

Real Wages and the Standard of Living in Vancouver, 1901-1929*

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EDITORS' PREFACE

As our regular readers know, issues of *BC Studies* normally include several articles on a variety of topics. In a departure from this pattern this issue is devoted largely to a single article, one we believe is an unusually significant contribution to Canadian economic and social history.

The "standard of living" debate has been a major controversy in British historiography for more than two decades, one side led by R. M. Hartwell arguing that industrialization brought an increase in the standard of living of British workers, the other, whose most notable spokesman is E. J. Hobsbawm, contending that it did not. Only recently and in a quite different economic and social context has a similar discussion begun among Canadian historians and economists. We know a good deal about the rising fortunes of entrepreneurs and financiers such as William Mackenzie, Donald Mann, Joseph Flavelle, Edmund Walker, A. E. Ames, George A. Cox and Chester Massey during the rapid growth of the first three decades of the twentieth century, but little about the material well-being of working men and women during this period. To what extent, if at all, did they profit from the great immigration, the railway building, and "the wheat boom" of the years before World War I, and from the industrialization begun then and accelerated by the war?

Economists Gordon Bertram and Michael Percy have studied national trends in real wages, while historians Terry Copp and Michael Piva have examined the lives of the working class in Montreal and Toronto respectively. Thus we are beginning to have some picture of the standard of living of the wage-earning sector of society during the economic expansion of the first two decades of the century and the slower development of the 1920s.

Eleanor Bartlett's contribution to this discussion, published here, is based on her M.A. thesis presented in the Department of History at the University of British Columbia in 1980. It focuses on one measure of the standard of living in one Canadian city: real-wage indexes in Vancouver in the years 1901-1929. Her innovative method and results, which challenge some of the conclusions of earlier studies of working-class incomes, should encourage other scholars to embark on comparable studies of other centres.

* The author would like to thank George Gregory, W. Peter Ward, Donald G. Paterson and Margaret Prang for their comments on earlier drafts of this article.

Some of our readers may find much of this article technically formidable, but the general argument can be grasped without a detailed comprehension of the statistical material. For those who are currently concerned about their "real wages" in a time of inflation and general economic uncertainty, that argument is worth pursuing.

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For many years the consensus among historians has been that the standard of living of wage-earners did not improve with early twentieth-century Canadian economic expansion. Proof of economic growth is not hard to find: the statistics of increasing revenues in manufacturing industries and natural resource extraction, the miles of newly completed railway lines and the value of building permits, to name a few, can be cited.¹ However, economists and historians are pessimistic about the extent of growth of income per capita and, more particularly, how much the working man shared in the new prosperity. Often the manual wage-earner's labour was greatly in demand, while at other times many of his number roamed the streets in hope of a job or, failing that, relief. Even in times of full employment his wages may have been eroded by rising living costs. Recently this consensus has been questioned. In an article published in the *Canadian Journal of Economics* Gordon W. Bertram and Michael Percy challenge the pessimistic thesis.² They do so by providing estimates of average national working-class real wages which increased slightly, unlike those estimates of other scholars which suggested that real wages remained constant or declined.³

When confining one's attention to the working class of Vancouver, should one be pessimistic or optimistic about its standard of living? Although general comments have been made in the literature about the city, no study specifically addresses this question; this article does. The methods chosen are the quantitative methods of Bertram and Percy.

¹ M. C. Urquhart and K. A. H. Buckley give the following GNP estimates for the years under study: 1900, \$1,057,000,000; 1910, \$2,235,000,000; 1920, \$5,529,000,000; and 1929, \$6,134,000,000. Series # 214-244, Gross national product, by industry, decennially, 1870 to 1929, and Series E1-2, National income and gross national product, by components, 1926 to 1960. *Historical Statistics of Canada* (Cambridge: Cambridge University Press, 1965), pp. 141, 130.

² Gordon W. Bertram and Michael Percy, "Real Wage Trends in Canada 1900-26: Some Provisional Estimates," *Canadian Journal of Economics* 12 (May 1979): 299-312.

³ Albert Rees similarly challenges the position of American scholars that working men did not immediately share in the profits of late nineteenth-century and early twentieth-century American economic growth. Albert Rees, *Real Wages in Manufacturing 1890-1914*, assisted by Donald P. Jacobs, A study of the National Bureau of Economic Research, New York (Princeton: Princeton University, 1961).

I

In the first three decades of this century Canada's economy expanded rapidly. The years up to 1913 are commonly referred to as the era of wheat, tariffs and railroads. The period after the post-war readjustment until 1929 was the calm before the storm of depression. Certain contemporary observers thought the prosperity of these thirty years was general. In his observations of Canada, published in 1906, J. A. Hobson remarked that "every able-bodied man can find a job," and quoted the then Minister of Labour, who said, "we have no poor."⁴ There were reservations. One of the most prominent social critics of the time, J. S. Woodsworth, was not convinced that all social groups shared in prosperity. Citing the poverty and crippling high living costs in Winnipeg as evidence, for example, in *Strangers Within Our Gates*, he noted the plight of poverty-stricken Italian migrants living in the city's North End who were driven by high rents into crowded, unsanitary tenements.⁵ Later, in 1919, he quoted a disgruntled Vancouver dock worker's complaint in *On the Waterfront*: "Aren't the capitalists making their millions out of us. This new ship nearly paid for herself in the last voyage and yet the price of rice goes up."⁶

Some later economists and historians support Woodsworth's view of the condition of the working class in the early twentieth century. O. J. Firestone, in his book *Canada's Economic Development, 1867-1953*, estimates that net national income per capita increased at an annual rate of 1.95 per cent for the years 1890 to 1910, but changed negligibly between 1910 and 1930.⁷ Sylvia Ostry and H. D. Woods, in *Labour Policy and Labour Economics in Canada*, argue that the erosion of the working man's position took place even earlier than Firestone suggests. They claim that national real wages actually declined by 3.9 percent between 1901 and 1914.⁸

⁴ J. A. Hobson, *Canada To-day* (London: 1906), p. 5 cited in Michael J. Piva, *The Condition of the Working Class in Toronto — 1900-1921*, Cahiers d'Histoire No. 9 (Ottawa: University of Ottawa Press, 1979), p. 28. Studies of Hobson's sort seem to abound for both Canada and the smaller region of British Columbia.

⁵ James S. Woodsworth, *Strangers Within Our Gates, or Coming Canadians* (Toronto: University of Toronto Press, 1971), p. 134.

⁶ Woodsworth, *On the Waterfront* (Ottawa: Mutual Press, 1918), p. 10.

⁷ Net national income is derived by subtracting from gross national product depreciation allowances and similar business costs, and indirect taxes less subsidies. O. J. Firestone, *Canada's Economic Development, 1867-1953: With Special Reference to Changes in the Country's National Product and National Wealth*, Income and Wealth Series, No. 7 (London: Bowes and Bowes, 1958), pp. 171, 317.

⁸ H. D. Woods and Sylvia Ostry, *Labour Policy and Labour Economics in Canada* (Toronto: Macmillan, 1962), p. 211.

The pessimism of Woodsworth is most strongly echoed by two historians, Terry Copp and Michael J. Piva, in separate studies of Montreal and Toronto. From their analyses of available Dominion and provincial labour department material on working-class wages and living costs in the two cities they conclude that real wages of most blue-collar workers declined, and a large number, if not a majority, of their family incomes were insufficient for them to live decently.⁹ Even in the prosperous days of the late 1920s, Copp argues, "47 per cent of the Montreal labour force [fell] well below [the] poverty line and an additional 25 per cent [were] on the edge . . ." The definition of poverty used by Copp is an income of \$1,590 per year. This is the cost of a budget described by the Dominion Department of Labour as meeting the ordinary needs of a family of five in 1926.¹⁰ Piva estimates that in 1921 a family of five in Toronto needed \$1,655.29 *per annum* to purchase the items covered in the Department of Labour's budget. Yet he notes that the average Toronto adult male blue-collar worker earned only 75.6 percent of this amount.¹¹ In addition Copp and Piva argue from their estimates of increases in return from production that the social inequality of incomes increased in both cities. They note that the value of production grew more rapidly than did working men's wages.¹²

Vancouver shared in early twentieth-century economic and demographic development. Between 1901 and 1929 the exploitation of the provincial natural resources sector was undertaken at an unprecedented rate. Exports of lumber products increased tenfold, from 326 million board feet in 1902 to 3.3 billion in 1929; the value of mineral production increased from \$20 million in 1901 to \$68 million in 1929; and the value of fishery production increased from \$8 million in 1901 to \$24 million in 1929.¹³ The value of all manufactures in the province, including secondary processing of primary products, increased from \$19 million in 1900 to \$271 million in 1928.¹⁴ Much of this new wealth flowed through Van-

⁹ Piva calculates a declining real-wage index for construction and manufacturing workers, two classes of workers in the printing trades, street railway motormen and conductors, and factory craft workers. Piva, pp. 48, 52, 54, 55.

¹⁰ Terry Copp, *The Anatomy of Poverty: The Condition of the Working Class in Montreal, 1897-1929* (Toronto: McClelland & Stewart, 1974), pp. 31-32, 43.

¹¹ Piva, p. 38. According to the Department of Labour their budget only covered some 70 per cent of family expenditures. Piva and Copp increase the cost of the department's budget appropriately to reflect this.

¹² Copp, p. 43; Piva, pp. 4, 5.

¹³ British Columbia, Provincial Bureau of Information, *Manual of Provincial Information: Province of British Columbia, 1930*, pp. 103, 117, 126.

¹⁴ *Ibid.*, p. 145.

couver, which during these years became the major regional metropolis serving the provincial economy. The demographic character of Vancouver also reflected provincial economic expansion. The city's population grew from 27,000 in 1901 to 247,000 in 1931.¹⁵ This growth was mainly a result of migration and not natural increase. In 1911 only 44 percent of the population had been born in Canada, and only a third of these had been born in British Columbia.¹⁶ Most of the immigrants were men of working age, a fact borne out by the 1911 highly distorted sex ratio for the city of 1½ males for every female and by the median and mean ages of the city's population in 1911 of 27.48 and 27.96.¹⁷

Increases in the city's population, however, were not always matched by economic growth. At times employers were short of labour. An article entitled "Lots of Work in Vancouver," published in *British Columbia Magazine* in 1911, warned "hoboes" to

keep away from Vancouver, town no good, work stares in your face from every labor agent's window and comes all the way to meet you. If you come here you are likely to get shanghai'd into a logging camp or a railway construction camp and put to work keep away.¹⁸

In times of depression, though, the labour surplus was high as men drifted into the city from the prairies, the interior of the province and American coastal cities. In the autumn of 1908 the mayor of Vancouver forwarded the following notice to a number of newspapers in Manitoba, Saskatchewan and Alberta:

The citizens of Vancouver desire to notify all parties that for the present winter the labour market in Vancouver is rather overdone, and no inducement can be offered for labourers before, at least, next March or April.

¹⁵ Canada, Department of Trade and Commerce, *Fifth Census of Canada, 1911: Areas and Population by Provinces, Districts and School Districts*, 1:527; *Sixth Census of Canada, 1921: Population, Number, Sex and Distribution—Racial Origins—Religion*, 1:221; Canada, Department of Trade and Commerce, Dominion Bureau of Statistics, *Seventh Census of Canada, 1931: Population—Local Subdivisions*, 2:7. The 1931 population figure reflected the 1929 incorporation of Point Grey and South Vancouver. The population of Vancouver in 1928 was 142,262. Vancouver, *Annual Report, 1941*, p. 63.

¹⁶ *Fifth Census of Canada, 1911: Religions, Origins, Birthplace, Citizenship, Literacy and Infirmities, by Province, Districts and Sub-Districts*, 2:427.

¹⁷ Calculated from *Fifth Census of Canada, 1911: Areas and Population by Provinces, Districts and School Districts*, 1:174; and from Canada, Department of Trade and Commerce, Dominion Bureau of Statistics, *Eighth Census of Canada, 1941: Ages of the Population*, 3:8-9.

¹⁸ "Lots of Work in Vancouver," *British Columbia Magazine*, August 1911, pp. 811-12.

We give this notice in view of the rush of labourers to this city from the prairie districts last fall. The city will only take care of actual residents who have resided here at least six months.¹⁹

The Vancouver labour force was affected by the province's periods of boom and bust as well as regular seasonal fluctuations. The province's natural resource industries depended on external demand for their markets. When demand for resource-intensive goods was high, jobs were available, expansion undertaken and migrants attracted to the province. When demand fell, so did the number of jobs. Many workers then left British Columbia, but still others came looking for work or a mild winter climate in which to spend their unemployment.²⁰ On top of these cyclical economic fluctuations were more regular seasonal variations. The province's resource industries were active primarily in the spring, summer and early fall. When winter closed these operations, the workers flocked to Vancouver to find other work or to spend their unemployment.

Sometimes this pattern of employment resulted in no noticeable distress, but at other times it caused severe distress which taxed the city's relief capability. Distress was particularly severe when seasonal unemployment coincided with cyclical unemployment. Trends in the annual value of construction, an activity that was very responsive to changes in the business climate, disclosed long-term economic variations. These figures are given here in Table 1. These statistics suggest there was considerable building activity between 1910 and 1912, after which there was a considerable decline. The construction industry did not revive in the last years of the war even though other industries in the city seemed to recover from the 1913-15 depression. The building industry did, however, regain its pre-war levels in the late 1920s. Trade union reports of unemployment for the province, given here in Table 2, showed cyclical and seasonal fluctuations. In particular, the figures imply that unemployment increased in winter.

Did working-class living standards improve in Vancouver during the period of economic growth? The method of answering this question is largely quantitative, although the qualitative record of contemporary observers will be considered further. In particular, the real wage or pur-

¹⁹ Cited in *The Labour Gazette* (hereafter *LG*) 9 (November 1908):467.

²⁰ In describing more recent times, however, Marr and Paterson point out that the diversification of the primary resources base has meant that fluctuations in them did not necessarily occur simultaneously. William L. Marr and Donald G. Paterson, *Canada: An Economic History* (Toronto: Macmillan, 1980), p. 44.

TABLE 1
*Value of Building Permits Issued by Years,
 Vancouver, 1903-1929*

1903	\$ 1,400,000*	1912	\$19,428,432	1921	\$ 3,045,132
1904	1,968,891	1913	10,423,197†	1922	8,661,695
1905	2,653,000	1914	4,484,476	1923	6,277,574
1906	4,233,910	1915	1,593,379	1924	6,230,774
1907	5,596,594	1916	2,989,893	1925	7,964,375
1908	5,950,893	1917	768,255	1926	15,501,262
1909	7,264,563	1918	1,450,229	1927	10,687,167
1910	13,150,365	1919	2,271,611	1928	12,777,293
1911	17,652,642	1920	3,569,636	1929	21,572,727‡

* For eleven months only.

† Point Grey and South Vancouver were incorporated into Vancouver in 1929. In 1928 the values of building permits in these two municipalities were \$5,136,850 and \$1,533,145 respectively.

‡ The Labour Gazette reported that the 1913 figure gave an exaggerated notion of building activity since many of the projects did not obtain financing. *The Labour Gazette* 14 (July 1913):37.

SOURCES: *The Labour Gazette*, 1903-1913; British Columbia, Provincial Bureau of Information, *Province of British Columbia*, 1930, p. 60.

chasing power of wage-earners must be measured. To say that wage-earner's real wages increase, decrease or remain the same does not state all there is to know about standards of living. Inasmuch as people buy their standard of living, real wages measure their ability to continue to purchase what their purchases have been known to be at one time. The real wage is only a yardstick of that subject's progress from that point but does not account for intangibles which do not figure in expenditures. Real wages do not measure whether the yardstick to begin with is adequate. And real-wage estimates of one social group cannot be compared easily with those of other people in the same society as a gauge of social inequality or relative deprivation. This article, of course, cannot hope to answer all questions about the condition of the Vancouver working class from 1901 to 1929. Nevertheless it does assemble evidence about one aspect of working-class life in Vancouver that, to date, has not been brought together and provides clues for the more tangible dimensions of inquiry.

TABLE 2
*Percentages of Unemployment in Trade Unions,
 June and December, 1915-1929*

	<i>June</i>		<i>December</i>	
	<i>B.C.</i>	<i>Canada</i>	<i>B.C.</i>	<i>Canada</i>
1915			14.8	7.9
1916	5.8	2.1	2.4	2.0
1917	1.8	1.2	3.2	2.6
1918	0.9	0.4	4.0	2.5
1919	3.4	2.6	18.6	4.3
1920	5.8	2.1	11.6	13.0
1921	24.4	13.2	24.7	15.1
1922	7.1	5.3	13.3	6.4
1923	4.0	3.4	7.1	7.2
1924	2.2	5.8	10.2	11.6
1925	4.1	6.1	6.9	7.9
1926	2.6	4.1	7.5	5.9
1927	2.7	3.2	10.5	6.6
1928	3.6	3.2	6.9	6.6
1929	2.6	2.9	11.5	11.4

SOURCE: *The Labour Gazette*, 1915-1930.

NOTE: There are three problems in using trade union reports to indicate unemployment levels. Firstly, and most obviously, the reports do not reflect the positions of unorganized workers. Secondly, as K. B. Conn notes, some unemployed trade unionists likely allowed their memberships to lapse. Therefore, the percentages may under-represent trade union unemployment. On the other hand, as the Department of Labour notes, the trade union reports could over-estimate trade unemployment since "particulars of unemployment are more generally available for those trades in which the loss of time is greatest." K. B. Conn, "Employment and Unemployment in Canada: Its Measurement, with Special Reference to 1919," *Canadian Historical Review* 6 (September 1925):236-44; "Trade Union Reports on Unemployment," *The Labour Gazette* 16 (April 1916): 1122-25.

II

All measures of working-class standards of living originate in the flows of money income. Working people in the city of Vancouver received a money income with which they purchased commodities which influenced their standard of living. One key measure of the living standards of

people who live by earning and spending money is the real wage, since this measures the true value or the purchasing power of their earnings. As an economic concept the real wage is simple: essentially it compares wages to customary expenditures. Does the income of an individual or group increase more, as much as or less than living costs?

In this study real wages are constructed by comparing the weekly wages of various trades with an average expenditure budget derived from a survey of working-class families. It is essential that the survey budget used be as close as possible to the true average budget of the wage-earners studied, because expenditure patterns vary widely among different social groups. The influence of income on expenditure patterns, for example, is perhaps best known. According to Engel's law,²¹ as income increases the percentage of income spent on subsistence decreases, while that for non-essentials increases. Even within distinct social groups other differences in expenditure patterns exist which are functions of ages of family members, the number of family members, education, personal taste and other factors. For example, a young man has fewer responsibilities if he is single than he has a few years later when he supports a wife and several children. Responsibilities gradually diminish as he grows older and as his children become independent. The expenditure pattern over this life cycle is predictable. The proportion of necessity expenses, other things remaining equal, increases from the first to second stage and then decreases as the third stage approaches. It is important to remember, therefore, that any average expenditure budget obscures expenditure variations within a subject group. An average budget only identifies general characteristics.²²

Two ways of expressing expenditures are available. Both are referred

²¹ Engel was Chief of the Prussian Bureau of Statistics in the late nineteenth century. United States, Department of Commerce and Labor, *Eighteenth Annual Report of the Commissioner of Labor, 1903, Cost of Living and Retail Prices of Food, 1903*, p. 101. See also Marr and Paterson.

²² Because expenditure patterns vary between different social groups, changes in prices affect these groups differently. Of course, if all prices change in the same direction and with the same magnitude, then the effect on all groups is the same. Take the following example. A spends 60 per cent of his income on essentials and 40 per cent on non-essentials, while B spends 40 per cent and 60 per cent respectively. If the costs of essentials and non-essentials both double, then both A's and B's costs of living double proportionately. In most instances, however, prices for different goods change at different rates and often even in different directions. Therefore price changes have various effects on different groups. If, in the case of the example, the cost of essentials doubles while the cost of non-essentials is unchanged then A's cost of living increases proportionately more since he spends a larger percentage of his income on essentials than does B.

to as systems of weighting. The first, known as percentage weights, is employed in this study. The percentages of income spent on specific commodities are called weights. Thus, if 2 percent of income is spent on beef, then the weight for beef is two with all weights totalling 100. The second system employs quantity weights; that is, actual units of commodities. Thus, if the average annual beef consumption per family is 520 pounds, then the weekly weight for beef is ten pounds.

The difference in the use to which these two systems of weighting can be put is striking. In employing percentage weights the prices of commodities are summed in such a way as to give an index number that reflects only changes in the cost of living. A cost-of-living index using quantity weights shows changes in living costs as well, but the weights themselves can also be used to derive the actual cost of a commodity budget.

A quantity-weighted index number showing cost of living changes can be calculated in one of two ways:

$$\text{Paasche Index: } I_i = \left(\frac{\sum \frac{P_n Q_n}{P_{\text{base year}} Q_n}}{\sum \frac{P_n Q_n}{P_{\text{base year}} Q_n}} \right) 100$$

$$\text{Laspeyres Index: } I_i = \left(\frac{\sum \frac{P_n Q_{\text{base year}}}{P_{\text{base year}} Q_{\text{base year}}}}{\sum \frac{P_n Q_{\text{base year}}}{P_{\text{base year}} Q_{\text{base year}}}} \right) 100$$

I_i = index number in i^{th} year

P = price

Q = quantity

n = year of observation

The value of the numerator for either the Paasche or the Laspeyres index is the actual cost of the budget in the given year, while the value of the denominator is the cost of the budget in the base year. Essentially a quantity-weighted index measures changes in the cost of a budget composed of fixed quantities of goods.²³

²³ A Laspeyres index is preferred to a Paasche index in a historical study because it is possible to produce a continuous series of index numbers with the former. When using a Paasche index, comparisons are only possible between two years: the given year and a base year. The percentage-weighted indexes used in this study are combinations of Laspeyres and Paasche indexes. It is not possible to obtain expenditure weights for a single base period.

Percentage weights are used in an index defined as follows:

$$I_i = \sum_{k=1}^n W_k \left(\frac{P_{ik}}{P_{(base\ year)k}} \right) 100$$

W = expenditure weight

k = commodity

In simpler terms the price of each commodity in the i^{th} year is divided by its price in the base year; this fraction is then weighted and summed with the other weighted fractions to arrive at an index number. Unlike the quantity weights used above, the percentage weights do not allow calculation of the actual costs of a budget in the given or base years.

Although there may be an advantage in knowing the percentage changes in the cost of a fixed quantity of goods, an index measuring this has one serious flaw. Quantity-weighted indexes assume consumption of a budget of items with fixed quantities. By contrast, within particular commodity groups it is possible to interpret a percentage-weighted index so as to allow for relative price changes and substitution. If, for example, the price of beef falls, it can be assumed that consumers purchase more with the same percentage of income, thus taking advantage of relative price changes. On the other hand, if the price of beef rises, it can be assumed that consumers substitute a cheaper good, for example, chicken, for the same percentage of their income. Substitution is impossible to account for in an index where quantities of items are fixed, but substitution can be accounted for in a percentage-weighted index.²⁴

Until recently no real-wage index existed for Vancouver during the period 1901 to 1929. In 1977, however, Bertram and Percy constructed a real-wage index for construction workers during the period 1900 to 1926.²⁵ Their index employs published Dominion Department of Labour

²⁴ On this point see G. W. Bertram and Michael Percy, "Preliminary Research Report on Wages in Canada 1871-1926," unpublished research paper (mimeographed), Department of Economics, University of British Columbia, (1977), p. 33. Percy points out that we do not know whether the correspondents of *The Labour Gazette* attempted to substitute lower-priced or lower-quality items within a commodity group whose relative price was rising. If they were following their instructions, it is unlikely that they did. Collection of price data itself, therefore, prohibits substitution in our budget. But the effect of relative price changes can still be felt in our budget because with a given percentage of income more or less of a commodity can be purchased depending on its price.

²⁵ Bertram and Percy, "Urban Real Wage Trends in Canada, 1900-1926: Some Provisional Estimates: An Outline," Discussion Paper 77-24, Department of Economics, University of British Columbia, August 1977, p. 33.

wage and price data and is part of their larger work on a new national real-wage index. The Vancouver real-wage indexes compiled in this article rely on Department of Labour material and cover twenty occupations.

Of the various sources of wage evidence available for Vancouver during the early twentieth century, only Department of Labour data is used here.²⁶ The other wage data available for Vancouver in the period under consideration — namely British Columbia Department of Labour wage surveys, the 1911 and 1921 Canada Census data on yearly earnings, and wage data contained in the 1915 Report of the Board of Inquiry into the Cost of Living, the Coates report — are not used in the construction of the real-wage indexes.²⁷

In 1921 the Dominion Department of Labour published *Wages and Hours of Labour in Canada*, a collection of yearly observations from 1901 to 1920 of wages paid per hour and hours worked in several industrial occupations. This data has its flaws. In the first place it only permits the calculation of standard wages; that is, the amount earned at the standard rate for standard hours. As Bertram and Percy note, the data's use is thus limited:

While useful as an index of the secular trend of money wage income, this measure may seriously misrepresent weekly earnings at any point in time. In periods of excess demand for labour, for example, employees might well work overtime at premium rates. . . . Conversely, full-time weekly earnings would over-estimate actual earnings during periods of recession.²⁸

²⁶ Wage information periodically appears in *The Labour Gazette* from 1900 onwards. This data and considerably more data appear in *Wages and Hours of Labour in Canada*, first published by the Department of Labour in 1921. The report contains wages for selected occupations in a number of cities dating back to 1901. The report is updated and expanded in annual reports published between 1922 and 1930.

²⁷ British Columbia, Department of Labour, *Annual Report of the Department of Labour, 1918-1930, 1919-1931*; Canada, Department of Trade and Commerce, *Fifth Census of Canada, 1911* does not contain published wage data. However, "Labour Force Data from Census Manuscripts, 1911-1961: British Columbia and Canada," compiled by R. M. McInnis, does. Queen's University, Unpublished. By kind permission of R. M. McInnis. Canada, Department of Trade and Commerce, *Sixth Census of Canada, 1921: Population, Dwellings, Families, Conjugal Condition of Family Head, Children, Orphanhood, Wage Earners*, vol. 3. Canada, Department of Trade and Commerce, Dominion Bureau of Statistics, *Seventh Census of Canada, 1931: Population — Earnings, Housing, Families and Miscellaneous*, vol. 5. Canada, Board of Inquiry into Cost of Living, *Report of the Board, 1915*, 2 vols.

²⁸ Bertram and Percy, "Real Wage Trends in Canada 1900-26," p. 306. Albert Rees uses yearly wage data in his study of American real wages. The advantage of yearly data is that short time and overtime wages are included in the wages given. Unfortunately, yearly data is not available for Canada.

In addition, *Wages and Hours of Labour in Canada* includes only the wages of skilled, organized workers, who presumably were better paid and more regularly employed. The unskilled labour is largely unrepresented, construction workers excepted. This bias cannot be resolved, because only isolated observations of wages made by wage-earners other than the skilled and organized exist.²⁹ Thus a wage index compiled on the basis of the Dominion Department of Labour information must be examined in light of the known reservations to it.

For several reasons the other wage information is less useful than that of the Department of Labour. The 1921 Canada Census records the earnings of wage-earners in all the major cities in Canada for 1921. Earlier wages for either the cities or the provinces are not available in the published census, although R. M. McInnis has compiled 1911 wage data for the provinces from the manuscript census. Estimates of Vancouver wages for each of the years between 1921 and 1931 can be constructed by apportioning the change in wages equally over the intervening ten years. A similar calculation of British Columbia wages is possible for the years between 1911 and 1931 using McInnis's data. Of course, provincial wages can only serve as an approximation of Vancouver wages. No equation of either provincial or city wages is possible for the years prior to 1911, because comparable data is unavailable in the published and manuscript 1901 censuses. The creation of such artificial wages has its drawbacks. The money wage data of the 1921 census must be used with caution because of the intense business cycle activity in that year. Also there is no reason to believe 1901, 1911, 1921 and 1931 all lay on the same point of the business cycle. Unless they did, it makes comparisons among census years inappropriate. Perusal of the year-to-year observations in *Wages and Hours of Labour in Canada* suggests that there were yearly fluctuations in the years between censuses. For example, according to the census 1921 wages were higher than 1931 wages. Therefore estimated wages for the 1920s would show a gradual decline. But the 1931 Census was taken well after Canada had entered the Great Depression.

The British Columbia Department of Labour was not formed until 1918; as a result, information from this source is available only for the

²⁹ This bias in the department's evidence is a function of its collection. The department relied on various trade-union reports, collective agreements on file and fair-wage schedules in government contracts. This lack of information is not a problem if the ratio of skilled to unskilled money wages is constant and there are not significant differences in the expenditure patterns of the two wage groups. Of course, the ratio and expenditure pattern differences are not known.

TABLE 3
*Nominal and Implicit Weights Derived from Census
 Wage Earner Data*

	(1911)		(1921)	
	<i>Nominal</i>	<i>Implicit</i>	<i>Nominal</i>	<i>Implicit</i>
INDUSTRIES				
I. Manufactures	20.3	43.6	19.2	45.2
II. Construction	15.1	32.5	9.5	22.4
III. Transportation	11.1	23.9	13.8	32.4
	<u>46.5</u>	<u>100.0</u>	<u>42.5</u>	<u>100.0</u>
SELECTED OCCUPATIONS				
I. 1. Blacksmiths	3.6	17.2	0.3	2.3
2. Boilermakers	1.0	4.8	1.4	10.5
3. Moulders	3.4	16.3	1.5	11.3
4. Machinists	5.3	25.4	6.0	45.1
5. Compositors	6.8	32.5	3.7	27.8
6. Pressmen	0.8	3.8	0.4	3.0
	<u>20.9</u>	<u>100.0</u>	<u>13.3</u>	<u>100.0</u>
II. 1. Bricklayers	5.4	5.6	2.2	3.2
2. Carpenters	55.5	57.4	35.7	51.9
3. Electricians	1.3	1.3	4.6	6.7
4. Sheet Metal Workers	2.9	3.0	0.7	1.0
5. Plumbers	10.2	10.6	6.0	8.7
6. Labourers	11.5	11.9	8.6	12.5
7. Painters & Decorators	9.8	10.2	11.0	16.0
	<u>96.6</u>	<u>100.0</u>	<u>68.8</u>	<u>100.0</u>
III. 1. Brakemen	1.8	8.8	1.3	6.2
2. Conductors — Steam Railroad	1.5	7.4	1.9	9.1
3. Locomotive Engineers	2.1	10.3	3.0	14.4
4. Locomotive Firemen	1.9	9.3	1.4	6.7
5. Sectionmen	0.4	2.0	1.8	8.6
6. Conductors — Electric Railroad	8.8	43.1	8.9	42.6
7. Telegraphers				
	<u>20.4</u>	<u>100.0</u>	<u>20.9</u>	<u>100.0</u>

NOTE: The Department of Labour did not survey all the wage earner groups represented in the census. For example, the Department's wage data for Vancouver manufacturing wage earners only covered 20.9 percent and 13.3 percent of the manufacturing occupations enumerated by the 1911 and 1921 censuses. Therefore, 20.9 and 13.3 represent the nominal weight totals in the index for manufacturing in these years. These nominal weights are converted into implicit weights where the total for each year is 100. This procedure is repeated for each industry and the all-industries index.

latter half of the period under study. The usefulness of the provincial department's data is further limited by the fact that separate statistics for Vancouver were not obtained. Also the level of response between 1918 and 1929 was low.³⁰ The department's 1921 statistics surveyed 50,485 wage-earners,³¹ while the 1921 census shows 163,283 wage-earners in the province.³² Finally, the department's surveys requested weekly wage rates for the "week of employment of greatest number."³³ Therefore the wage data probably overestimates actual wages.³⁴

Only two other sources of wage data were found that could be considered for use in this article. The first, the Coates report, is disappointing. This federal study was commissioned in 1913 in response to trade-union

³⁰ The department secured its data by sending questionnaires to all known employers in the province. Employers were required by law to respond but the penalty for non-compliance was a small fine, one which the department was reluctant to levy. In early annual reports the department chastised employers for not returning their questionnaires, but eventually the department consoled itself that at least the major employers responded.

³¹ *Annual Report, 1919*, p. 35. For strict comparability the 1921 returns should be given. In 1921, 2,275 firms responded for 50,485 wage-earners. *Annual Report, 1921*, p. 28.

³² The level of response increased to 110,521 in 1931. The 1931 census reports 235,066 wage-earners in the province. Therefore the response increased from 31 per cent to 47 per cent of the wage-earner force as enumerated by the census. See "Wage Earnings and Number of Wage Earners by Consistent Industry Classes — British Columbia — Male and Females," in McInnis. *Annual Report, 1929*, p. 33. This is, of course, an approximation since census data is not available for 1918 and 1919.

³³ See *Annual Report, 1918*, p. 35.

³⁴ The department was also statistically unorthodox in its methods. It did not request "exact figures regarding individual rates of pay" because it did not wish to intrude upon employers' privacy. The department anticipated that employers would have refused to respond to requests for information if such specific questions about their operations were asked. Employers might have feared the leaking of confidential questionnaires to competitors or employees. *Annual Report, 1919*, p. 12. The department asked employers to segregate the wage-earners "in the week of greatest employment" into various weekly wage categories. The lowest one was \$5.00 or less, the highest \$50.00 or more, and the intervening categories had intervals of \$1.00 up to \$29.99 a week and of \$5.00 from \$30.00 to \$49.99 a week. Needless to say, these categories were not constructed in a manner ideal for the purposes of obtaining a mean or median. Nevertheless the department did construct "average weekly wages" for males from this data. (The Minimum Wage Board, in appendixes to the department's annual reports, provided similarly constructed averages for women wage-earners.) For the purposes of making an average the department assumed: "where steps of \$1 were given in the table, that '\$25 to \$25.99', for example, meant \$25.50, and where steps of \$5 were given, that '\$30 to \$34.99', for example, meant \$32. As these assumptions may perhaps be criticized as erring a little on the side of generosity, '\$50 or over' has been taken in all cases to mean '50 only'." *Annual Report, 1920*, p. 11. It is impossible to know how these methods further distorted the actual wage picture. The original questionnaires cannot be examined because they appear to have been destroyed.

and public pressure for an investigation of the causes of the high cost of living. The report gives Vancouver wage data for wage-earners in the construction, metal and transportation industries, and in municipal government and domestic service from 1900 to 1913. Evidence for the first three groups largely duplicates that found in Department of Labour records. Some information is available for wage-earners in these three industries that is not available from the Department of Labour. However, it is impossible to find post-1913 data with which to link this. Policemen are the only municipal employees for whom wage data is given. And the wages of domestic servants given are, by the report's own admission, suspect.³⁵ One other possible source is the manuscript records of the British Columbia Commission on Labour, which contain a broad survey of wages earned in Vancouver between 1912 and 1914.³⁶ This provincial commission had been created by the legislature in 1912 to investigate a broad range of subjects affecting labour and capital in the province. Since this information only gives observations for three years at the most, it is unsuitable for the wage index.

Consequently the only base of information suitable for the construction of a wage index is that of the Dominion Department of Labour. The steps needed to compile a money wage index from this data are few. Weekly wages for individual occupations are calculated from the wages paid per hour and the hours worked in a week. The weekly wages for each occupation are then indexed; that is, converted to a number indicating change in magnitude from a base year. These individual occupation indexes are then combined together to form industry indexes; and these in turn are grouped to form an all-industries index. An individual occupation index is combined with others into an industry index by weighting it according to the percentage of employment it accounts for in the industry. Similarly one industry is grouped with other industry indexes by weighting it according to the percentage of employment it accounts for of all employment. Both the weights for the individual indexes come from information found in the census. (See Table 3.)

A Vancouver price index can readily be constructed for the period

³⁵ *Report of the Board, 1915*, vol. 1, pp. 544-651.

³⁶ British Columbia, Commission on Labour, 1912-1914, *Correspondence, Submissions and Miscellaneous Data*, vol. 4, file 20, RG 684, Public Archives of British Columbia (hereafter PABC). For a complete summary of the wage data gathered see Eleanor Anne Bartlett, "Real Wages and the Standard of Living in Vancouver, 1901-1929" (University of British Columbia: Unpublished M.A. thesis, 1980). The commission's material is a valuable, seemingly unused source of British Columbia's social history.

1901 to 1929 from the existing Department of Labour price data and Laspeyres weights. In their own work Bertram and Percy suggest revisions to the department's method of weighting. A simple shortcut would be to use the Vancouver price index contained in Bertram's and Percy's work. However, their Vancouver price index also needs revisions. These are discussed in another section.

In February of 1910 the Department of Labour began publishing a monthly price survey of twenty-eight food items, laundry starch, two types each of coal and wood and the cost of renting a "typical six-roomed dwelling with sanitary conveniences in a working class section."³⁷ This was a list of prices only and was not combined to form a cost-of-living budget or index. The prices were secured on or about the fifteenth of each month (probably one week earlier in British Columbia) by local correspondents in each of the fifty-seven Canadian cities with a population over 10,000.³⁸

Evidently the department did not feel equipped, in 1910, to begin calculating a price index that adequately represented national price trends. In 1904 when R. H. Coates, assistant editor of *The Labour Gazette*, began the planning of suitable price collection and publication with Deputy Minister W. L. Mackenzie King, Coates set two aims: the regular publication of a price survey and the construction of a price index based on a survey of the expenditure patterns of Canadian working men's families.³⁹ For reasons unknown, the publication of a regular price survey was delayed until 1910. As early as July 1907 Coates suggested postponing his ambitious plans for an expenditure survey in the interest

³⁷ The food items surveyed were sirloin steak, chuck roast, veal, mutton, pork, salt pork, bacon, fish, lard, fresh and packed eggs, milk, dairy tubs and creamery prints butter, new and old cheese, bread, flour, rolled oats, rice, dry beans, evaporated apples, prunes, granulated and yellow sugar, black and green tea, coffee and potatoes. *LG* 10 (February 1910):915.

³⁸ In 1905 R. H. Coates, associate editor of the *Gazette*, suggested an earlier collection time for British Columbia in order that the information could be mailed and received in time for the monthly publication deadline. Memorandum re Publication of Cost of Living Statistics Monthly in the *Labour Gazette*, 20 September 1905, Vol. 48, RG 27, Manpower and Social Development Records, Public Archives of Canada (hereinafter MS DR, PAC). Over the next decade the list of items for which prices were collected was augmented so that by March 1920 the list stood at more than 100. In October 1922 this list was reduced somewhat "owing to the impossibility of securing prices for the [several] grades of [goods now contained in the list] from the various cities from month to month." List increased in February 1916, *LG* 16 (February 1916):929; in January 1917, *LG* 17 (January 1917):54; and in March 1920, *LG* 20 (March 1920):346. Reduced list appeared in October 1922, *LG* 22 (October 1922):1219.

³⁹ Coates, Memorandum re Organization of a Wages and Cost of Living Statistical Branch, 1 September 1904, Vol. 48, RG 27, MS DR, PAC.

of accurate price collection.⁴⁰ A 1911 annual report promised that a survey of Canadian working men's expenditure patterns would be undertaken "in due course."⁴¹ Members of the department may have accepted privately that "due course" was in the very distant future.⁴² Meanwhile, the prices obtained were averaged each year and published in appendixes to the department's annual review of wholesale prices.

In July 1915 the department published its first "family budget" in *The Labour Gazette*. It was like the first price survey in that the family budget contained the same twenty-eight food items, laundry starch, two types of wood and coal, and the rent of a six-roomed house with sanitary facilities in a typical working men's district. However, the family budget specified quantities of these goods — for example, two pounds of sirloin steak and two pounds of chuck roast — and calculated the total cost of all these quantities of commodities. The *Gazette* described the family budget as "the typical weekly expenditures on staple foods, fuel, lighting and rentals for a family of five" whose annual income between 1910 and 1914 was \$800.⁴³ A few years later, in a January 1922 article in *The Labour Gazette*, the department elaborated on the family budget's function. The department denied that the budget could in any way be construed as a "subsistence" budget; if anything, the department continued, the quantities adopted afforded "a liberal supply for the healthy family of a man at hard physical work." And the budget's primary function

⁴⁰ Memo for Mr. King, 17 July 1907, Vol. 48, RG 27, MS DR, PAC. Although the department strove for price accuracy it could not always follow rigorous procedures. The department drew up a list of commodities specifying grades and sizes, and forms printed with it were forwarded to the local Department of Labour correspondents to complete each month. Once received from the correspondents, the prices were checked by the department staff, "an explanation being required from the correspondent for every variation as compared with the preceding month and for every stationary price of over three months standing." Coates was confident, publicly at least, that the price data was accurate for each locality although he thought that the quotations for the various localities were not absolutely comparable. See also the explanation offered by Coates in 1915 in *Report of the Board*, 1915, vol. 1, p. 130.

⁴¹ Canada, Department of Labour, *Report of the Department for the Fiscal Year Ending March 31, 1911*, p. 147. The department recognized the difficulty of obtaining weights in a country as diverse in its conditions of life as Canada.

⁴² A survey of urban Canadian family expenditures did not become available to the department until 1940 when the Dominion Bureau of Statistics published its 1937-8 survey. Reasons for the delay do not appear in *The Labour Gazette* or in department documents examined. However, shortages of staff and budget money were probably salient issues. Canada, Dominion Bureau of Statistics, *Family Income and Expenditure in Canada 1937-1938 (A Study of Urban Wage-Earner Families, including Data on Physical Attributes)*, 1941.

⁴³ *LG* 15 (August 1915):212.

was "to show the increase or decrease from time to time in the cost of the items included."⁴⁴

For a long time scholars have suspected that the family budget was based upon an expenditure survey undertaken by the American Bureau of Labor Statistics in 1901.⁴⁵ A March 1919 article in *The Labour Gazette* confirms this suspicion:

In determining the quantity of each commodity to be used in making allowance for the importance of each commodity in average family consumption, no comprehensive statistics as to consumption or expenditure in Canada were available.

There were at hand, however, dietary studies carried out by authorities on health and living conditions, the results of an investigation into consumption and expenditure in workingmen's families in the United States in 1901, made by the United States Bureau of Labour Statistics, and published in its annual report for 1901, and local investigations made by other authorities.

From the information available as to living conditions in Canada, and from these statistics, allowing for certain well known differences between Canada and the United States in customs . . . a budget of the foods for which prices were available was drawn up on the basis of a week's supply for a family of five, man, wife and three children at average ages.

To the food budget were added figures for the rent of a house with sanitary conveniences and an "approximate average" of coal and wood prices "for the whole Dominion."⁴⁶

The process of altering the American budget to reflect Canadian conditions was rather unsophisticated and often resulted from inadequacies in the department's price collection. The 1919 article mentioned above described the process. "Well known differences" in Canadian and American consumption of coffee, tea, pork, beef, poultry and cheese were

⁴⁴ *LG* 22 (January 1922):89.

⁴⁵ *Eighteenth Annual Report of the Commissioner of Labor, 1903*. This was a comprehensive survey of 25,440 white wage-earners and their families whose average family size was close to five members. The survey covered the various occupations in the principal industrial areas of thirty-three states. In his comparison of American and Canadian costs of living, "Labour Costs and Labour Standards," H. A. Logan states that the Canadian budget was "based upon the American study of 1901 with certain allowances judged suitable to bring it into closer relation to the Canadian scene." H. A. Logan, "Labour Costs and Labour Standards" in *Labour in Canadian-American Relations* ed. by H. A. Innis (Toronto: Ryerson Press, 1957), p. 52. Logan does not, however, cite authority for his claim. Bertram and Percy note that visual inspection of the American study and the Canadian family budget supports this proposition. "Real Wage Trends in Canada," p. 301. Records of departmental discussions held in 1907 also confirm the American origin of the family budget. Memo for Mr. King, 17 July 1907, vol. 48, RG 27, MS DR, PAC.

⁴⁶ "Cost of Living Inquiries: The Construction of Family Budgets, Index Numbers, Etc., in Various Countries," *LG* 19 (March 1919):354-55.

allowed for. The American budget included fish, but since "no statistics of prices of fish available were regarded as sufficiently representative to be averaged" the commodity was omitted from the Canadian budget.

Similarly, there were no satisfactory statistics of prices of vegetables, except potatoes and dry beans, nor of any fruit, except evaporated apples and prunes. It was considered that the omissions from the budget of certain articles could be best allowed for by increasing somewhat the quantities of articles which would most nearly reflect the changes in cost of the commodities omitted. For instance, more meats tend to be used where fish are not readily available and cheap; prunes and evaporated apples are in common use in the prairies where fresh fruits are scarce, and prices of potatoes change more or less in proportion to the changes in other vegetables. In the Department of Labour budget, therefore, the estimated quantities of potatoes, prunes, evaporated apples, rice, beans, flour, oatmeal, sugar, lard and meats have been put at a somewhat high figure in order to make up for the absence of similar articles.⁴⁷

This substitution is unfortunate. For example, potatoes, dry beans and dried fruit experienced considerable inflation during World War I which was above that experienced by fresh fruit and vegetables.⁴⁸ But without a survey of the actual expenditure patterns of Canadian working men's families, no evaluation of the correctness of all these alterations can be made.

Although the purpose of the family budget was to measure cost-of-living changes affecting working men, it was frequently assumed that this was not all that it measured. As noted above, the Department of Labour felt called upon to deny that the budget represented a "subsistence" standard of living. Indeed, it described the budget as affording a "liberal supply" for a family of five. The department reacted this way because the budget was often viewed as not truly measuring the cost of living in Canada. Vancouver Island coal-miners, whose wages in the late 1910s and early 1920s were indexed to this family budget, complained that it measured "mere subsistence" since no allowance was made for clothing or any extras.⁴⁹ On the other hand, the department apologized for the inclusion of only good cuts of meat and the generous supply of dairy products, and the absence of fresh fruits and vegetables.⁵⁰ The depart-

⁴⁷ Canadians supposedly consumed less coffee and more tea, less beef and poultry but more pork and cheese. "Cost of Living Inquiries," p. 355.

⁴⁸ An examination of Department of Labour price surveys of fresh fruits and vegetables bears out this point.

⁴⁹ *LG* 20 (March 1920):263.

⁵⁰ "Cost of Living Inquiries," p. 356.

ment did this to make up for shortcuts taken in price collection and to compensate for using an American budget to measure Canadian living standards. Clearly the department felt constrained in its attempts to measure the cost of living because it did not possess a survey of actual Canadian working men's family expenditures.⁵¹

Problems were seen with the way the family budget was put together. When first published in 1915 it had no clothing component. Regarding fuel, Coates noted that no allowance was made "for the difference in the quantity of fuel used in the different localities."⁵² A rectification of these problems was attempted in 1921 when the department secured, from the Dominion Bureau of Statistics, indexes of average national prices of gas, electricity, clothing and sundries back to 1913. All these figures were combined with existing food and rent data in a price index first published in 1921.⁵³

⁵¹ There are other problems with the construction and use of the family budget, many of which the Department understood, and a few which only later commentators recognize. One major difficulty was obtaining reliable price information for the monthly cost-of-living articles published in *The Labour Gazette*. The blame for the problem fell squarely on the shoulders of the part-time correspondents whose duty, among others, was to supply the monthly prices. Behind its public mask of price accuracy the department hid imprecision. In a 1918 memo to the Minister and Deputy Minister of Labour, Coates, by then chief statistician in the department, complained that the labour correspondents were "quite untrained in statistical practice" and as part-time workers gave "at the best such service as may be expected when the department's work is not their chief interest." The correspondents were frequently tardy in reporting to the department, the result being delays in the *Gazette's* publication. Memorandum for the Minister and Deputy Minister, 15 November 1918, File 614.05, vol. 184, RG 27, MS DR, PAC. Coates also suspected the correspondents of not following established procedure in price collection. Instruction letters to the correspondents told them to obtain cash prices for "delivered goods as quoted by representative retail establishments which do a considerable trade with workingmen." "Retail Prices of Stable Commodities Form," 4 January 1918, vol. 24, RG 27, MS DR, PAC. Since it was not the department's practice to send officers into the field to check the correspondents' work, Coates' suspicions could be neither confirmed nor dismissed. Coates was certain that errors existed in ascertaining house rents. Rent was a critical price component since it was meant to represent, as well, the cost of home ownership. In 1918 he observed that "the figure presented in the Labour Gazette is really only what the correspondent thinks the average rental is." At one time the correspondents may also have been instructed to take shortcuts. A 1909 draft of the instruction letter to correspondents said: "It would best meet the requirements of the Department if you were to note the prices paid in your own home or boarding house for the different articles named." Memo for Mr. Ackland, 26 April 1909, vol. 48, RG 27, MS DR, PAC. An attempt to improve the quality of the price collection was made in 1921 when arrangements were made for the Dominion Bureau of Statistics to collect prices which would be averaged with those collected by the department's correspondents. *LG* 21 (February 1921):239.

⁵² Memorandum for the Minister and Deputy Minister.

⁵³ *The Labour Gazette, Prices in Canada and Other Countries, 1926, issued as a Supplement to the Labour Gazette*, 27 (January 1927):8.

One final error is contained in the family budget. As Bertram and Percy point out, in basing its budget on the American 1901 study the Department adopted "many of the commodities of the 1901 study [but] did *not* adopt any of the expenditure [that is, percentage] weights derived. . . ."⁵⁴ Thus the family budget employs quantity weights in that the weights are the quantities consumed in the base year. Unlike a percentage-weighted index, an index using quantity weights does not give an accurate reflection of cost-of-living changes, since it is not possible to take into account relative prices nor the principle of substitution.

Why was the department concerned about the inadequacies of its price collection? It considered the family budget to be an important tool: in the hands of arbitrators of industrial disputes the family budget could offer the final word on what working men needed to be paid.⁵⁵ As such it could be an instrument of industrial peace. The attachment of such powers to a cost-of-living budget was not unique to the Canadian Department of Labour. The American Bureau of Labor and other labour investigators did the same. It is worthwhile considering this use of cost-of-living budgets, because various conceptual problems are unearthed in using them to indicate adequacy of incomes. These conceptual problems apply to the department's use of the family budget and the use of cost-of-living budgets by other scholars.

The most interesting fact that emerges from the comparison made here of the studies conducted in the early twentieth century is that two types of budget were compiled which gave ideal working men's consumption patterns as opposed to measuring actual ones. These sociological and quantity budgets reflected the attempts of contemporary observers to go beyond merely measuring whether the cost of living increased. They were used to determine how far working-class incomes fell below what was needed to live.⁵⁶ Sociological budgets established as an ideal the cost of the budget of the "better class of workingmen's

⁵⁴ Bertram and Percy, "Urban Real Wage Trends in Canada," p. 3.

⁵⁵ See especially R. H. Coates to W. L. Mackenzie King, 6 August 1908, vol. 48, RG 27, MS DR, PAC.

⁵⁶ To my knowledge these terms were first used by Margaret Gould, Canadian Brotherhood of Railway Employees researcher. See Canada, Parliament, House of Commons, Select Standing Committee on Industrial and International Relations, *Minutes of Proceedings and Evidence*, 18 May 1926, pp. 39-40. For two examples of sociological budgets see Robert Caib Chapin, *The Standard of Living among Workingmen's Families in New York* (Philadelphia: Russel Sage Foundation and New York Charities Publication Committee, 1909); and Margaret F. Byington, *Homestead: the Households of a Milltown*, The Pittsburgh Survey (Philadelphia: Russel Sage Foundation and New York Charities Publication Committee, 1910).

families" and measured how far short of this dollar value the incomes of other workers fell. Quantity budgets were of wider application. They established the quantities of various consumption articles working-class families needed to maintain various standards of well-being; for example, poverty, subsistence, subsistence plus health and decency, and comfort.⁵⁷

The best-known quantity budget of this period was the "minimum health and decency budget" compiled by the United States Bureau of Labor Statistics in 1918 and 1919. Between 31 July 1918 and 28 February 1919 the budgets of 12,096 white families in ninety-two cities in forty-two states were sampled from which a subsample of 280 budgets was drawn. The sample was selective because the object "was to secure families dependent for support, as largely as possible, upon the earnings of the husband."⁵⁸ The main criterion for the selection of the subsample was that the budgets come from families approximating the size of the "standard family" of husband, dependent wife, and three children under fourteen years of age. This supposedly represented in size and character the average white, native-born or old immigrant American family,⁵⁹ and was halfway "between the family with no children and the family with grown children capable of self-support."⁶⁰

In a 1919 *Monthly Labor Review* article, Royal Meeker, Commissioner of the Bureau of Labor, pointed out that many American families were not able to obtain the minimum quantities deemed necessary by

⁵⁷ Paul Douglas, *Wages and the Family* (Chicago: University of Chicago Press, 1925), pp. 5-6.

⁵⁸ United States, Department of Labor, Bureau of Labor Statistics, *Cost of Living in the United States*, Bulletin No. 357 (Washington: 1924), p. 69.

⁵⁹ The standard family was expressed as equivalent to 3.35 adult males. Bureau dieticians determined that if the food requirements of a working-class male were taken as 1.00, then the following table of values applied to the other members of his family:

Female, 15 years or over	.90
Child, 11 to 14 years	.90
Child, 7 to 10 years	.75
Child, 4 to 6 years	.15

The figure of 3,500 calories per adult male was selected by bureau dieticians as the number needed (allowing for loss in food preparation) to maintain health and to include sufficient proteins, fats, carbohydrates, whole milk and fresh vegetables and fruit. The bureau attempted in a similar manner to establish "health and decency" levels of housing, clothing, fuel and light, and sundries. "Minimum Quantity Budget Necessary to Maintain a Worker's Family of Five in Health and Decency," *Monthly Labor Review* 10 (June 1920): 2-3; "Tentative Quantity-Cost Budget Necessary to Maintain a Family of Five in Washington, D.C.," *Monthly Labor Review* 9 (December 1919): 24-5.

⁶⁰ "Tentative Quantity-Cost Budget Necessary to Maintain a Family of Five in Washington, D.C."

the bureau because of low incomes.⁶¹ Not surprisingly, then, the bureau urged that its budget be used as a guideline in establishing minimum wages. But Paul Douglas, in his 1925 publication *Wages and the Family*, argued that the economy was not able to pay minimum wages calculated from this budget. Why? He answered that "to pay all workers enough to maintain a family of five would mean saddling industry with the maintenance of over forty-five million fictitious wives and children."⁶² Contrary to the bureau's reasoning, every American did not live in a standard family. Douglas cited the 1920 *Census of Occupations*, which showed that 27.6 percent of all males between the ages of twenty and sixty-five were unmarried and, therefore, not really entitled to wages sufficient to support five people.⁶³ Douglas concluded that bureau statisticians compiling the quantity budget and even the 1901 expenditure survey had arrived at the five-member standard family figure as the average size because their survey deliberately excluded single men, counted all family members whether dependent or not, and expressly selected families to approximate their perceived norm.⁶⁴ Since the average family size in Canada in 1921 was 4.28, the family budget based as it is on the 1901 American budget would seem to overestimate family expenditures.⁶⁵

Other problems of a similar nature can also be seen in the American studies. There is much reason to believe that all of them surveyed families whose incomes were higher than average. Albert Rees in his American study, *Real Wages in Manufacturing 1890-1914*, makes this observation about the 1901 survey. He notices that the average income of the 25,440 families was \$750. However, the 1901 United States Census shows average earnings in manufacturing of \$621.⁶⁶ As noted above, the age composition of the standard family was chosen to strike a mean between two extremes: the family with no children and the family with self-supporting children. A rather expensive mean was chosen, then, between two less expensive extremes. The quantities consumed by families vary according to the number of members and by the place occupied in the life cycle. The bureau selected one of the larger-consump-

⁶¹ Meeker, "What is the American Standard of Living?" *Monthly Labor Review* 9 (July 1919): 13.

⁶² Douglas, p. 5.

⁶³ Calculated from Table 26, Per cent distribution by age and sex of the population for cities of 30,000 and over, 1931, *Seventh Census of Canada, 1931*.

⁶⁴ Douglas, pp. 34-39.

⁶⁵ A similar calculation is possible for Vancouver as late as 1931 where of a total male population fifteen years of age and over 38,499 of 103,996 were single.

⁶⁶ Rees.

tion phases of families as a norm. Again the family budget derived from the 1901 American study may overestimate Canadian working-class expenditures.⁶⁷

These criticisms were not levelled at the Canadian family budget when it was used as a guide in setting wages, even though it was based on the 1901 American survey and therefore had the latter's conceptual problems. Nevertheless the Canadian family budget did invoke other criticism. In 1918 the Department of Labour enthusiastically announced that Dominion mediators in the Vancouver Island coal dispute had suggested a settlement which included a wage bonus of \$1.25 on a basic \$3.00 a day wage to be given to reflect cost-of-living changes since 1916. This bonus was to be adjusted quarterly according to changes in the cost of the family budget. Bonuses were paid to the coal miners for the next two years reflecting increases in the cost of living. But when the cost of living began to fall in early 1921, according to the department's budget, the bonuses became smaller. By November of 1922 the bonus had been reduced from \$1.25 to 76 $\frac{5}{6}$ ¢. Thereafter the bonus increased, but only slightly. The miners were not pleased with such reductions in their wages and, in November of 1924, negotiated a new contract which did not include regular adjustments according to changes in the family budget.⁶⁸

The inadequacies of the budget are perpetuated in the research of those who use it. Ostry, M. C. Urquhart and K. A. H. Buckley, and Michael Piva use the index calculated from the family budget to measure cost-of-living trends despite the fact that the index uses quantity weights and does not survey expenditures on clothing and sundries.⁶⁹ The desire to measure the sufficiency of incomes is shared by Copp and Piva.

⁶⁷ The Bureau of Labor may, indeed, have knowingly contrived a standard family that did not reflect reality. In the article written by Meeker cited above he explained why the standard family was the ideal family. Three children were needed in each family for the perpetuation of the race; there should be no boarders in such families for their admission "was not good policy"; and for the family to function in health and decency the mother had herself to be dependent; that is, she had to devote all her time to her home and family. Seen in this light, minimum wages based on such a quantity budget would have made it possible for working men to afford this image of America.

⁶⁸ The family budget was used in settlements in the Alberta coal-mining and the Pacific shipbuilding industries, but for shorter periods. Memorandum for the Minister and Deputy Minister. See also "Cost of Living Adjustment of Wages of Vancouver Island Coal Miners," *LG* 23 (November 1923): 1210.

⁶⁹ In his Toronto study Piva calculates a declining real wage index for construction and manufacturing workers, two classes of workers in the printing trades, street railway motormen and conductors, and factory craft workers. Piva, pp. 48, 52, 54, 55.

They use the family budget to measure the cost of a minimum subsistence, which it probably does not measure. In addition they accept that the standard family of five, on which all these early twentieth-century budgets were based, is appropriate to Toronto and Montreal. The 1921 Canada Census shows, however, average family sizes of 3.68 and 4.32 respectively for these cities.⁷⁰

Copp's and Piva's use of the family budget deserves further discussion. Their reasons for using the family budget to measure the adequacy of working-class incomes in Montreal and Toronto are not completely sound. Piva uses the budget to define a "‘health and decency’ standard of living," but his argument for doing so is surprising. He notes that :

although the Department insisted its budget did not purport to show the minimum level of expenditure of families on these basic items, its budget was based upon studies of actual family expenditures, primarily the United States Bureau of Labor Statistics' study of family expenditures in 1901-1902. Since the concern of the following analysis is the establishment of a minimum level of expenditure which would allow a "health and decency" standard of living rather than the actual expenditures of working-class families, the Department of Labour's budget is quite suitable.⁷¹

Piva seems confused about whether or not the family budget represents actual expenditures. He seems to think the budget can be used to measure adequacy of incomes. Copp's reasons for using the budget are more straightforward. He calculates that the cost of the family budget in 1926 in Montreal fell between the cost of the American Labor Bureau's "minimum health and decency" budget and a "bare subsistence" budget prepared in 1926 by a Montreal social service agency, the Family Welfare Association. Therefore, Copp continues, the Department of Labour's budget can be used as a "guide to the approximate amount of income required to live a life somewhere between the barest subsistence and health and decency."⁷² Copp's premises are weak. The problems of the social service agency's budget are explored in another section. It seems unlikely that the American budget measured "minimum health and decency." There is considerable evidence that the incomes of the American families surveyed were above average. Although the question of the

⁷⁰ *Sixth Census of Canada, 1921: Population, Dwellings, Families, Conjugal Condition of Family Head, Children, Orphanhood, Wage Earners*, 3:58-59.

⁷¹ Piva, p. 36.

⁷² The American study showed a high degree of expenditures for sundries; at least half of the families reported budget surpluses, while another one-third broke even. *Eighteenth Annual Report of the Commissioner of Labour*, p. 12; Copp, pp. 31-32.

adequacy of their incomes has never really been asked, the evidence suggests that they were more than adequate.

Copp's and Piva's reasons for assuming that the standard family of five is appropriate for Montreal and Toronto are unsound. Copp describes the typical Montreal family of 1897 as made up of a husband, wife and three children.⁷³ If this size was typical in 1897 it was not in 1921 when the census reports the average family size as 4.32. Nevertheless Copp uses the family budget, a budget for a five-member family, in his calculations of the cost of living in Montreal in the late 1920s.⁷⁴ Piva admits that the average family size in Toronto in 1921 of 3.75 is far from the size of the standard family. He argues, though, that expenditures decrease only slightly with fewer children. He points out that the census reports an average household size of 4.42, which could mean an aged or infirm grandparent even more dependent than a child.⁷⁵ But the average household could as easily have included a paying boarder. Piva assumes facts that are not in evidence. He cannot argue that the budget of a standard family of five is appropriate for the smaller Toronto family without knowing the ages of family members, the composition of the household, the degree of dependency accounted for by the members of the household and other pertinent information.

In this paper the problems perpetuated by Ostry, Urquhart and Buckley, Copp, and Piva are avoided by finding new percentage expenditure weights with which to construct cost-of-living indexes. These indexes measure only changes or trends in living costs. No attempt is made to measure the level or adequacy of incomes with the real-wage indexes compiled or with the budgets on which these are based, since these are imperfect tools for that task.

III

This section specifies the construction of a three-industry, twenty-occupation Vancouver wage index and performs various checks on it with other wage data. There is, however, a problem in trying to ascertain working-class standards of living from money wage evidence alone. As Ostry points out:

On the whole, money wages do not have much cyclical sensitivity and thus show a persistent tendency to rise, except in major depression periods.

⁷³ Copp, p. 29.

⁷⁴ See p. 2 *ff.* above.

⁷⁵ Piva, p. 39.

It should be stressed, however, that during such periods no measure of wages is a significant indicator of the financial condition of labour, since so many workers are either unemployed or on short work weeks.⁷⁶

This must be kept in mind as Vancouver working-class wages between 1901 and 1929 are examined.

Consistent and continuous Vancouver wage data is assembled from Department of Labour data for three industry groups. The industries and occupations represented are given in the following table.⁷⁷

<i>Construction</i>	<i>Manufacturing</i>	<i>Transportation</i>
Bricklayers	Blacksmiths	Freight Conductors
Carpenters	Boilermakers	Brakemen
Stone Cutters	Iron Moulders	Freight Locomotive Engineers
Electrical Workers	Machinists	Freight Locomotive Firemen
Painters	Sheet Metal Workers	Telegraphers
Plumbers	Hand Compositors	Sectionmen
Builders' Labourers	Pressmen	Street Railway Con- ductors & Motormen

Weekly wages are calculated by multiplying the hourly rates given by the hours worked per week. These weekly wages are converted into an index with base year 1913 by converting the wages into 1913 dollars. The year 1913 was chosen as the base because it is in the middle of the period and therefore is not likely to bias the index significantly. The process of constructing the wage index from weekly wages is discussed in greater detail in Appendix 1. The wage index is given here in Table 4.

In comparing the wage index produced here with the existing Department of Labour and the Bertram and Percy national wage indexes, two points are immediately made clear. (See Table 5.) In the first place, if money wages paid in British Columbia were higher than those paid elsewhere in Canada, they did not increase as much as national wages did

⁷⁶ Ostry, p. 206.

⁷⁷ Unfortunately the data on sawmill workers' wages cannot be used, because Vancouver data only cover the period 1920 to 1929. Stonecutters are omitted from the index because they are not clearly distinguished in the census and therefore cannot be weighted. Sheet-metal workers are placed in the construction index in this paper because they are most clearly located here according to the census. Pressmen's wages are only known for 1911 to 1929. However, wages for the 1901 to 1914 period are calculated by assuming that the relationship that existed between pressmen's wages and compositors' wages over the period 1911 to 1914 held for the 1901 to 1910 period.

TABLE 4
*Index Numbers of Average Hourly Wage Rates for
 Selected Vancouver Industries, 1901-1929*
 1913 = 100

	<i>Total Index</i>	<i>Manufacturing</i>	<i>Construction</i>	<i>Transportation</i>
1901	74.6	78.9	70.4	71.4
1902	77.9	82.5	74.6	73.6
1903	77.9	83.1	75.4	72.3
1904	78.5	84.0	75.0	73.2
1905	80.8	86.2	78.9	74.6
1906	81.2	86.4	80.0	74.8
1907	88.6	93.3	83.1	86.0
1908	90.2	94.3	83.8	88.9
1909	90.6	94.7	84.8	88.9
1910	93.6	94.9	93.4	91.7
1911	97.2	99.0	93.7	97.1
1912	99.6	100.0	98.4	100.0
1913	100.0	100.0	100.0	100.0
1914	100.4	100.0	98.2	102.6
1915	97.0	100.0	88.3	98.7
1916	102.4	107.6	83.7	107.9
1917	111.8	118.9	90.7	116.4
1918	133.5	140.6	123.8	130.3
1919	147.2	153.7	135.0	146.4
1920	164.8	165.5	160.6	166.7
1921	158.0	162.1	144.0	161.9
1922	148.8	148.9	143.3	152.6
1923	154.6	157.5	144.5	157.6
1924	156.2	159.4	147.8	157.6
1925	157.9	161.0	152.0	157.6
1926	160.9	163.0	161.3	157.6
1927	164.8	165.2	164.5	163.8
1928	166.2	165.3	171.4	163.8
1929	167.1	166.0	172.9	164.7

in the 1910s and 1920s. To some degree Ostry's conclusion about the cyclical insensitivity of money wages holds. The wage index shows a persistent tendency to rise. Wages from 1901 to 1929 more than doubled.

TABLE 5
National Average Wage Rates
 1913 = 100

	(1) <i>Department of Labour Index</i>	(2) <i>Bertram and Percy Index</i>
1901	72.9	68.7
1905	82.7	77.9
1910	95.1	90.4
1911	94.1	93.9
1912	97.1	96.6
1913	100.0	100.0
1914	101.2	102.0
1915	102.0	104.1
1916	109.0	110.1
1917	125.1	122.0
1918	146.7	141.6
1919	172.5	170.6
1920	205.1	206.3
1921	187.1	191.7
1922	174.5	180.3
1923	179.2	186.0
1924	181.6	187.8
1925	179.6	186.9
1926	180.8	188.0
1927	184.7	
1928	187.0	
1929	190.2	

SOURCES: Urquhart and Buckley, Series D1-11, Index numbers of average wage rates for selected main industries, 1901 to 1960, p. 84 (recalculated from base 1949); Bertram and Percy, "Real Wage Trends in Canada," p. 307.

In fact the wage index only decreases at two points, between 1914 and 1915, and between 1920 and 1922, two major depression periods.⁷⁸

However, the wage index is not completely insensitive to cyclical fluctuations. When its trends are studied in conjunction with reports of economic conditions of the Dominion and British Columbia Departments

⁷⁸ See Coates' comment about the impact of the 1907-08 recession on skilled, organized workers in *Report of the Board, 1915*, vol. 1, p. 425.

of Labour, as well as other wage data, some interesting features become visible. The years 1901 to 1913 were the halcyon days of the prairie wheat economy. The impact of this prosperity on British Columbia was to encourage the lumber industry, because of the increased demand for building materials, and to promote considerable construction and real estate activity in Vancouver. The period can be divided into three shorter periods. According to the Vancouver correspondent to *The Labour Gazette*, growth in all sectors took place between 1901 and 1907 with "less impressive" gains having been made in 1904 and 1905.⁷⁹ The years 1906 and 1907 were the most expansive; then actual shortages of labour were thought to push wages up.⁸⁰ The Vancouver wage index constructed here registers a 7.4 point increase between 1906 and 1907. In other years there was a glut of labour in spite of employment opportunities which increased every year. Slumps in mining activity in 1902 and 1904 and in the lumber industry in 1904 brought men into the city to look for work.⁸¹ Other influxes of men followed strikes in Rossland, Seattle and San Francisco in 1901, and among coal-miners and railway construction workers in 1903.⁸² This movement of men was, of course, in addition to the regular influx of unemployed from the interior every winter. The labour surplus present in Vancouver perhaps accounts for the smaller increases in the city's wage index in years other than 1906-07.

This general prosperity was interrupted in the summer of 1907 when "a growing stringency in the money markets of the world began to be felt in Canada."⁸³ With reduced demand on the prairies for building materials the lumber industry went into a slump. Financial stringency meant that the investment capital needed for many construction projects was not available. Few businesses were untouched by these conditions. The city provided relief work, cheap shelter and meal tickets for the unemployed in the winter of 1907-08.⁸⁴ In the spring of 1908 the *Gazette* correspondent reported that many men had left Vancouver, some hoping to find work in the central and northern interior of the province, others going south to the United States.⁸⁵ But in spite of the inhospitable labour

⁷⁹ *LG* 1901-1907, *passim*.

⁸⁰ "Industrial and Labour Conditions in Canada," *LG* 7 (January 1907):753-70.

⁸¹ *LG* 2 (June 1902):702; *LG* 4 (June 1904):1225.

⁸² *LG* 2 (September 1901):148; *LG* 3 (April 1903):759; *LG* 8 (June 1903):971.

⁸³ "Industrial and Labour Conditions in Canada," *LG* 8 (January 1908):809.

⁸⁴ "Unemployment in Canada during the Winter Season 1908-09," *LG* 8 (January 1908):736.

⁸⁵ *LG* 8 (March 1908):1074.

market in Vancouver these vacant places were, reportedly, more than filled with newcomers who came in anticipation of construction projects in Prince Rupert or new interior railroad activity.⁸⁶ The city's wage index does not show a slump in this recession period, no doubt because the skilled workers, whose pay rates are reflected by the index, maintained their wages even though they may have worked shorter time. Nevertheless the smallness of the increase in the index for 1907 through 1909 may be an indication of depressed conditions.

Between 1909 and 1913 the wage index registers an increase of ten points. Better times had come by the spring of 1909. Recovery occurred earlier in the west than in the east, something the Department of Labour attributed to an "upward movement" in real estate and the large amount of railway construction underway in the four western provinces.⁸⁷ Boom conditions prevailed for 1911 and 1912 when, as in 1906 and 1907, shortages of labour were again noted, even for workers as prone to unemployment as bank and office clerks.⁸⁸ Various groups among organized labour judged the times ripe for pressing their demands. The Vancouver building trades were successful in their strike of June 1911.⁸⁹

The period from mid-1913 until 1922 marked a second and distinctly different phase of economic activity in Vancouver. The March 1913 *Labour Gazette* reported that, in the capitalist world, investment was curbed after trouble erupted in the Balkans. In Vancouver the construction industry was the first to feel the effects of tighter money: many of the construction projects planned for 1913 were not completed because of the difficulty of obtaining financing.⁹⁰ Unemployed construction workers began leaving Vancouver that summer, while the pool of those who remained was swelled in late autumn by the seasonal influx of unemployed. The winter work available could not accommodate this "above-normal" number of unemployed. City council announced in November 1913 that relief would be provided only for married men, and that the day rate for relief work would have to be reduced from \$3 to

⁸⁶ *LG* 9 (September 1908):261-62.

⁸⁷ "Department of Labour Record of Changes in Wages," *Report of the Board, 1915*, vol. 1, p. 425.

⁸⁸ "Review of Labour Conditions in Canada," *LG* 13 (January 1912):737-45.

⁸⁹ The issue in the strike which began 5 June was the "closed vs. the open shop." The Vancouver Employers' Association preferred the latter option. Although a "large number" of non-union tradesmen continued to work, all organized workers, except the bricklayers, struck until July 25, by which time most employers had conceded the strikers' demands. *LG* 12 (July 1911):42; *LG* 12 (August 1911):134.

⁹⁰ *LG* 13 (March 1913):950.

\$2.⁹¹ In the summer of 1914 one regular source of employment disappeared because construction on the Grand Trunk Pacific and Canadian Northern lines had been completed. As the correspondent to the *Gazette* noted, the outbreak of war only accelerated this "industrial inactivity." The metal trades and the interior lumber camps closed in September 1914.⁹² Workers left Vancouver every day, but still others funnelled into the city, so that by October 1914 there were an estimated 15,000 unemployed in the city.⁹³ Conditions were somewhat better in 1915, not because employment increased but, reportedly, because the labour force was shrinking. City hall estimated that the population had decreased from 122,000 in 1912 to 106,000 in 1914.⁹⁴ Military recruitment was starting to draw off numbers of men as well. A Dominion order-in-council prohibited the entry of artisans and labourers into British Columbia.⁹⁵ But there were still more unemployed than the city's resources could handle. On April 5 the city suspended aid to non-residents. When rioting ensued the next day the provincial government granted \$50,000 for relief.⁹⁶ By the fall a new form of welfare appeared: arrangements were made to send excursions of the unemployed to the prairies for harvest work.⁹⁷ These excursions were held throughout the war. The magnitude of this economic crisis is reflected, though understated, in the wage index. The index falls 3.4 points between 1914 and 1915, as even the skilled had to take wage cuts.

In 1916 British Columbia finally came to benefit from wartime prosperity. Demand had already increased for the metallic minerals needed in munitions production. The lumber industry entered a boom in 1916 because of interruptions in the supply of Baltic lumber. As well, though

⁹¹ *LG 14* (December 1913):677.

⁹² *LG 15* (September 1914):366.

⁹³ *LG 15* (October 1914):460.

⁹⁴ *Annual Report, City of Vancouver, 1941*, p. 63.

⁹⁵ First passed in September 1914, this order-in-council was renewed in April 1915. "Prohibition of Immigration of Skilled and Unskilled Labour to British Columbia," *LG 15* (May 1915):1256.

⁹⁶ *LG 15* (May 1915):1292.

⁹⁷ *LG 16* (September 1915):280. John Herd Thompson seems not to have considered the relief aspect of these harvest excursions from British Columbia. In a recent *Canadian Historical Review* he writes that "Railway companies were reluctant to sponsor eastward excursions from B.C. which could take labour from the fruit growers and the extractive industries, and so it was not until the wartime emergency of 1915 that rates of 1¢ a mile to points on the Prairies were offered to B.C. workers." "Bringing in the Sheaves: The Harvest Excursionists, 1890-1929," *Canadian Historical Review* 59 (December 1978):466-78.

not until 1917, Pacific spruce was in demand for the construction of airplanes. The Vancouver shipbuilding industry expanded because ships were needed to carry the lumber.⁹⁸ Local industries provided boots and textiles to the armed forces.⁹⁹ One sign of greatly improved employment conditions by September 1916 was that the city relief officer reported difficulty in filling necessary city road and sewer jobs.¹⁰⁰ Throughout 1917 the correspondent to *The Labour Gazette* reported that banks were compelled to fill the jobs of enlisted clerks with women.¹⁰¹ It must be remembered, of course, that much of the decline in unemployment was due to a decline in the size of the labour force. This was the result of enlistments, 50,000 for British Columbia by 1918,¹⁰² and the exodus of labour that had begun in 1913. The wage index reflects the improved demand for labour in these years and the success skilled, organized workers had in making up for the slow growth of their wages in the preceding years. The index jumps 31.1 points between 1916 and 1918.

These boom conditions did not immediately dissipate with the signing of the armistice, as several industries worked to fill existing contracts.¹⁰³ The wage index continues to climb until 1920. But retrenchment had already begun in 1919, and the ensuing depressed conditions continued until 1922. Once more the unemployed flocked to Vancouver as interior logging and mining camps, sawmills and shingle mills closed down. These workers were joined by soldiers returning home or taking their discharge on the west coast. Relief provisions on the scale of those of 1914 and 1916 again became necessary as "winter employment conditions" continued through the spring and summer.¹⁰⁴ The wage index shows that a major depression had occurred. Between 1920 and 1922 the index falls sixteen points.

Improvement was increasingly evident by the end of 1922, the beginning of the third phase of economic activity, as operations in the lumber and mining industries increased. Yet unemployment continued to plague Vancouver until the end of the decade, though not on the scale of that felt between 1913 and 1915 and between 1920 and 1922. Plenty of unemployed men were available in October 1923 to accept the

⁹⁸ *LG* 16 (August 1916):1159.

⁹⁹ *LG* 16 (November 1916):1729.

¹⁰⁰ *LG* 16 (September 1916):1542.

¹⁰¹ *LG* 17, *passim*.

¹⁰² *Annual Report, 1918*, p. 5.

¹⁰³ *Annual Report, 1919*, p. 5.

¹⁰⁴ *Annual Report, 1921*, p. 5.

Vancouver Shipping Federation's offer of 80¢ an hour to anyone who would cross the longshoremen's picket line.¹⁰⁵ In 1924, a year in which slumps in lumber and mining were reported, the province found it necessary to dispense \$150,000 for relief work.¹⁰⁶ The province had not voted special relief funds for three years. Even after the recovery from this temporary setback in 1925, unemployment continued to be a problem.¹⁰⁷ This was especially true of the winter months but was also so in the summer months. The provincial Department of Labour reported labour surpluses in each year from 1925 to 1929. The department attributed much of this to the problem of soldiers. In January 1925, some 37,000 CEF pensioned soldiers resided in Canada. Of this 5,400 or 14.5 percent were in British Columbia, mainly in the lower mainland. This figure compared to enlistments and discharges in the province of 9.0 percent and 8.2 percent.¹⁰⁸ The mild climate had attracted many of these ex-servicemen. Many of the soldiers were handicapped and thus not suited to much of the physically demanding work which characterized the province.¹⁰⁹ Of course, it was not usually the ex-servicemen who went on the annual spring and fall prairie excursions;¹¹⁰ nor was it only the ex-servicemen on whom \$250,000 of relief money was spent in the province in the winter of 1927.¹¹¹ In contrast to the full-employment conditions of 1906-7, 1911-12, and late in the war, in the 1920s an economic climate prevailed where employment expansion coincided with persistent unemployment. The wage index reveals a steady but undramatic increase from 1923 to 1929 which perhaps reflects this phenomenon. But again Ostry's conclusion is borne out that wages show little sensitivity to less than major economic changes.

How does other wage data correspond to the Department of Labour data used in the wage index? That found in the Canada Census shows that the wages in the wage index are higher than the provincial average. An approximation of the average British Columbia male's weekly wage from the 1911 Census is \$16.35, while the average on the wage index is

¹⁰⁵ *Annual Report, 1925*, p. 33.

¹⁰⁶ *Annual Report, 1924*, p. 6.

¹⁰⁷ *Annual Report, 1925*, p. 39.

¹⁰⁸ *Annual Report, 1927*, p. 59.

¹⁰⁹ *Annual Report, 1925*, p. 45.

¹¹⁰ Thompson, "Bringing in the Sheaves," p. 472, gives the following totals for the excursion from British Columbia: 1921, 4,397; 1922, 4,170; 1923, 4,019; 1924, 5,351; 1925, 9,471; 1926, 7,336; 1927, 7,703; 1928, 9,737.

¹¹¹ *Annual Report, 1927*, p. 56.

\$22.10.¹¹² The 1921 census gives the average wage for Vancouver males of \$24.61 for 44.5 weeks worked, while the average on the wage index is \$24.99.¹¹³ The following table compares wage data from the 1921 census with that from the wage index for the three sectors comprising the index :

	<i>1921 census data wage/week</i>	<i>1921 wage index wage/week</i>
Manufacturing	\$22.62	\$37.00
Construction	26.24	34.70
Transportation	27.51	32.40

Given the origins of the wage index information these results are not surprising. Although the wage data used in the indexes may exceed census estimates, what is important is whether it exceeds census estimates by the same ratio. If it does, it makes no difference whether census or wage index data are used. Unfortunately, census data do not exist for enough years to make such a determination.

The differences between the wage index and the census wage information bear noting. For 1921 the spread between census weekly wages paid manufacturing wage-earners and index wages is considerable. This difference in remunerations suggests that substantial numbers of manufacturing workers did not obtain the wages of the skilled metal and printing trades represented in the index. Of course, the census also surveys part-time workers and children. Inclusion of their wages reduces the average weekly wage. At the most, the manufacturing wage index compiled here surveys the positions of 20.9 percent of the manufacturing wage-earners in 1911 and 13.3 percent in 1921. (See Table 3.) In the construction industry, where the index surveys 96.6 percent and 68.8 percent of construction workers for the same years, a smaller difference exists between the two wage figures given. The higher representativeness suggests that short time was more the cause of the spread, although it should not be assumed that the Department of Labour rates were won by all construction workers who were supposedly entitled to them. That the smallest spread between the census and index earnings exists in transportation is

¹¹² McInnis gives average annual male earnings as \$728. A weekly estimate is derived from this by dividing \$728 by 44.5 weeks, the average number of weeks worked in 1921. *Sixth Census of Canada, 1921: Population, Dwellings, Families, Conjugal Condition of Family Head, Children, Orphanhood, Wage Earners.*

¹¹³ *Ibid.*

perhaps a reflection of the high degree of organization in that trade and fewer part-time workers.

The difference in percentage changes in wages between 1911 and 1921 is most striking for construction workers. The census shows a change of 22.0 percent, while the index shows a change of 50.9 percent. The Vancouver construction industry declined between 1911 and 1921. The building permits returns given in Table 1 substantiate this point. In 1911 census estimates show that 15.1 percent of all Vancouver wage-earners were engaged in the construction industry; this percentage dropped to 9.5 percent in 1921. Surely one of the effects of this decline was a reduction in the amount of work available to construction workers. Yearly earnings, as reported by the 1921 census, were therefore reduced, but the hourly earnings reported by the Department of Labour were not.

All that can be said with safety is that the weekly wages given in the British Columbia Department of Labour wage surveys are lower than those given for the same period by the wage index. This caution is given because the direction and order of the bias in the provincial data is unknown. However, like the census wage increases, the provincial data reinforces conclusions drawn from the wage index, in particular, that wages did increase moderately in the 1920s. The provincial average male weekly wage, according to the provincial labour department, increased from \$27.62 in 1921 to \$29.20 in 1929, or 5.72 percent. From 1921 to 1929 the wage index increases 9.1 points, or 5.76 percent.¹¹⁴

A serious failing of the wage index is that it does not include any accounting of women's wages. For this the only observations available are in the census and in the British Columbia Department of Labour's Minimum Wage Board surveys. According to the census, the average provincial female's wage increased between 1911 and 1921 from \$439 a year to \$676; these figures are \$289 and \$371 less than male wages for the same years. Not surprisingly, the 1921 census shows Vancouver women's weekly wages to be far below the average wage in the wage index. The two numbers are \$15.34 and \$34.99 respectively. However, women's wages increased 54 percent during the decade, according to the census, a higher rate of increase than that of the males in the same decade.¹¹⁵ Between 1918 and 1929 the provincial Department of Labour published surveys of female wage rates.¹¹⁶ These figures show smaller

¹¹⁴ *Annual Reports, 1918-1929.*

¹¹⁵ McInnis.

¹¹⁶ The women's wage data was obtained by the Minimum Wage Board. The board's survey methods were similar to the department's and thus the former's results are

wage increases for women in the 1920s than the provincial department's data and the wage index show for men. The average women's wage increased between 1921 and 1929 from \$17.12 to \$17.64. The percentage change was 3 percent.

But whatever its limitations the Vancouver wage index constructed here is not substantially challenged by other available wage data. In addition, this wage index fits comfortably with the qualitative record of the labour market in British Columbia and Vancouver. But to speak with more assurance about the condition of labour in the city between 1901 and 1929, a price index must be compiled that can be linked with the wage index to indicate the trend of wage-earners' purchasing power.

IV

The task of constructing a *Vancouver price index* is short if that which Bertram and Percy compiled for 1901 to 1926 is extended. Their index, of course, is not based on a survey of Vancouver working men's expenditure patterns.¹¹⁷ They obtain their percentage weights for their food index from the 1901 expenditure survey published by the United States Bureau of Labor. Their fuel and lighting and clothing subgroup weights are those established by the Dominion Bureau of Statistics in 1926. Their weights for grouping food, fuel and lighting, rent and clothing into one index are the bureau's estimates of domestic disappearance in Canada in 1913; that is, the total national domestic consumption of each commodity or group of commodities.¹¹⁸ In taking the food weights, Bertram and Percy omit the weight for fish, perhaps thinking that its consumption is not sufficiently national.¹¹⁹ In addition they use a national electricity index, since consistent regional ones are unavailable to them.

questionable for the same reasons as mentioned above. The board received returns representing 9,700 women wage-earners in 1921. This compared with census returns in 1921 showing 22,000 female wage-earners in the province.

¹¹⁷ Since their larger work is a new national price index from city price indexes, they do not make each city index as regionally specific as possible.

¹¹⁸ The Dominion Bureau of Statistics argued that an index number employing this base afforded "an excellent measurement of changes in the average cost of living in the Dominion as distinguished from that of any particular class or section." For a discussion see Dominion Bureau of Statistics, *Prices and Price Indexes, 1913-1928*, p. 182; and Bertram and Percy, "Real Wage Trends in Canada."

¹¹⁹ Fish price quotations are not available for each city in all years. The Department of Labour apologized for this omission by citing the difficulty of obtaining "representative" prices.

Ideally, a Vancouver price index for the years 1901 to 1929 would be weighted according to known expenditure patterns for that period. Such a survey, however, was not undertaken for the city until 1937.¹²⁰ Nonetheless, rather than accept the national expenditure weights which Bertram and Percy employ, it is preferable to employ an expenditure survey which more closely approximates Vancouver working men's living costs. There are five possible cost-of-living surveys available for the period of study.

A survey of the cost of living in Winnipeg in the 1910s was published in the Coates report. Although no explanation of the inclusion of this budget in the report was given, perhaps it is an example of the kind of study the department relied upon in adjusting the 1901 American cost-of-living study to Canadian conditions. But it is difficult to imagine how the department used it, since the representativeness of the families studied was not specified and the survey lacked detail in its measure of food expenditures.¹²¹

Two quantity budgets were presented to the House of Commons Select Standing Committee on Industrial and International Relations in the late 1920s. The committee, largely at member J. S. Woodsworth's urging, was considering minimum-wage legislation. Margaret Gould, a research officer for the Canadian Brotherhood of Railway Engineers, presented a budget in 1926. Hers is, in fact, the 1918-9 minimum health and decency budget of the American Bureau of Labor Statistics with some modifications.¹²² H. A. Logan describes the cost of the budget as "too high," since prices were obtained in railway centres where prices were supposedly high. He thinks the modifications "controversial" because Gould first presented the budget to a board of conciliation convened under the Canadian Industrial Disputes Investigation Act in 1922.¹²³ Logan feels that since Gould's primary goal in presenting the budget to the board of conciliation was to obtain the high wages that the railway workers wanted, her modifications overestimated actual living costs.

The budget which Harold T. Falk, secretary of the Financial Federation of the Montreal Council of Social Agencies, presented to the standing committee in 1928 feigned the sophistication it lacked. His report described its method in the following way:

¹²⁰ *Family Income and Expenditure in Canada, 1937-1938*.

¹²¹ *Report of the Board, 1915*, vol. 1, p. 9.

¹²² *Minutes of Proceedings and Evidence*, 18 May 1926.

¹²³ Logan, pp. 150-51, 152n.

Mrs. H. M. Jaquays, Miss Grace Towers and Mrs. Andrew Fleming undertook, as a subcommittee, to study a food and clothing budget. The results were arrived at by the most careful estimating of quantities, qualities, varieties and prices of food and clothing. Nothing was done by guess work, experimentation and actual pricing being carried out in every instance. Corner store prices for food were listed, as the majority of families must do their shopping in the district in which they live.

Once obtained these results were assessed.

The original report of this sub-committee was submitted to the most expert criticism of dieticians, and to the criticism of all divisions of the Council.

The chairman of the standing committee commended the council for a "really excellent piece of work," though it is far too imprecise to interest an economic historian today.¹²⁴

Beyond their biases and lack of sophistication, these budgets have the additional drawback, as far as this study is concerned, of not being Vancouver studies. More seriously, they are quantity budgets. As such, they try to measure the adequacy of income and are not therefore appropriate for statistically determining cost-of-living changes.

Two cost-of-living surveys exist for British Columbia, both compiled by the British Columbia Minimum Wage Board in 1918. In that year the board established minimum wages for women and girls in various occupations. In setting the wages, the board employed cost-of-living forms which it distributed to employees in these occupations. The board did not discuss how it selected its employee samples, although in both cases the number of returned surveys was small.¹²⁵ Moreover, not all of the questions on the forms were answered. The minimum wage was set to provide the "prudent, self-supporting" woman with "reasonable comfort." The purpose of the forms was to obtain "estimates" from employees "of the amount required yearly" to obtain this degree of comfort. The two quantity-sociological budgets derived cannot be used in the compilation of a Vancouver price index, since they surveyed women only.¹²⁶

¹²⁴ *Minutes of Proceedings and Evidence*, no. 14, 15 May 1928, p. 213.

¹²⁵ The returns of twenty-nine employees were used when the minimum wage was set for mercantile occupations, and the returns of thirty-seven employees were used when the minimum wage was set for laundry, dyeing and cleaning industries. *Annual Report, 1918-1930*.

¹²⁶ The board set wages for the following industries: public housekeeping, office occupations, personal service (hotels and restaurants), fishing (canning), telephone and telegraph, fruit and vegetable canning, and manufacturing.

One alternative to the Bertram and Percy set of expenditure weights still exists. When the American Bureau of Labor Statistics published its 1901 national cost-of-living study it provided separate results for each of the states surveyed. One of these was Washington state. Because there were enough similarities between Washington and Vancouver economic and demographic conditions, the use of the Washington subgroup and group expenditure proportions seems justified.¹²⁷ Frontier cost-of-living conditions, such as distance from supply and the inability to achieve self-sufficiency in many commodities, prevailed in both localities. Washington and Vancouver shared at least two other frontier conditions which can affect family expenditures. Both had small average family sizes, 4.10 in 1901 in the Washington survey families,¹²⁸ and 3.58 in Vancouver as late as 1921.¹²⁹ Both regions had fewer employment opportunities for women and children than more established parts of the continent.¹³⁰ Also the Washington survey seemed to identify regional fuel peculiarities true of Vancouver that the Bertram and Percy index does not. The Washington study fuel subgroups gave a higher proportion of expenditure to soft wood and a lower one to bituminous coal than the Bertram and Percy index does. This accords better with the Dominion Department of Labour's evidence about fuel uses in British Columbia. Finally, the Washington survey did not include measures of domestic disappearance, something Bertram and Percy employ. Since domestic disappearance includes the expenditure of upper-and middle-class families, a Washington-weighted index, based as it is on working-class expenditures, seems superior to the Bertram and Percy index on this point.

¹²⁷ *Eighteenth Annual Report of the Commissioner of Labor, 1903*. The Washington survey did not give subgroup weights for fuel other than one weight for fuel and one weight for lighting. In order to obtain a fuel and lighting breakdown a later expenditure survey is used. United States, Department of Labor, Bureau of Labor Statistics, *Cost of Living in the United States*, Bulletin No. 357, 1924. This cost-of-living survey gave specific expenditure weights for gas, electricity, soft wood and bituminous coal for the cities of Spokane, Seattle and Everett, pp. 334-91. The city data is weighted together according to their respective populations to obtain Washington weights. United States, Department of Commerce, Bureau of the Census, *Fourteenth Census of the United States, 1920: Population*, 1:312. The weights for fuel and lighting derived are 46.4 for bituminous coal, 36.1 for soft wood and 17.5 for electricity. Gas is omitted since gas price information is not available for the whole period of study.

¹²⁸ *Eighteenth Annual Report of the Commissioner of Labor, 1903*, p. 362.

¹²⁹ *Sixth Census of Canada, 1921: Population, Dwellings, Families, Conjugal Condition of Family Head, Children, Orphanhood, Wage Earners*, 3:59.

¹³⁰ "Work Force by Age, 1911-1961 — Males and Females — Canada and British Columbia," McInnis; and *Eighteenth Annual Report of the Commissioner of Labor, 1903*, p. 352.

However, a Vancouver price index employing Washington survey weights shares two flaws with an index using Bertram's and Percy's weights. In the first place, both the Washington and the Bertram and Percy proportions are derived from surveys which deliberately excluded families of non-European origin. As such, Vancouver's sizeable population of Asian origin is ignored by both indexes. Secondly, the food component of the Bertram and Percy index, and all components of the other one, are American. In the absence of any suitable national food expenditure survey Bertram and Percy justify their use of the American food weights by arguing that :

since Canadian industrialization and incomes have historically lagged behind American levels, food subgroup weights based on 1901 expenditure patterns of American urban workingmen could easily reflect expenditure patterns of Canadian urban workingmen in 1913 [the midpoint of their period of study].¹³¹

The argument for using the Washington survey in the compilation of a Vancouver price index can only repeat this justification plus that based upon the economic and demographic conditions in Washington and Vancouver.

The two sets of group and subgroup expenditure weights thus obtained, and given in Table 6, show that differences existed between the two survey groups. The Washington families seemed poorer because they allotted a higher proportion of income to food than did the subjects of the survey which Bertram and Percy use. Yet the Washington families spent proportionately more for fresh vegetables and fruit, while the other families consumed relatively more meat and dairy products. Are the Washington families' expenditures on food evidence of higher subsistence spending, as defined by Engel's Law? Or were some of the food expenditures luxuries? Or is there some other explanation of the high proportion spent on food? The answer is by no means clear.

In this impasse nothing more can be done than to compile two Vancouver price indexes, one based on the Washington survey weights and the other based on the Bertram and Percy expenditure weights. The latter proportions are revised by adding a subgroup weight for fish; their index is further changed by including a provincial electricity rather than a national electricity index. If both Vancouver price indexes thus constructed seem to present a confused picture of the degree of subsistence and non-subsistence spending, it is hoped that both price indexes reflect

¹³¹ Bertram and Percy, "Real Wage Trends in Canada," p. 303.

TABLE 6
Implicit Sub-Group and Group Price Weights*

	<i>Revised Bertram and Percy¹</i>	<i>Washington survey</i>
I. GROUP WEIGHTS		
Food	43.8	52.5
Fuel and Light	8.7	6.8
Rent	22.5	22.7
Clothing	25.0	18.0
II. SUB-GROUP WEIGHTS		
1. Food		
Fresh Beef	17.2	18.5
Fresh Pork	4.8	1.1
Salt Pork Products	4.8	4.2
Veal/Mutton/Lamb	3.4	2.1
Fish	2.8	2.8
Eggs	5.8	2.6
Milk	7.3	5.0
Butter	9.9	11.4
Cheese	0.9	0.3
Lard	3.2	1.6
Tea	1.8	0.7
Coffee	3.7	2.8
Sugar	5.4	5.2
Flour and Meal	5.9	3.2
Bread	4.3	4.0
Rice	0.7	0.2
Potatoes	4.5	2.9
Other Vegetables	6.5	14.7
Fruit	5.7	16.2
Vinegar	1.4	0.5
	100.0	100.0
2. Fuel and light		
coal (bituminous)	64.6	46.4
wood (soft)	19.5	36.1
electricity or coal oil	15.9	17.5
	100.0	100.0

¹ Bertram and Percy, "Preliminary Research Report on Wages in Canada," p. 44.

* Weights for sundries have been reapportioned among the remaining weights.

something of Vancouver working-class expenditures, and that the true or ideal Vancouver price index lies between them.

Once expenditure weights are selected, all that remains is the indexing of Vancouver prices.¹³² A quarterly price index for 1910 onwards, with two observations prior to that year, is compiled.¹³³ Each item is indexed with the average price for 1913 being taken as the base. The individual indexes are weighted together into subgroup indexes. The twenty-eight food items form the food index. To the index numbers for soft wood and bituminous coal is added the Dominion Bureau of Statistics yearly electricity index for British Columbia to form the fuel and light index.¹³⁴ The index of the rent of a six-room house with sanitary facilities in a typical working men's district is the only item in the housing index, since two out of three households lived in rental accommodation in 1921.¹³⁵ The Department of Labour did not survey clothing until late in the period of study. Bertram and Percy, however, compile their own index by joining the Dominion Bureau of Statistics clothing index that begins in 1913 to an index for the same items with prices which they obtain from Eaton's

¹³² *The Labour Gazette* began publishing monthly prices in 1910. In addition month of December quotations for the years 1900 and 1905 are available in the Coates report. The journal conducted some trial runs of price data collection in November of 1900, 1901 and 1903. This data is not used because the Department of Labour admitted that problems were experienced in specifying grades of items. *LG* 3 (April 1903): 779. The prices in the Coates report were obtained from books of retailers who had supplied the correspondents of the *Gazette* after 1910. *Report of the Board, 1915*, vol. 2, p. 72. The 1900 prices are converted to 1901 prices by assuming constant increase between 1900 and 1905 and by dividing this increase by five to get annual increases. This is done to make the price index consistent with the wage index whose first observation is for 1901.

No major problems are encountered in compiling price data. There was a short gap in the collection of the price data, between June 1912 and October 1912. To approximate prices for this interval a constant month-by-month increase is assumed between the June and October prices. Not all of the price data available for each month is used. At different times prices for over 100 items were obtained. Instead, the list of food items used by Bertram and Percy and given in the Washington survey is used. Where more than one grade was given for an item — for example, creamery prints butter and dairy tubs butter — only one grade is used. As Bertram and Percy note, the various grades are close substitutes for each other, and therefore their price changes are similar. Bertram and Percy, "Preliminary Report on Real Wages in Canada," p. 46.

¹³³ The data exists in *The Labour Gazette* for the construction of a monthly price index for 1910 onwards but visual inspection of month-to-month changes suggests that a quarterly index does not seriously obscure month-to-month variations.

¹³⁴ *LG* 23 (December 1923): 1442; *Prices and Price Indexes, 1913-1928*, p. 264; *Prices and Price Indexes, 1913-1930*, p. 200.

¹³⁵ *Sixth Census of Canada, 1961: Population, Dwellings, Families, Conjugal Condition of Family Head, Children, Orphanhood, Wage Earners*, 3:55, 59.

TABLE 7
*Revised Bertram and Percy Price Index for
 Vancouver, 1901-1929
 average 1913 = 100*

	<i>March</i>	<i>June</i>	<i>September</i>	<i>December</i>
1901				80.2
1905				84.0
1910	107.6	98.0	97.4	107.7
1911	101.0	108.9	104.1	112.8
1912	109.5	106.1	102.7	99.2
1913	95.1	102.2	103.6	98.8
1914	97.8	100.6	96.8	92.5
1915	92.1	93.4	90.0	92.5
1916	95.3	97.4	96.2	103.8
1917	114.8	125.1	127.2	127.7
1918	140.4	150.7	152.2	152.0
1919	155.5	161.6	167.7	168.0
1920	187.5	206.4	183.3	176.2
1921	159.0	149.9	149.0	144.8
1922	138.1	137.7	128.8	136.8
1923	137.5	138.3	136.7	137.9
1924	138.1	135.3	136.2	139.1
1925	141.0	138.5	138.0	141.2
1926	139.5	138.3	136.8	136.5
1927	135.9	137.2	134.8	135.2
1928	133.8	135.1	137.4	137.6
1929	139.0	140.7	141.7	143.4

catalogues.¹³⁶ Ultimately, these four subgroup indexes are combined into an aggregate cost-of-living index. Two aggregate cost-of-living indexes, one using revised Bertram and Percy weights and the other using Washington weights, are given in Tables 7 and 8.

The two price indexes do not differ substantially from one another. It does seem that, proportionately, prices increased less in Vancouver than nationally. (See Table 9.) The Washington-weighted index begins at a lower point and ends at a higher point than the revised Bertram and

¹³⁶ For a discussion of their procedure see Bertram and Percy, "Preliminary Research Report on Real Wages in Canada," pp. 59-60. It would be preferable to compile a clothing index with Vancouver prices, but consistent and continuous catalogue data is not available.

TABLE 8
Washington-Weighted Price Index for Vancouver, 1901-1929
average 1913 = 100

	<i>March</i>	<i>June</i>	<i>September</i>	<i>December</i>
1901				76.4
1905				80.8
1910	106.0	97.1	95.9	106.2
1911	101.6	109.8	105.7	113.7
1912	110.6	107.4	104.2	101.0
1913	95.5	101.5	103.1	99.8
1914	97.3	103.6	98.5	93.3
1915	94.0	94.9	92.5	96.2
1916	98.1	102.0	98.2	107.4
1917	115.4	130.4	137.1	135.2
1918	147.6	159.4	161.7	157.4
1919	158.9	168.0	178.2	173.2
1920	189.4	201.0	181.8	172.4
1921	157.7	145.1	145.4	141.6
1922	139.7	139.4	140.3	137.9
1923	139.8	139.3	137.4	136.8
1924	137.3	134.5	133.2	136.8
1925	139.6	136.7	136.5	138.6
1926	138.4	135.8	134.8	132.6
1927	134.7	135.2	132.1	132.3
1928	132.7	136.5	138.6	138.8
1929	143.1	143.2	143.7	146.0

Percy index. However, the patterns of the two indexes are remarkably similar. Both indexes divide into five distinct periods. Price increased between 1901 and the last quarter of 1911. There were considerable fluctuations in prices in 1912 and 1913, following which a marked downturn occurred in 1914 and 1915. Prices increased substantially from the fourth quarter of 1915 to the second quarter of 1920, when the highest point for the period is reached on both indexes indicating the highest prices in the whole period of study. During the next quarter prices fell sharply and continued to fall until the end of 1923. From then until the end of 1929, prices increased slowly with periodic downturns in 1924, 1925, 1926 and 1927.

At various times some prices on the individual food, fuel and lighting, rent and clothing indexes are more volatile than others. Between 1901

TABLE 9
National Price Indexes
1913 = 100

	(1) Bertram and Percy Index	(2) Department of Labour Index
1901	76.5	71.0
1905	82.0	78.2
1910	92.2	91.2
1911	94.2	92.7
1912	98.8	98.3
1913	100.0	100.0
1914	98.0	102.0
1915	102.6	98.7
1916	120.3	105.4
1917	142.7	129.4
1918	155.8	147.2
1919	169.3	158.1
1920	187.2	184.7
1921	157.3	161.9
1922	150.0	148.9
1923	151.5	150.2
1924	151.3	147.6
1925	155.2	150.2
1926	150.9	153.1
1927		151.2
1928		151.7
1929		154.1

SOURCE: Bertram and Percy, "Real Wage Trends in Canada," p. 306. Urquhart and Buckley, Series J128-131 — Price index numbers of a family budget (Department of Labour) 1900 to 1939.

and 1911 the rent index is the most dynamic, jumping from 55.4 to 143.6 (compared with increases in the aggregate indexes from 80.2 to 112.8 for the revised Bertram and Percy index and from 76.4 to 113.7 for the Washington-weighted index). In the depression that followed, rent returned to its former level reaching 53.3 in the fourth quarter of 1915. During that period of wartime inflation, food prices increased the most. The revised Bertram and Percy index jumps from 98.3, in the fourth quarter of 1915, to 243.8, in the second quarter of 1920. The Washington-weighted index increases from 106.2 to 231.9 for the same period. In

the downturn from 1920 to 1923 food prices declined more than other prices, falling from 243.8 to 131.4 and from 231.9 to 137.9 for the two indexes. Rent, according to the estimates used in this article, did not change from 1920 to the end of the period. Clothing prices continued to decrease even after the 1920 to 1923 price recession, and fuel and lighting costs also continued to fall after 1923.

Other price changes can be seen when the food and fuel indexes are examined in detail. During the period of war and postwar inflation, pork, smoked pork products, lard, sugar, flour, rice, potatoes, dry beans, dried fruit, beef and butter experienced considerable price increases. That these items increased so much is not surprising, given the export and military demand for them.¹³⁷ The fuel index examined in detail shows that both electricity and soft wood prices were lower in 1920 than in 1913 and dropped to even lower levels throughout the 1920s. In 1920 bituminous coal prices were substantially above 1913 levels, but they declined through the early and mid-1920s, though never to 1913 levels. In 1927 they began to increase again. The combined effect of these prices was a fuel index which declines through the 1920s but less than either the electricity or soft wood indexes.

Although the revised Bertram and Percy price index and the Washington-weighted price index do not vary in pattern or direction, the former is higher than the latter until 1928. Since the two indexes rely upon identical rent and clothing index components, the variation is a function of slight differences in the food and fuel indexes and the different group weights. The revised Bertram and Percy index begins at 81.0 and ends at 155.0, and the Washington-weighted food index begins at 77.5 and ends at 160.0. However, the first index shows a greater spread from low to high points during the period of war and postwar inflation, roughly from the third quarter of 1915 to the second quarter of 1920. It rises from 98.7 to 243.8 while the Washington-weighted index rises from 105.2 to 231.9. For most of this period of inflation the Washington-weighted food index actually is higher than the revised Bertram and Percy food index, a function of the greater proportion it allots to commodities experiencing military and export demand. The latter index does

¹³⁷ Between the third quarter of 1915 and the second quarter the following food index changes occur: pork increases from 76.6 to 185.1; smoked pork products increase from 96.8 to 213.9; lard increases from 88.0 to 187.7; sugar increases from 114.7 to 321.7; flour and meal increases from 104.6 to 237.0; rice increases from 78.4 to 294.1; potatoes increase from 59.3 to 1422.9; dried beans increase from 138.9 to 333.3 in the third quarter of 1917; dried fruit increases from 124.4 to 284.3; beef increases from 87.7 to 166.3; and butter increases from 87.1 to 176.9.

make spectacular jumps in 1920. These increases can be attributed to the greater weight given in the revised Bertram and Percy index to sugar and potatoes, two commodities which increased greatly in price. The two fuel indexes have different spreads from first to last observation. The revised Bertram and Percy index begins at 78.3 and ends at 120.3 while the other index begins at 70.1 and ends at 109.2. This is because the revised Bertram and Percy index gives a greater weight to bituminous coal, 64.6 percent compared to 46.4 percent for the Washington-weighted index. And since coal, unlike soft wood and electricity, did not decline from its 1913 price level, the index weighting coal more heavily is higher than the other.

A further check on the validity of the two price indexes is their correspondence with the existing qualitative record of Vancouver price changes given by the correspondents to the *Gazette*, newspapers, commissions of investigation, and other contemporary observers. In the first period of inflation from 1901 to 1911-2, when the two price indexes climb thirty points or more, most references referred to increasing prices. Price reports for 1907-8 were mixed and, unfortunately, price index numbers are not available for these years. In April and May 1908 the *Gazette* noted that prices remained high except for decreases in flour, eggs, milk and butter.¹³⁸ Summary reports in the journal noted price decreases in 1907, however, and "stationary or easier conditions" in 1908.¹³⁹ In March 1908 the Vancouver correspondent observed that, because of increases in the price of bakery bread in a time of recession, "the working people . . . are baking their own bread."¹⁴⁰

The greatest outcry about price inflation came in the early months of 1912. Earlier, in 1910, *The Labour Gazette* reported that a number of working men had to sublet part of their houses in order to keep up with house rents.¹⁴¹ From early 1912 until the summer a barrage of articles and editorials appeared in local newspapers condemning cold-storage operators for hoarding meat and produce warehousemen for combining to drive up prices. City councilmen and trade-union leaders urged housewives to form food-purchasing co-operatives as a means of combating these excesses and called upon various levels of government to investigate

¹³⁸ Few local Vancouver reports were given in *The Labour Gazette* although various national reports, whatever national means, were given. The real problem here is that we do not know how regionally specific markets in Canada were.

¹³⁹ "Industrial and Labour Conditions in Canada," *LG* 8 (January 1908):809; "Industrial and Labour Conditions in Canada," *LG* 9 (January 1909):709-25.

¹⁴⁰ *LG* 8 (April 1908):1219.

¹⁴¹ *LG* 11 (August 1910):182.

prices. On the other hand, the cold-storage operators and warehousemen defended themselves against charges of villainy by citing consumer extravagance, waste in food preparation, unreasonable consumer demands for lettuce and green onions in January, and the shrinking number of people willing to farm.¹⁴² In retrospect the cold-storage operators and warehousemen may have been correct in their point that people in Vancouver expected a higher standard of living than they had in former times. The price indexes show that prices peaked by 1911. It is not surprising, then, that the furor died down by the summer of 1912.

Substantially less comment was made about prices during the depression which followed when the price indexes drop substantially, though not to their 1901 levels. The fall in rents was a source of frequent comment. In October 1913 the correspondent to *The Labour Gazette* noted a large number of empty houses for rent in the city, a result of the exodus of working men. He said :

For the first time in years rents have dropped, and dwelling houses of all kinds can be obtained for from \$5 to \$10 per month cheaper than last year. This is very significant and of all statistics which might be cited to prove the depression which prevails this is one of the most definite.¹⁴³

Employers cited their own declining revenues and a lower working men's cost of living as reasons for wage cuts. But when this argument was made in the British Columbia Electric Railway dispute in 1915, Fred Hoover, representing the Street Railwaymen's Union, retorted that he could produce figures which would show that living costs had not changed.¹⁴⁴ Had they been produced, these figures would, presumably, have shown increasing living costs.

Prices did not begin to increase in Vancouver until late 1915, when wartime economic activity picked up in the city. The price indexes record the doubling of prices by 1920. Once again local newspapers assailed the villains they had identified in the earlier period of inflation. The correspondent to *The Labour Gazette* noted sharp price increases when war broke out.¹⁴⁵ If the price data going into the compilation of the price index is correct, though, this early war increase was very short-term. The

¹⁴² *Vancouver Sun*, February to March and June to July 1912, and *Vancouver Province*, March to April 1912.

¹⁴³ *LG* 14 (November 1913):550.

¹⁴⁴ "Cost of Living is Reduced in City," *Vancouver Province*, 20 July 1915, p. 16.

¹⁴⁵ *LG* 15 (September 1914):366. The outbreak of war supposedly was marked by increases in the prices of flour, rolled oats, beans, rice, prunes, sugar, coffee and coal oil though meat was not affected.

TABLE 10
Vancouver Real Wage Indexes, 1901-1929
average 1913 = 100

	<i>RWA</i> ¹	<i>DRWA</i> ²	<i>RWB</i> ³	<i>DRWB</i> ⁴
1901	93.0	93.0	97.6	97.6
1905	96.2	96.2	100.0	100.0
1910	91.1	86.8	92.4	88.1
1911	91.1	86.2	90.3	85.5
1912	95.5	100.4	94.2	98.6
1913	100.0	101.2	100.0	100.2
1914	103.6	108.6	102.3	107.6
1915	105.4	104.8	102.7	100.8
1916	104.3	98.6	100.9	95.3
1917	90.4	87.5	86.3	82.7
1918	89.7	87.8	85.3	84.8
1919	90.2	87.6	86.8	84.9
1920	87.5	93.6	88.5	95.6
1921	104.8	109.1	107.2	111.6
1922	108.0	108.9	107.2	108.0
1923	112.4	112.2	111.8	113.0
1924	113.9	112.3	115.3	114.2
1925	113.0	111.8	114.5	113.9
1926	116.8	117.9	118.8	121.3
1927	121.2	121.7	123.2	124.4
1928	122.2	120.8	121.6	119.7
1929	118.4	116.5	116.0	114.4

¹ Revised Bertram and Percy Index, yearly average prices.

² Revised Bertram and Percy Index, month of December prices.

³ Washington-weighted Index, yearly average prices.

⁴ Washington-weighted Index, month of December prices.

Department of Labour attributed wartime inflation to allied and national military demands for wheat, flour, cheese, meats, oats and butter. As well, nations cut off from normal supply sources relied on Canada for these foods.¹⁴⁶ The Department of Labour attributed the phenomenal increases after 1916 in bread and flour prices, for example, to a large wheat crop in 1915 which stalled the rise of prices until the summer of 1916 when there were crop failures.¹⁴⁷

¹⁴⁶ "Prices in Canada during 1914," *LG* 15 (January 1915):818-21.

¹⁴⁷ "Government Regulation of Prices during the War," *LG* 17 (May 1917):408.

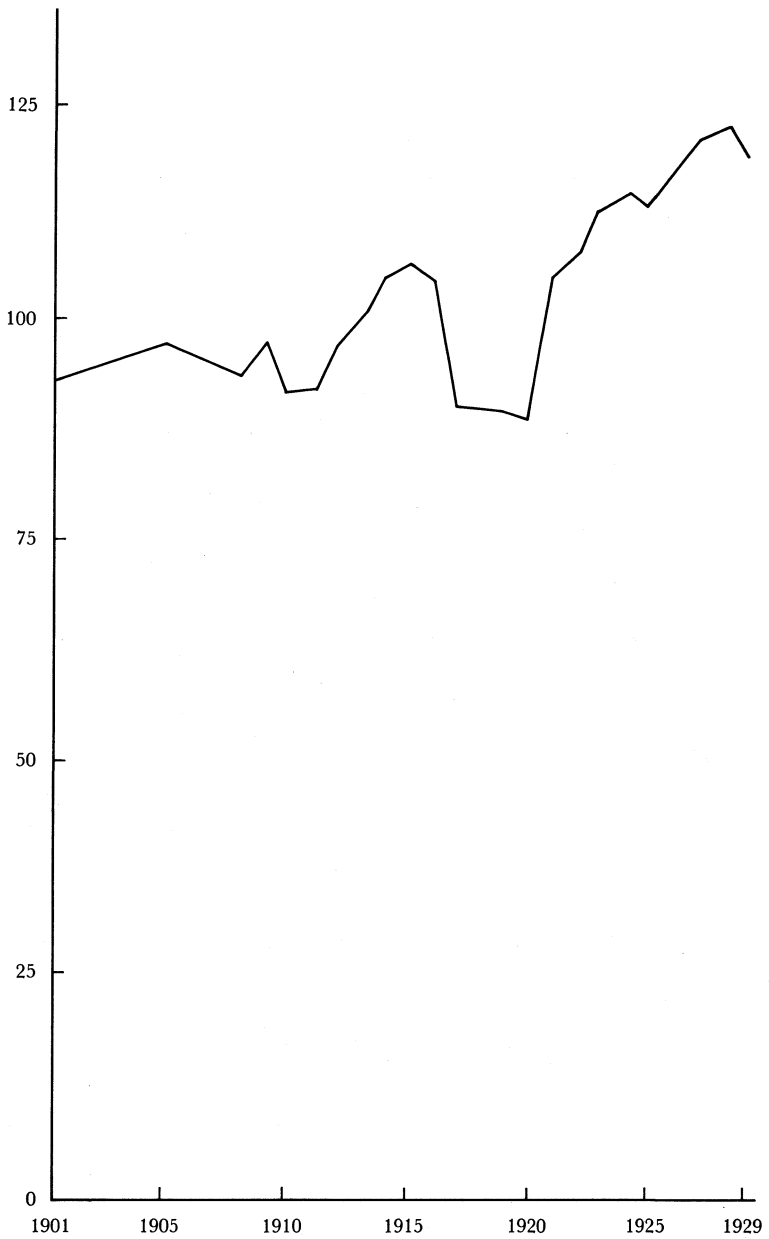


FIGURE 1

*Index Numbers of Real Wages, Revised
Bertram and Percy Index, 1901-1929*

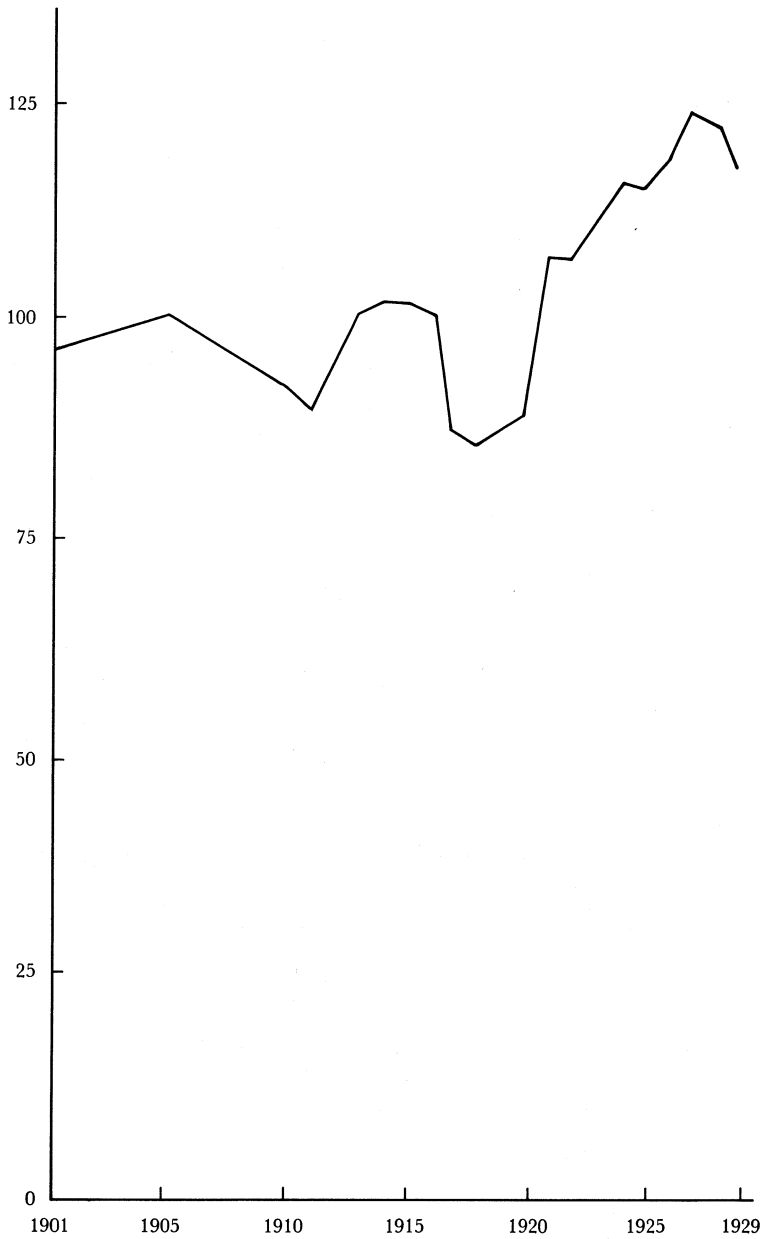


FIGURE 2
*Index Numbers of Real Wages, Washington-
Weighted Index, 1901-1929*

The qualitative record of price changes is sparse after 1919. Only the occasional reference to the cost of living appeared, although *The Labour Gazette* continued to discuss prices each month in its price surveys. This record accords well with the price indexes compiled which show declines between 1920 and 1923 and only moderate increases from 1923 to 1929.

Thus the Vancouver price indexes are consistent with the other evidence of price changes affecting working men's families. The price indexes are more useful than qualitative evidence alone, since they give more than a general impression of when price changes occurred. Examined in conjunction with the non-quantitative record, the price indexes prove to be more sensitive to cyclical and seasonal economic fluctuations than did the Vancouver wage index. The next step is to examine the impact of these price fluctuations on Vancouver working men's wages. This is the subject of the final section, in which the price indexes are used to deflate the wage index.

V

To come to some conclusion about the impact of economic expansion on the Vancouver working class it remains to calculate a real-wage index from the wage and price indexes compiled so far.

Four real wage indexes are compiled. The first index contains yearly average prices weighted by Bertram's and Percy's weights. The second contains December-only prices but is weighted in the same way as the first. The third index of yearly prices relies on Washington weights, while the fourth uses the same weights but has December-only prices.¹⁴⁸

The four real-wage indexes presented here agree remarkably in their interpretation of the behaviour of working-class real wages. (See Table

¹⁴⁸ The wage and price data are not completely compatible. After 1910 the price indexes are quarterly; before 1910 only December 1901 and 1905 observations are available. The wage index is a yearly series commencing in 1901. The wage index can be deflated by the price information in two ways. Month of December price index numbers can be taken for the years 1901, 1905 and 1910 to 1929 and then used to deflate the wage index for the same years. The only argument for using December-only observations for the entire period is that seasonal factors are standardized. This cannot be done with a mixture of December-only and quarterly averages. The alternative method is to average the quarterly price index numbers for each of the years from 1910 onward and use these yearly averages to deflate the yearly wage index. The advantage of this method is that the greater frequency of observations from 1910 onward is not sacrificed because observations in the earlier years are infrequent. This latter method is preferred because a yearly average reflects variations in a year that a December observation is less likely to represent. Two separate indexes are constructed according to both methods in order to see what differences there are. With two price indexes to begin with, the revised Bertram and Percy and the Washington-weighted, this means the construction of four real wage indexes in total.

10 and Figures 1 and 2.) All indexes increase some twenty points between 1901 and 1929. Real wages increased until 1905 and then dropped by 1910, reaching a low point in 1911. They then increased, reaching a peak in 1915, and then fell. According to the revised Bertram and Percy real-wage indexes, real wages troughed in 1919-20; according to the Washington-weighted indexes, real wages reached a low point in 1918. Subsequently, real wages climbed steadily to the end of the 1920s although they declined somewhat between 1924 and 1925. The revised Bertram and Percy indexes show a peak in 1928 while the Washington-weighted indexes show one in 1927.

TABLE 11
National Average Real Wage Indexes
1913 = 100

	(1) <i>Department of Labour Index</i>	(2) <i>Bertram and Percy Index</i>
1901	102.7	89.8
1905	105.7	95.0
1910	104.9	98.0
1911	101.5	99.7
1912	99.0	97.7
1913	100.0	100.0
1914	99.2	104.1
1915	103.3	101.5
1916	103.4	91.5
1917	96.7	85.5
1918	99.7	90.0
1919	109.1	100.8
1920	111.0	110.2
1921	115.6	121.9
1922	117.2	120.2
1923	119.3	122.8
1924	123.0	124.1
1925	119.6	120.4
1926	118.1	124.6
1927	122.2	
1928	123.3	
1929	123.4	

SOURCE: Bertram and Percy, "Real Wage Trends in Canada," p. 307. Column 2 obtained by dividing Column 1, Table 5 by Column 2, Table 9.

When the four indexes are compared with the existing national Department of Labour and Bertram and Percy real-wage indexes, given here in Table 11, some differences appear. For example, between 1901 and 1913 the Department of Labour index shows a slight decline. As Bertram and Percy note, this evidence is not consistent with "the historical evidence on population flows and economic growth for the period. . . ."¹⁴⁹ Bertram's and Percy's national index shows a slight increase over the period and thus suggests that growth in real wages was not as poor as other commentators argue.¹⁵⁰ The indexes compiled for Vancouver, despite having been constructed according to Bertram's and Percy's methods, decrease somewhere between 1905 and 1910. Therefore a pessimistic position on the standard of living in Vancouver seems more appropriate than an optimistic one.

Many features of the indexes compiled in this paper are borne out by contemporary observers. In 1903 Arthur Bulley of the British Columbia Steamshipmen's Society testified to the federal Royal Commission on Industrial Disputes in the Province that "taking into consideration the cost of living . . . the fact of what your money will buy is about the same as in Montreal."¹⁵¹ A comparison of the Vancouver real-wage indexes between 1901 and 1905 with the national ones indicates that wages in Vancouver kept pace with prices about as well as those elsewhere.

In the discussion of the Vancouver price indexes it is noted that most complaints about the high cost of living were made in 1912 when prices were high. Real wages declined in the city in 1910 and 1911 from the 1905 position. Although money wages increased in 1910 and 1911, they did not keep pace with price increases. In such circumstances even skilled workers with considerable job security felt the pinch of higher living costs. A representative of the carpenters' union testified before the provincial Commission of Labour in 1914 that any interruptions to work, such as a strike, put them in a precarious position:

Undoubtedly hundreds have a lot, and possibly a house and a lot, and they can't stand a month's strike because they would be up against the next payment. I know from my own personal experience. I was business agent of the carpenters' organization with pretty nearly eight hundred people when a

¹⁴⁹ The inadequacies of the Department of Labour's index have been discussed here and more fully in Bertram's and Percy's work. See "Urban Real Wage Trends in Canada," p. 27.

¹⁵⁰ "Urban Real Wage Trends in Canada," *passim*.

¹⁵¹ Canada, Parliament, House of Commons, Royal Commission on Industrial Disputes in the Province of British Columbia, *Minutes of Evidence*, 14 May 1904, p. 169.

strike came on and it wasn't three weeks before the executive officers were at their wits' end to get money to finance the next payment. The next payment became a nightmare with us. That, I believe, is the position of hundreds of men in the city.¹⁵²

The commissioners considered such statements proof of an improving Canadian standard of living. As the commissioner's report observed, "the luxuries of former days are now coming to be considered the necessities of a well-regulated household."¹⁵³

The Vancouver real-wage indexes show an increase in real wages from 1912 until 1915, a period of depression. Since the indexes depict the positions of skilled workmen who were able to maintain their employment, this means that these skilled workers were able to take advantage of declining prices. Of course, large numbers of people in Vancouver, skilled and unskilled, were under or unemployed between 1912 and 1915. A representative of the Trades and Labour Congress testified to the Commission on Labour in 1914 that there was at least 25 percent more labour in British Columbia than was needed.

The organized element walk along Powell and Carroll Streets. Go there between seven and eight o'clock and you will see the streets jammed with people scanning the boards of employment offices in search of employment. If you want . . . forty or fifty men of almost any trade, you can find them making their headquarters [at the Labor Temple.]¹⁵⁴

For many working people underemployment pared real income significantly, despite the fact that they continued to work. For example, in 1915 many Vancouver skilled tradesmen took wage cuts, a fact borne out by the decline in the money wage index. In 1915 Fred Hoover of the Street Railwaymen's Union testified that because of the depression working time was cut, and therefore street railway workers made less. The maximum possible earnings for conductors under such circumstances, he stated, were \$766 per year; \$1,233, he argued, was needed for a working-class family to live decently.¹⁵⁵ The behaviour of the real-wage indexes between 1912 and 1916 corresponds to the position of workers who maintained their employment and benefited from lower prices. However, the qualitative evidence drawn upon suggests that the

¹⁵² If a worker owned his home outright the current rental rate used in the price index overstates his expense. Therefore his real income would have been higher than that indicated here. *Transcripts of Evidence*, 7 March 1913, vol. 1, p. 168.

¹⁵³ British Columbia, Commission on Labour, *Report on the Royal Commission on Labour*, 1914, p. 3.

¹⁵⁴ *Transcripts of Evidence*, vol. 1, file 10, pp. 323-24.

¹⁵⁵ "Judge Arranged a Peace Conference," *Vancouver Province*, 27 July 1915, p. 16.

indexes give a misleading interpretation of the condition of the unemployed and short-time workers during this time.

What the real-wage indexes show most clearly is that working people who were steadily employed felt their wages undercut by the inflation that attended rapid economic expansion. These same people benefited when prices fell. However, when deflation was too severe they suffered by having hours or wages cut, or by losing employment. In the end it would seem that, being organized and skilled, these workers were better off in a period of more moderate economic expansion like that of the 1920s, when wages increased slowly, but more rapidly than prices.¹⁵⁶

The position of the unorganized and unskilled or semiskilled is not, however, obscured by the indexes. They benefited from rapid economic growth because of the greater employment opportunities. They also experienced erosion of their wages by prices. In times of more moderate activity the unskilled and unorganized had to contend with seasonal and cyclical unemployment, two problems which increased in severity in times of depression. And the benefit which the skilled workers in established jobs derived in depression — that is, a lower cost of living — was not completely lost on the unskilled and unorganized. It was, at least, less expensive to be unemployed in a period of depression than in a period of economic expansion.

This paper has provided new measures of the economic position of working men; that is, the real-wage indexes. These do not illuminate all aspects of working-class well-being in this period. No single measure, be it quantitative or qualitative, can do that. But the real-wage indexes suggest that one should be less than optimistic about the standard of living of the Vancouver working class. Inflation often outweighed the benefits which rapid growth brought the skilled and unskilled, the organized and the unorganized. Vancouver working men may have benefited less from rapid economic expansion, accompanied by inflation in the first years of the century and during the war, than from the more modest growth of the 1920s.

¹⁵⁶ Of course, it should not be forgotten that these working people, as well as others, realized an increase in their leisure time with the reduction of hours worked per day and per week. A real wage index which makes allowance for this might show greater increases over the whole period. See Roslyn Kumin, "The Standard of Living in Canada," Unpublished research paper, Simon Fraser University, 1972.

APPENDIX 1

Individual occupation indexes are combined into industry indexes and these, in turn, are combined into an all industries index. It is important that the individual indexes not be combined in such a way as to give a simple average. In a simple average each occupation and industry is given an influence out of proportion to the actual number of wage earners it represents. Take, for instance, the following example. Occupation A consists of five wage earners while occupation B consists of ten. Suppose that the wage indexes for these two occupations are 110 and 100 in year two where 100 = year one. A simple average index of these two indexes is 105. This number, however, gives excessive influence to occupation A and insufficient influence to occupation B. If, however, the indexes are weighted by the proportions of wage earners they represent before averaging, a different result is obtained:

Weight A (Index A) + Weight B (Index B) = Weighted Total Index

$$5/15(110) + 10/15(100) = 103.5$$

For this reason the wage indexes prepared here are weighted.

Two sets of weights are needed. The occupations have to be weighted and combined to form three industry indexes, and these have to be weighted and combined in an all industries index. It is desirable to obtain occupation and industry weights that reflect any changes over time in employment patterns, such as a decrease in the proportion of wage earners who were carpenters. To cite one case, the proportion of construction wage earners in Vancouver who were carpenters in 1911 dropped from 56 percent to 36 percent in 1921 according to the census. A wage index for 1901 to 1929 that is compiled using the first percentage only as a weight might give an excessive influence to carpenters in the latter part of the period studied. The problem created here is similar to the one discussed above of using simple averages rather than weighted ones. Since *Wages and Hours of Labour in Canada* gives the wages earned by wage earners, an index constructed from this data has to be weighted according to the numbers of wage earners in the population and not to the numbers of other workers, such as, salaried employees, the self-employed or other own account workers. The 1901 census does not provide data on all wage earners. The published 1911 census only provides data on the gainfully occupied which includes salaried and own account workers in addition to wage earners. The 1921 census gives separate data on both the gainfully occupied and wage earners.* Although the 1911 census does not isolate wage earners from other classes of workers it is possible to approximate the numbers of wage earners in 1911 by assuming that the same relationship exists between wage earners and the gainfully occupied in 1911 as is known to exist in 1921. For example, if 80 percent of the gainfully occupied des-

* Canada, Department of Agriculture, *Fourth Census of Canada, 1901: Manufactures* provides information on manufacturing wage earners only; *Fifth Census of Canada, 1911; Occupations of the People; Sixth Census of Canada, 1921: Occupations and Sixth Census of Canada, 1921: Population. Dwellings, Families, Conjugal Condition of Family Head, Children, Orphanhood, Wage Earners.*

cribed as carpenters in the 1921 census were wage earning ones, then it is assumed that 80 percent of the gainfully occupied carpenters in 1911 were wage earners.

Two separate indexes are calculated using these 1911 and 1921 weights. (See Table 3.) Wages for 1901 to 1914 are combined in an index using the 1911 weights. Then wages for 1915 to 1929 are combined in an index using the 1921 weights. Wages for the whole period of 1901 to 1929 are also combined in a separate index using only the 1921 weights. This is done to see what effect the shift in weights make in the calculation of the index. Since the use of different weights results in indexes which move in the same direction and with similar magnitude only the single index weighted by the 1921 weights is used in the final real wage index.