbook No. 1, 1 December 1873 - 30 May 1877", PABC MSS.

"Contract for the Construction of the Esquimalt and Nanaimo Railway".
Sessional Papers of British Columbia, 1884. P. 183: 31-39.

Great Britain, Colonial Office. "Despatches to Vancouver, Island, 21
July 1849 - 16 August 1858". PABC MSS.

Minutes of the Council of Vancouver Island, 1851-1861. PABC reprint.
Victoria. King's Printer. 1918.

Vancouver Island. "Despatches to the Secretary of State, 1849-51".
PABC MSS.

-----, "Miscellaneous Letters, 1850-59". PABC MSS.

-----, Lands and Works Department. "Correspondence Relating to
Wharves, 1859-1864". PABC MSS.

Vancouver Island House of Assembly Correspondence Book, 1856-1859.
PABC reprint. Victoria. K.P. 1918.

PRIVATE CORRESPONDENCE, DIARIES, JOURNALS, PAPERS, REPORTS (general)

Albion Iron Works. "Minutes of Directors, 7 November 1882 - 29 June
1904". PABC MSS.

"Alex Macdonald Correspondence". (1864). Helmcken Collection, PABC
MSS.

"Alex Fraser Buckham Collection". Add. MSS 436, PABC.

"Baynes Sound Coal Company Correspondence from 1868". HSI, I-196,
PABC MSS.

"Beaufort Coal Company Correspondence, 1870". HSI, I-210, PABC MSS.

"Black Diamond Coal Company Papers" (1864-67). Uncatalogued PABC MSS.

Bryden, John. "Diary and Letterbook, 1878-1880". PABC MSS.

"Dunsmuir & Diggle Coal Claim Correspondence c 1871". HSI, I-201,
PABC MSS.

Dunsmuir, James. "Daily Work Records, 1869-70". (copy in BCPMmh).

"Labouchere Papers". (Duke of York & Albany 1826). pp. 14-91. Public Archives of Canada. MG24 A58.

Muir, Andrew. "Private Diary, 9 November 1848 - 5 August 1850". PABC MSS.

"Nanaimo Correspondence, August 1852 - September 1853". M-111, PABC MSS.

"Nanaimo Journal, August 1855 - March 1857". M-112, PABC MSS.

New Vancouver Coal Mining and Land Company. "Miscellaneous Papers". PABC MSS.

Nicol, Charles A. "Papers, 1858-68". PABC MSS.

North Pacific Coal Mining Company. "Papers" (1864-68). Uncatalogued PABC MSS.

"Perserverance Coal Company Correspondence, 1873". HSI, I-191, PABC MSS.

Queen Charlotte Coal Mining Company. "Papers" (1866). Uncatalogued PABC MSS.

Vancouver Coal Mining and Land Company. *Directors' Reports*. London, John King & Co. 1863-65. 5 vols. (Copies in HBCA (PAM) F33/1).

-----, (Mark Bate). "Director's Diary, 1 July 1880 - 30 September 1881". PABC MSS.

Victoria Gas Company. "Records, 1861-89". Add. MSS 4, PABC.

HUDSON'S BAY COMPANY ARCHIVES (Provincial Archives of Manitoba)

Hudson's Bay Company. "London Outward, 1850-52". HBCA (PAM) A6/29-30.

-----, "Fort Victoria Correspondence, 1848-58". HBCA (PAM) A11/72-78.

Vancouver Coal Mining and Land Company. "Miscellaneous Documents, 1861-62". HBCA (PAM) F33/1.

-----, "Prospectus". HBCA (PAM) F33/1.

-----, "Correspondence, 1866-67". HBCA (PAM) F33/1.

Vancouver Island Steam Sawing Mill Co. "Various Documents, 1852-54". HBCA (PAM) F32/1.

NEWSPAPERS, PERIODICALS, JOURNALS (general)

Daily Colonist (Victoria). 1858-91.

Evening Standard (Victoria). 1870-89.

Mining Journal, Transport and Commercial Gazette (London). 1861-85.

Nanaimo Free Press. 1874-88.

Nanaimo Gazette. 1865.

Prices Current (San Francisco). 1854-75.

Vancouver Daily World. 1889.

Victoria Gazette. 1860.

Tribune (Nanaimo). 1865-67.

CONTEMPORARY WORKS (general)

Bancroft, H.H. *History of British Columbia*. 1792-1887. San Francisco.
The History Co. 1887. 792 pp.

British Columbia and Victoria Directory, 1863. Victoria. Howard &
Barnett.

Mallendaine, E. *Victoria Directory*, 1874. Victoria.

Williams, R.T. *British Columbia Directory*, 1884-85. Victoria.

Gosnell, R.E. *Year Book of British Columbia*, 1897. Victoria, Q.P.

Kerr, J.B. *Biographical Dictionary of Well Known British Columbians*.
Vancouver. Kerr & Begg. 1890.

MacFie, Matthew. *Vancouver Island and British Columbia*. London.
Longmans Green. 1865.

Mayne, Chdr. R.C. *Four Years in British Columbia and Vancouver's
Island*. London. Murray. 1862.

Pemberton, J.D. *Facts and Figures relating to Vancouver Island and
British Columbia*. London. Longman Green. 1860.

HUDSON'S BAY COMPANY (published, general)

Blakey Smith, Dorothy, ed. *The Reminiscences of Doctor John Sebastian
Helmcken*. Vancouver. UBC Press. 1975.

Galbraith, John S. "The Hudson's Bay Company Under Fire, 1847-62".
CHR 30:322-43 (1949).

Gough, Barry M. "The Hudson's Bay Company and the Imperialism of
Monopoly: A Review Article". *B.C. Studies* 18:70-8 (1973).

-----". "The Character of the British Columbia Frontier". *B.C.
Studies* 32:28-40 (1976).

Innis, H.A. *The Fur Trade in Canada*. Univ. of Toronto Press. 1930.

Knaplund, Paul. "James Stephen on Granting Vancouver Island to the
Hudson's Bay Company, 1846-1848". *BCHQ* 9:259-72 (1945).

-----". "Letters from James Edward Fitzgerald to W.E. Gladstone
concerning Vancouver Island and the Hudson's Bay Company, 1848-
1850". *BCHQ* 13:1-22 (1949).

Large, R.G. ed. *The Journals of William Fraser Tolmie: Physician and
Fur Trader*. Vancouver. Mitchell Press. 1963.

Ormsby, M.A. "Sir James Douglas". *Dictionary of Canadian Biography*.
vol. 10, pp. 239-49.

Rich, E.E. ed. *The Letters of John McLoughlin, 1825-46*. London.
Hudson's Bay Record Society. vols. 4, 6, 7. 1941-44.

-----". *London Correspondence Inward from Eden Colville, 1849-1852*.
London. HBRS. vol. 19. 1956.

-----". *The History of the Hudson's Bay Company, 1763-1870*. London.
HBRS. 1959.

Sampson, Harriet S. "My Father: Joseph Despard Pemberton: 1821-93".
BCHQ 8:111-25 (1944).

Sage, Walter N. *Sir James Douglas and British Columbia*. U. of Toronto
Press. 1930.

-----". "Sir James Douglas, K.C.B.: The Father of British Columbia".
BCHQ 11:211-28 (1947).

Saw, Reginald. "Sir John H. Pelly, Bart., Governor of the Hudson's
Bay Company, 1822-1852". *BCHQ* 13:23-32 (1949).

"Sir George Simpson". *Oxford Companion to Canadian History and
Literature*. Toronto. Oxford U. Press. 1969. pp. 764-65.

BRITISH AND AMERICAN COAL INDUSTRIES

- Ashton, T.S. and J. Sykes. *The Coal Industry of the Eighteenth Century*. Ash. Manchester U. Press. 1929.
- Davis, Lance et al. *American Economic History. The Development of a National Economy*. Homewood, Ill. Richard D. Irwin. 1969.
- Duckham, Baron F. *A History of the Scottish Coal Industry, 1700-1815*. Newton Abbot, David & Charles. 1970.
- Finch, Roger. *Coals from Newcastle. The Story of the North East Coal Trade in the Days of Sail*. Lavenham, Suffolk. Terence Dalton. 1973.
- Jevons, H.S. *The British Coal Trade*. Newton Abbot, David & Charles Reprints (orig. pub. 1915). 1969.
- Jevons, W.S. *The Coal Question. An Inquiry Concerning the Progress of the Nation, and the Probable Exhaustion of our Coal Mines*. London. Macmillan. 1865.
- Nef, John U. *The Rise of the British Coal Industry*. London. F. Cass. 2 vols. 1966.
- Schurr, S. et al. *Energy in the American Economy, 1850-1975*. Baltimore. John Hopkins Press. 1960.
- Sweezy, P.M. *Monopoly and Competition in the English Coal Trade 1550-1850*. Harvard U. Press. 1938.

CAPITAL, ECONOMIC THEORY, AND BRITISH COLUMBIA'S ECONOMY

- Bliss, Michael. "review of T. Naylor *History of Canadian Business* (1975)". *Social History* 9:446-49 (1976).
- . "The History of Canadian Business: Reviewer's Response". *Soc. Hist.* 10:160-63 (1977).
- Cairncross, A.K. *Home and Foreign Investment, 1870-1913*. Cambridge U. Press. 1953.
- Careless, J.M.S. "Frontierism, metropolitanism, and Canadian History". *CHR* 35:1-21 (1954).
- . "The Business Community in the Early Development of Victoria, British Columbia". *Canadian Business History*, D.S. Macmillan, ed. Toronto. McClelland & Stewart. 1972. pp. 104-23.
- Caves, R.E. and R.H. Holton. "An Outline of the Economic History of British Columbia, 1881-1951". *The Canadian Economy, Prospect and Retrospect*. Harvard U. Press. 1959. pp. 218-32.

- Clement, Wallace. *Continental Corporate Power. Economic Linkages between Canada and the United States*. Toronto. McClelland & Stewart. 1977.
- Cox, T.R. *Mills and Markets. A History of the Pacific Coast Lumber Industry to 1900*. U. of Washington Press. 1974.
- Drache, Daniel. "review of R.T. Naylor *History of Canadian Business, 1867-1914*". *CHR* 59:83-90 (1978).
- Drummond, Ian. "review of R.T. Naylor *History of Canadian Business, 1867-1914*". *CHR* 59:90-3 (1978).
- Holmes, Cuthbert H. "Some Notes on the Economic Past, Present, and Future of Vancouver Island". *BCHQ* 16:53-66 (1952).
- Jefferys, J.B. "The Character and Denomination of Shares, 1855-1885". *Econ. Hist. Review* 16:45-55 (1946).
- King, W.T.C. *History of the London Discount Market*. London. F. Cass. 1936.
- Lamb, W. Kaye. "Early Lumbering on Vancouver Island, 1844-66". *BCHQ* 2:31-54, 95-122 (1938).
- McCalla, Douglas. "Tom Naylor's *A History of Canadian Business, 1867-1914: A Comment*". *Cndn. Hist. Assn. Historical Papers* 1976, pp. 249-54.
- Naylor, R. Tom. *The History of Canadian Business, 1867-1914*. Toronto. James Lorimer. 1975. 2 vols.
- "Trends in the Business History of Canada, 1867-1914". *CHA. Historical Papers* 1976, pp. 255-67.
- "The History of Canadian Business: A Reply". *Soc. Hist.* 10:152-59 (1977).
- Paterson, Donald G. *British Direct Investment in Canada 1890-1914. Estimates and Determinants*. U. of Toronto Press. 1976.
- Peters, J.E. and R.A. Shearer. "The Structure of British Columbia's External Trade, 1939 and 1963". *B.C. Studies* 8:34-46 (1970).
- Phillips, Paul. "Confederation and the Economy of British Columbia". *British Columbia and Confederation*, G. Shelton, ed. U. of Victoria. 1967. pp. 43-66.
- Ralston, Keith. "Patterns of Trade on the Pacific Coast, 1867-1892: The Case of the British Columbia Salmon Canning Industry". *B.C. Studies* 1:37-45 (1968).

Rostow, W.W. *British Economy of the Nineteenth Century*. Oxford U. Press. 1948.

Schumpeter, J.A. *The Theory of Economic Development*. Harvard U. Press. 1949. (Applies equally to management).

Shannon H.A. "The Coming of General Limited Liability". *Economic History*. 2:267-91 (1931).

----- "The Limited Companies of 1866-1883". *EHR* 4:290-307 (1933).

Shearer, Ronald A. "The Economy of British Columbia". *Trade Liberalization and a Regional Economy: Studies of the Impact of Free Trade on British Columbia*. U. of Toronto Press. 1971, pp. 3-42.

Solo, C. "Innovation in the Capitalist Process, A Critique of the Schumpeterian Theory". *Quart. Jour. of Econ.* 65:417-28 (1951).

COAL LANDS, GEOLOGY, MINEROLOGY

Buckham, A.F. "The Nanaimo Coal Field". *Canadian Institute of Mining and Metallurgy Transactions* 50:460-72 (1947).

Cail, Robert E. *Land, Man, and the Law. The Disposal of Crown Lands in British Columbia, 1871-1913*. Vancouver. U. of Br. Col. Press, 1974.

Executive Committee of the XII International Geological Congress, Canada, 1913. *The Coal Resources of the World*. Toronto. Morang & Co. 3 vols. 1913.

Clapp, C.H. "The Geology of the Nanaimo Coal District". *CIMM Transactions*, pp. 334-53 (1912).

----- "Coal Fields of Vancouver Island". *Coal Resources of the World*. (Toronto, 1913), vol. 2. pp. 509-13.

Dunbar, Carl O. *Historical Geology*. New York. John Wiley & Sons. 1960.

Graham, Chas. "Coal Mining in Comox District, Vancouver Island". *CIMM Transactions* 25:412-20 (1922).

----- "The Problems of the Vancouver Island Coal Industry". *CIMM Transactions* 27:456-76 (1924).

Howay, F.W. "Coal-mining on Burrard Inlet, 1865-66". *BCHQ* 4:1-20 (1940).

James, A.R.C. "The Coalfields of Vancouver Island". B.C. Dep't of Mines, unpub. report. Victoria. 1969.

Mackenzie, J.D. "The Coal Measures of Cumberland and Vicinity, Vancouver Island". *CIMM Transactions* 25:382-411 (1922).

----- . "Coal Resources of Southern Vancouver Island". Canadian Geographical Survey, unpub. report. Ottawa. 1923.

North Pacific Anthracite Coal Co. "Agreement" with Ed. Stephens, C.E. 27 Feb 1866. PABC MSS.

Richardson, J. "Coal Fields of the East Coast of Vancouver Island". Ottawa, G.S.C. *Report of Progress*. 1872. pp. 73-97.

----- . "Report on Geological Explorations in British Columbia". GSC. *Report of Progress*, 1873-74. pp. 94-102.

----- . "Report on the Coal Fields of Nanaimo, Comox, Cowichan (*sic*), Burrard Inlet and Sooke, British Columbia". GSC. *Report of Progress*, ~~1876-77~~. pp. 160-92.

Rickard, T.A. "A History of Coal Mining in British Columbia". *The Miner* 15:6:20-34 (1942).

Stutzer, Otto. *Geology of Coal*. U. of Chicago Press. 1940. (Trans. A.C. Noe).

Wrinch, L.A.A. "Land Policy of the Colony of Vancouver Island". UBC unpub. M.A. thesis. 1932.

LABOUR AND IMMIGRATION

Barlett, J.N.G. "The 1877 Wellington Miners' Coal Strike". UBC unpub. B.A. Hons. essay. 1975.

Briggs, Asa and John Saville, eds. *Essays in Labour History, 1886-1923*. London. Macmillan. 1971. *passim*.

Brinley, Thos. *Migration and Economic Growth. A Study of Great Britain and the Atlantic Community*. Cambridge U. Press. 1954.

Conway, Alan. "Welsh Gold-Miners in British Columbia during the 1860's". *BCHQ* 21:51-74 (1957-58).

Mayo, Elton. *The Human Problems of an Industrial Civilization*. Cambridge, Mass. Macmillan Co. 1933.

Phillips, Paul. *No Power Greater: A Century of Labour in British Columbia*. Vancouver, B.C. Federation of Labour. 1967.

- Redford, Arthur; *Labour Migration in England, 1800-1850*. Manchester U. Press. 1926 (rev. 1964).
- Roy, R.H. "'... in Aid of a Civil Power', 1877". *Canadian Army Journal* 7:3:61-9 (1953).
- Saywell, J.T. "Labour and Socialism in British Columbia: A Survey of Historical Development before 1903". *BCHQ* 15:129-50 (1951).
- Shepperson, W.S. *British Emigration to North America*. Minneapolis. U. of Minnesota Press. 1957.
- Taylor, A.J. "Labour Productivity and Technological Innovation in the British Coal Industry, 1850-1914". *EHR* S2-14:48-67 (1961).
- "The Sub-contract System in the British Coal Industry". *Studies in the Industrial Revolution*, L.S. Presnell, ed. London. Athlone Press. 1960.
- Wood, Geo. H. "Real Wages and the Standard of Comfort Since 1850". *Journal of the Royal Statistical Society* (1909). Reprinted in Carus-Wilson, E.M. ed. *Essays in Economic History* (vol. 3). London. E. Arnold. 1954.

MANAGEMENT AND ENTREPRENEURSHIP

- Audain, James. *Alex Dunsmuir's Dilemma*. Victoria. Sunnyside Pub. Co. 1964.
- *From Coalmine to Castle. The Story of the Dunsmuirs of Vancouver Island*. New York. Pageant Press. 1955.
- Bennett, Wm. *Builders of British Columbia*. Vancouver. pop. pub. 1961. 1935.
- Bruse, R. *The Entrepreneurs. Strategies, Motivations, Successes, and Failures*. Bedford. Libertarian Books. 1976.
- Chandler, Alfred D. Jr. *The Visible Hand. The Managerial Revolution in American Business*. Harvard U. Press. 1977.
- Cole, A.H. *Business Enterprise in its Social Setting*. Harvard U. Press,
- Fayol, Henri. *General and Industrial Management* (English title). New York. Pitman. 1949 (First published in Paris, 1916).
- Gallacher, Daniel T. "Businessmen or Bureaucrats? Historians and the Problem of Leadership in Colonial British Columbia". *Syesis* 3: 173-86 (1970).
- Gough, J.W. *The Rise of the Entrepreneur*. London. B.T. Batsford. 1969.

- Hirschman, A.O. *The Strategy of Economic Development*. New Haven. Yale U. Press. 1958. (Applies equally to capital).
- Jackman, S. "Hon. James Dunsmuir". *Portraits of the Premiers*. Vancouver. Evergreen Press. 1969. pp. 135-44.
- Miller, Wm. ed. *Men in Business. Essays in the History of Entrepreneurship*. Harvard U. Press. 1952. *passim*.
- Myers, Gustavus. *A History of Canadian Wealth*. Chicago. 1912.
- Payne, P.L. *British Entrepreneurship in the Nineteenth Century*. London. Macmillan. 1974.
- Pollard, Sidney. *The Genesis of Modern Management. A Study of the Industrial Revolution in Great Britain*. London. Edward Arnold. 1965.
- Pugh, D.S. *et al. Writers on Organizations*. Harmondsworth, Middlesex. Penguin Books. 1971.
- Taylor, Fredrick W. *The Principles of Scientific Management*. New York. Harper Bros. 1911.

MARKETS AND SALES

- Careless, J.M.S. "The Lowe Brothers, 1852-70: A Study in Business Relations on the North Pacific Coast". *B.C. Studies* 2:1-18 (1969).
- Hacking, N.R. "'Steamboat' 'Round the Bend': American Steamers on the Fraser River in 1858". *BCHQ* 8:255-80 (1944).
- "Steamboating on the Fraser in the \$Sixties". *BCHQ* 10:1-42 (1946).
- Kemble, J.H. "Coal From the Northwest Coast, 1848-1850", *BCHQ* 2:123-30 (1938).
- Lamb, W. Kaye. *History of the Canadian Pacific Railway*. New York. Macmillan. 1977.
- Lawrence, J.C. "Markets and Capital; a history of the lumber industry of British Columbia 1778-1952". UBC unpub. M.A. Thesis. 1957.
- Lewis, O. *San Francisco: Mission to Metropolis*. Berkley. Howell-North. 1966.
- Masters, Donald C. *The Reciprocity Treaty of 1854*. London. Longman Green. 1937.

North, Douglas. "Location Theory and Regional Economic Growth".
Journal of Political Economy 63:243-58 (1955).

----- . "Ocean Freight Rates and Economic Development, 1750-1913".
JEH 18:537-55 (1958).

Phillips, C.F. and D.J. Duncan. *Marketing Principles and Methods*.
New York. Richard D. Irwin Inc. 1968.

Soule, Frank *et al.* *The Annals of San Francisco through 1855*. Palo
Alto. Lewis Osborne. 1966.

Turner, Robert D. *Vancouver Island Railroads*. San Marino. Golden West
Books. 1973.

SHIPPING: MERCHANT AND NAVAL

Bartlett, C.J. *Great Britain and Steampower, 1815-53*. Oxford.
Clarendon Press. 1963.

Brock, P.W. and Basil Greenhill. *Steam and Sail: In Britain and North
America*. Newton Abbot. David & Charles. 1973.

Brodie, B. *Steampower in the Machine Age, 1814-1940*. Princeton U. Press.
1941.

"Coaling Stations". *Encyclopaedia Britannica*. 10th ed. 1902. vol. 27,
pp. 122-24.

Croil, James. *Steam Navigation and Its Relation to the Commerce of
Canada and the United States*. Toronto. Wm. Briggs. 1898.

Gough, B.M. *The Royal Navy and the Northwest Coast of North America,
1810-1914*. Vancouver, UBC Press. 1971.

Graham, G.S. *Sea Power and British North America, 1783-1820*. Oxford
U. Press. 1941.

----- . "The Ascendency of the Sailing Ship". *EHR* 9:74-88 (1956).

----- . *Politics of Naval Superiority; Studies in British Maritime
Ascendency*. Cambridge U. Press. 1966.

Great Britain, House of Commons. Hamilton Committee on Naval Estimates.
Report. HOC 182 (1859) XIV, 703.

----- . Select Committee on the Board of Admiralty. *Report*. HOC
438 (1861) V, 1.

Lamb, W. Kaye. "Correspondence Relating to the Establishment of a Naval
Base at Esquimalt". *BCHQ* 6:277-96 (1942).

- Lewis, M. *The Navy in Transition, 1814-64; a Social History*. London. Hodder & Stoughton. 1965.
- Longstaff, F.V. "The Beginnings of the Pacific Station and Esquimalt Royal Naval Establishment". B.C. Hist. Ass'n. *Third Annual Report and Proceedings*. Victoria. K.P. 1925. pp. 29-43.
- . *Esquimalt Naval Base. A History of its Work and its Defences*. Vancouver. F.V. Longstaff. 1942.
- .and W. Kaye Lamb. "The Royal Navy on the Northwest Coast, 1813-1850". *BCHQ* 9:1-24, 113-28 (1945).
- Lord Brassey. *The Naval Annual, 1886*. Portsmouth. J. Griffin & Co. 1886 (first year of publication).
- Marder, A.J. *The Anatomy of British Seapower; A History of British Naval Policy in the pre-dreadnought era, 1880-1905*. Hamden, Conn. Archon Books. 1940.
- McKelvie, B.A. "Coal for the Warships". *The Beaver* 281:8-11. (1951)
- Moyse-Bartlett, H. *A History of the Merchant Navy*. London. Geo. Harrap. & 1937 1937.
- Richmond, H.W. *Statesmen and Steampower*. Oxford. Clarendon Press. 1947.
- Schurman, D.M. "Esquimalt: Defense Problem, 1865-1887". *BCHQ* 19:57-70 (1955).
- Tames, Richard. *The Transport Revolution in the 19th Century*. Oxford U. Press. 3 vols. (1970-71).

TECHNOLOGY

- Cummings, Doug. "Canadian Collieries (Dunsmuir) Ltd." *The Steam Chest*. Vancouver. "Hi-Ballers" Railroad Club. 3:4:27:1-9 (1960).
- Dickson, James. "Submarine Coal Mining at Nanaimo, Vancouver, Island, British Columbia". *CIMM Transactions*: 43:465-72 (1935).
- Elements of Mining Engineering*. Scranton. The Colliery Engineering Co. 1898. vol. 3.
- Garman, M.W. "Coal Washing on Vancouver Island". *CIMM Transactions* 25:446-53 (1922).
- Habakkuk, H.J. *American and British Technology in the Nineteenth Century. The Search for Labour-Saving Inventions*. Cambridge U. Press. 1962.

- Morgan, Wm. *Mining Tools. For the Use of Mine Managers, Agents, Students, Etc.* London. Lockwood & Co. 1865. (with illus. of "atlas").
- Nef, J.U. "Coal Mining and Utilization". *A History of Technology.* Oxford U. Press. 1957. vol. 3, pp. 72-88.
- . *The Conquest of the Material World.* Chicago U. Press. 1964.
- Ritson, J.A.S. "Metal and Coal Mining, 1750-1875". *Hist of Tech.* Oxford. 1958. vol. 4, pp. 64-98.
- Sawford, Frank. "Electrically Operated Coal Mines. Equipment at the Mines of Canadian Collieries (Dunsmuir) Limited in the Comox District, Vancouver Island, B.C.". *CIMM Transactions* 25:421-45 (1922).
- Smyth, W.W. *Coal and Coal Mining: A Rudimentary Treatise on.* London. Lockwood & Co. 1871.
- Stowers, A. "The Stationary Steam Engine". *Hist. of Tech.* Oxford. 1958. vol. 5, pp. 124-40.
- Tate, Thos. *Exercises on Mechanics and Natural Philosophy; or an Essay Introduction to Engineering.* London. Longman Green. 1846.
- Textbook on Coal Mining.* Scranton, Ill. International Textbook Co. 1896.
- Tomlinson, Chas. *A Rudimentary Treatise on Warming and Ventilation.* London. Virtue Bros. 1864.
- Wilson, Chas. "Technology and Industrial Organization". *Hist. of Tech.* 1958. vol. 5, pp. 799-813.
- Young, Otis E. Jr. *Black Powder and Hand Steel. Miners and Machines on the Old Western Frontier.* Norman, Okla. U. of Okla Press. 1975.

MISCELLANEOUS MATERIALS

- Acreman, A. et al. *Sooke Past and Present.* Victoria. Sooke and North Sooke Women's Institute. 1971.
- Akrigg, G. and Helen. *British Columbia Chronicle, 1847-1871.* Vancouver. Discovery Press, 1977.
- Berger, Carl. *The Writing of Canadian History. Aspects of English-Canadian Historical Writing: 1900-1970.* Toronto. Oxford U. Press. 1976.

- Bertram, Gordon W. "Historical Statistics on Growth and Structure of Manufacturing in Canada, 1870-1957". *Papers. Cndn. Pol. Sci. Ass'n. Conference on Statistics 1962-& 1963* U. of Toronto Press. 1964, pp. 93-152.
- "Coal Mining". PABC vertical files.
- Davidson, D.C. "The War Scare of 1854: The Pacific Coast and the Crimean War". *BCHQ* 5:243-54 (1941).
- Duff, Wilson. *The Indian History of British Columbia. The Impact of the White Man.* Victoria. B.C. Prov. Museum, 1964.
- "Dunsmuir, Robert". PABCvf.
- "Dunsmuir, James". PABCvf
- "Fort Rupert". PABCvf
- Goult, B. "First and Last Days of the *Princess Royal*". *BCHQ* 3:15-24 (1939).
- Gunn, A. "Gold and the early settlement of British Columbia, 1858-1885". UBC unpub. M.A. thesis. 1965.
- Hendrickson, James E. "Two Letters from Walter Colquhoun Grant". *B.C. Studies* 26:3-15 (1975).
- Howay, F.W., W.N. Sage, and H.F. Angus. *British Columbia and the United States.* Toronto. Ryerson. 1942.
- Hughes, Ben. *History of the Comox Valley, 1862 to 1945.* no pub., n.d.
- Johnson, Patricia. "Fort Rupert". *The Beaver* 302:4:4-15 (1972).
- . *Nanaimo.* North Vancouver. Trendex Publications. 1974.
- Lang, F.W. and W. Kaye Lamb. "The Fire Companies of Old Victoria". *BCHQ* 10:43-76 (1946).
- Lamb, W. Kaye. "The Census of Vancouver Island, 1855". *BCHQ* 4:51-58 (1940).
- . "Four Letters Relating to the Cruise of the *Thetis*, 1852-53". *BCHQ* 6:189-206 (1942).
- . "The Governorship of Richard Blanshard" *BCHQ* 14:1-40 (1950).
- Lucas, Rex A. *Minetown, Milltown, Railtown. Life in Canadian Communities of Single Industry.* U. of Toronto Press. 1971.

- Lugrin, N. de Bertrand. *The Pioneer Women of Vancouver Island, 1843-1866*. Victoria. Women's Canadian Club (Van. Is.). 1928.
- McClughan, Aileen. "Nanaimo in the Early Days". *B.C. Magazine* 7:1111-1119 (1911).
- McKelvie, B.A. "The Founding of Nanaimo" *BCHQ* 8:169-88 (1944).
- Matheson, Marion H. "Some Effects of Coal Mining on the Development of the Nanaimo Area". UBC unpub. M.A. thesis. 1950.
- Morley, Alan. *Vancouver from Milltown to Metropolis*. Vancouver. Mitchell Press. 1961.
- Mouat, A.N. "Notes on the Norman Morison". *BCHQ* 3:203-14 (1939).
- "Nanaimo". PABCvff
- Norris, John. *Strangers Entertained. A History of the Ethnic Groups of British Columbia*. Victoria. B.C. Centennial '71 Cmtee. 1971. pp. 1-53, 63-85, 209-19.
- Ormsby, M.A. *British Columbia: A History*. Toronto. Macmillan. 1964.
- Rickard, T.A. "The Gold Rush of '49". *BCHQ* 14:41-60 (1950).
- Robin, Martin. *The Rush for Spoils, 1871-1933*. Toronto. McClelland & Stewart. 1972.
- Trimble, W.J. *The Mining Advance into the Inland Empire*. Madison, Wisc. 1914.
- Walbran, Capt. John. *British Columbia Coast Names*. Vancouver. Vancouver Public Library reprint, 1971 (orig. pub. 1909).
- Woodward, Frances. "The Influence of the Royal Engineers on the Development of British Columbia". *B.C. Studies* 24:3-51 (1975).