Poverty in Britain in 1904:
An Early Social Survey Rediscovered

Ian Gazeley
Andrew Newell

September 2007

I Z A

Poverty in Britain in 1904:
An Early Social Survey Rediscovered

Ian Gazeley
University of Sussex

Andrew Newell
University of Sussex
and IZA

ABSTRACT

Poverty in Britain in 1904:
An Early Social Survey Rediscovered[*]

Until now there have been no national estimates of the extent of poverty in Britain at the turn of the 20th century. This paper introduces a newly-discovered household budget data set for the early 1900s. These data are more representative of urban working households in Britain in the period than any other existing record, although they are not without deficiencies. We use these data to estimate urban poverty in the British Isles in 1904. Applying Bowley's poverty line we find that about fifteen percent of people in urban working class households had income insufficient to meet minimum needs. This is close to Rowntree's estimate of primary poverty for York 1899 and in the range that Bowley found in Northern towns in 1912-3. This average masks a heavy concentration of poverty among the unskilled and those with large families.

Corresponding author:

Andrew Newell
Department of Economics
University of Sussex
Falmer, Brighton BN1 9QN
United Kingdom
E-mail: a.t.newell@sussex.ac.uk

Introduction

What was the extent of poverty in urban Britain at the turn of the twentieth century? On the face of it, the well-known results of Charles Booth's London inquiry of 1886-9 and Seebohm Rowntree's 1899-1900 study of York provided suggestively similar estimates of poverty.[2] However, Bowley's later research in Northern towns showed significant local variation in 1912-13. His poverty rates varied between 4.5 percent of the population of Stanley and 19 percent in Reading.[3] Even before the publication of Bowley's work contemporary analysis of Rowntree and Booth's results showed that their similarity was superficial. MacGregor pointed out that inference on the national picture from these local inquiries was rendered imprecise because the poverty-lines had not been formulated in the same way.[4] Using the published data of the two enquiries, MacGregor estimated how much of Booth's poverty there was in York and how much of Rowntree's poverty there was in London. He concluded that there was 3 percent poverty in York using Booth's standard and 50 percent poverty in London using Rowntree's standard.[5]

These early social investigators employed absolute poverty measures based upon minimum needs and it is this concept, rather than relative poverty, based on the shape of the size distribution of income, that we are interested in here.[6] As we will discuss in section 1, Booth, Rowntree and Bowley were all aiming to define the poor as those

---

[2] Booth's found just over 30 percent of the population in poverty in London. Rowntree has a number of measures of poverty. His *total* poverty estimate, rather than just *primary* poverty for the population of York was about 27 percent.

[3] Bowley, A.L., and Burnett-Hurst, A.R., Livelihood and Poverty (1915), pp. 38-9 and 42-3

[4] MacGregor, D.H. 'The Poverty Figures', *The Economic Journal*, Vol.20, No 80. (Dec., 1910), p.570

[5] MacGregor, D.H. 'The Poverty Figures', *The Economic Journal*, Vol.20, No 80. (Dec., 1910), p.572

[6] We recognise that all measures of poverty, including minimum needs standards, are socially determined to some extent.

living in extreme hardship. This article estimates absolute poverty incidence among working households in the British Isles using a newly discovered set of data for just over 1,000 working class families in 1904.

The original enquiry, involving nearly 2,000 working class families, was carried out by the Labour Department of the Board of Trade. The summary results and analysis of this enquiry were published in British Parliamentary Papers in 1905 (Cd 2337). This was the first large-scale official national survey of household expenditures in Britain and was the largest single enquiry of the late Victorian and Edwardian period. Prior to this, the Board of Trade had collected household budgets from 36 working men in 1887 and 286 households in 1903.[7] The only other large scale expenditure survey carried out before World War One is that conducted by the United States Commissioner of Labor in 1890-91 (hereafter USCL). The summary results of the 1904 survey have been widely cited by both contemporaries and historians working on a range of issues varying from nutritional attainment and the physical deterioration debate to the derivation of appropriate expenditure weights for the construction of a cost of living index for working class households.[8] Until now it was assumed that the original returns of this enquiry had been destroyed. In fact, a significant sub-sample is extant and we provide an analysis of these data in this article.

In section 2 we present the newly-recovered 1904 data set and compare summary statistics from it with the published summary statistics from the full survey and those

[7] *Returns of Expenditure by Working Men*, BPP 1889 C.5861 and Cd 1761, *The consumption and cost of living of the working classes in the United Kingdom and certain foreign countries*. BPP 1903.
[8] See, for example, Oddy, D.J. 'A nutritional analysis of historical evidence: the working class diet, 1880-1914' in Oddy, D.J. and Miller, D.S *The Making of the Modern British Diet*, 1976, pp.214-231; Williamson, J.G. *Did British Capitalism Breed Inequality*, 1985, Appendix A, pp207-223 and Feinstein, C.H., 'A new look at the cost of living 1870-1914', in Foreman-Peck, J.S., (Ed) *New Perspectives on the Late Victorian Economy* (Cambridge, 1991).

from the 1890-1 USCL survey. The distribution of head of household's weekly earnings in the recovered Board of Trade sample is very close to the 1906 wage census weekly earnings distribution and average family size is in accord with aggregate demographic data for the period. By contrast, the USCL data is a sample of higher income households and households with significantly fewer children than census data would predict. We conclude that, despite some major short-comings of the 1904 survey, particularly in what it can tell us about differences across regions, it provides a more representative record of the economic circumstances of working class families than does the USCL survey. Section 3 uses these new data to investigate the incidence of poverty, using poverty-lines devised by Booth, Rowntree and Bowley. Using Bowley's poverty line, once changes in the cost of living have been taken into account, we find a headcount rate of poverty amongst people from working class households of 15.5%. This estimate of just over one in six is close to Bowley's primary poverty findings in his important survey of poverty in Northern towns prior to the First World War. Section 4 investigates poverty by skill of the household head and by region. Skill and poverty are strongly inversely related, so that poverty is concentrated among the unskilled. Over 60 percent of families with more than three children and an unskilled head are below the Bowley poverty line.

1: Social investigators and the poverty line.

Booth is generally credited as being the first investigator to use a poverty-line that compared household income with the cost of a minimum needs basket of goods. For Booth, the minimum needs of households varied due to differences in household

4

structure. The minimum income necessary to meet his poverty line was between 18s and 21s per week.[9] According to Booth's classification of households in London, all those that he defined as 'very poor' or 'poor' did not have sufficient income to meet his minimum needs standards and were, therefore, in poverty.[10] He defined the poor as those households 'whose means may be sufficient, but barely sufficient, for decent independent life' and the very poor as 'those whose means are insufficient for this according to the usual standard of life in the country.' He went on to describe the poor as 'living under a struggle to obtain the necessities of life and make both ends meet,' in contrast to the very poor who 'live in a state of chronic want'.[11] Booth believed that he had uncovered in London a special 'metropolitan problem' of exceptional character.[12]

A decade or so later Rowntree found that 27.8 percent of the population of York was in total poverty. This included all those families 'whose total earnings are insufficient to obtain the minimum necessities for the maintenance of merely physical efficiency' and families 'whose total earnings would be sufficient for the maintenance of merely physical efficiency were it not that some portion of it is absorbed by other expenditures, either useful or wasteful.'[13] Rowntree termed these categories primary poverty and secondary poverty.[14] These accounted for 9.9 percent and 17.7 percent of the population of York respectively. Total poverty was evaluated on the basis of Rowntree's assessment of the circumstances of families derived from his house-to-house survey of all working-class households. It was an impressionistic measure that

---

[9] Lower case s denotes a shilling. Twenty shillings equal one pound.
[10] Booth, Charles, *Life and Labour of the People in London*, Volume 1, Macmillan, 1892 p.62
[11] Booth, Charles, *Life and Labour of the People in London*, Volume 1, Macmillan, 1892 p.33
[12] See Veit-Wilson 'Paradigms of Poverty' p.195
[13] Rowntree, B.S., Poverty: A Study of Town Life, 1901 pp.86-7
[14] Secondary Poverty was not measured directly, but the result of subtraction (Total Poverty minus Primary Poverty).

relied upon investigators noting evidence of 'obvious want and squalor', intemperance or thriftlessness.[15] Primary poverty was measured similarly to Booth's poverty, by defining a set of minimum needs and then comparing household income to this poverty-line. Like Booth, his minimum needs varied according to household structure. Rowntree's description of what merely physical efficiency meant leaves no room for doubt about the severity of his primary poverty standard:

> A family living upon the scale allowed for in this estimate must never spend a penny on railway fare or omnibus. The must never go into the country unless they walk. They must never purchase a halfpenny newspaper or spend a penny to buy a ticket for a popular concert. They must write no letters to absent children, for they cannot afford to pay the postage. They must never contribute anything to their church or chapel, or give any help to a neighbour which costs money. They cannot save, nor can they join a sick club or Trade Union, because they cannot pay the necessary subscriptions. The children must have no pocket money for dolls, marbles or sweets. The father must smoke no tobacco, and must drink no beer. The mother must never buy any pretty clothes for herself or for her children, the character of the family wardrobe as for the family diet being governed by the regulation, "nothing must be bought but that which is absolutely necessary for the maintenance of physical health, and what is bought must be of the plainest and most economical description." Should a child fall ill, it must be attended by the parish doctor; should it die, it must be buried by the parish. Finally, the wage-earner must never be absent from his work for a single day.[16]

Bowley developed Rowntree's primary poverty measure in his analysis of poverty among Northern towns just before the First World War. Bowley believed that Rowntree's standard was too harsh, as it included no allowance for the consumption of meat in the diet. Bowley's new standard also revised Rowntree's merely physical efficiency standard by adjusting for price changes between 1899 and 1912 and revising the relative costs of children, whom Bowley believed Rowntree had treated too generously (see also Gazeley and Newell 2000). The net result of these changes is to make Bowley's poverty line more generous for small families, but harsher than

---

[15] See Williams, Karel, *From Pauperism to Poverty*, Routledge, London.
[16] Rowntree, B.S., *Poverty: A Study of Town Life*, 1901 pp. 133-4.

Rowntree's for larger families. When analysing poverty in the new 1904 data set, we initially employ all three poverty lines, but then concentrate on Bowley's new standard since it stands as the culmination of these studies.

2: The 1904 Board of Trade data.

In 1903 the Board of Trade conducted an enquiry into the consumption and cost of food to working class families in certain urban districts of Great Britain.[17] The results of this enquiry were published as Cd 1761, but many of the returns for urban districts were incomplete and London was over-sampled.[18] The 1904 enquiry was designed to rectify these deficiencies. For this enquiry, details of income, rent and items of food expenditure were collected from workmen and their families for one week during July-September 1904, from all parts of the British Isles, including southern Ireland. In total 2,283 returns were collected via workmen's organisations, co-operative societies and certain individuals, who in some cases were asked to obtain information from 'fellow-workmen'.[19] This makes the sample anything but random. It certainly cannot be thought of as simply representative of the urban population. We show later that families headed by skilled manual workers are heavily over-represented. Of this

---

[17] The published report of this survey provides details of the consumption of food of 114 agricultural labourer's families collected by Wilson Fox in 1902. Only mean quantities of food consumed each week are given. In addition, the Labour Department of the Board of Trade undertook a survey of about 400 urban working families in 1903. 286 of these families provided returns, 88 of which were sufficiently detailed to provided for the analysis of food expenditures. 68 of these were from London and the suburbs. *The consumption and cost of living of the working classes in the United Kingdom and certain foreign countries. Memoranda Statistical Tables and Charts prepared in the Board of Trade with reference to various matters bearing on British and foreign trade and industrial conditions.* Cd 1761 pp. 212-214. BPP 1903.
[18] Cd 2337 1905, p.3 Cd 1761 (1903) B.P.P Consumption *of Food and Cost of living of Working Classes in the United Kingdom and Certain Foreign Countries*. p.211.

[19] Cd 2337 1905 p.3.

total, 1,808 were considered usable. These were combined with 136 returns collected from London and suburbs during the 1903 enquiry. The results of the 1904 enquiry were published as Cd 2337 in 1905 under the heading '*Consumption and Cost of Food in Workmen's Families in Urban Districts in the United Kingdom.*'

Although the income range and geographical coverage of the 1904 survey was quite extensive within the urban working-classes, as the title of the Board of Trade's summary analysis of the returns suggests, it was not designed to solicit information on any other category of expenditure other than food and rent. The enquiry made use of a fixed format questionnaire. The forms provide information on locality (often given very precisely); number and age of children; occupation and average weekly earnings of the head of household; average additional weekly family income; weekly house rent and number of rooms occupied. Fully half the questionnaire is concerned with expenditure and quantity of food consumed by the family, but no details of non-food expenditures were requested other than rent.

The original returns reveal that other useful expenditure information was recorded, though not always systematically. Several respondents used the comment space on the form to provide valuable qualitative descriptions of working-class life at the beginning of the century. These comments often also contain quantitative expenditure information relating to non-food items, particularly expenditure on fuel and light. Some families also use the comments section to record their total family expenditure. As importantly, a number of respondents discuss the extent to which family members living outside the home were supported, while others discuss the extent to which households were able to supplement their diets with produce from gardens and

allotments. Another topic that is frequently commented upon is the difficulty of making ends meet. We intend to document and publish these comments separately.

These data were used extensively at the time. For instance, the Labour Department of the Board of Trade used the returns to derive expenditure weights for the food component of their official cost of living index.[20] Bowley's own cost of living index is also based upon expenditure weights derived from Cd 2337, taken in conjunction with information from other contemporaneous sources.[21]

We will refer to the recovered returns from the survey as the BoTR survey. The full BoTR sample is 1,078, but this is not a simple sub-sample of the 1,944 used in Cd 2337. It contains, as far as we can tell, most of the Scottish and Irish returns, as well as 37 from Wales. It also contains a relatively small number of English returns. A sub-set of the returns that we have found were annotated by Board of Trade officials, most commonly as either 'late' or 'reject' and, occasionally, corrections have been made to the recorded details for income or rent. Many the returns rejected by the Board of Trade are usable in various ways. The Board of Trade was only interested in returns that gave detailed breakdowns of food expenditures and quantities of food items purchased. The set of rejected returns contains a range of responses, from a very small number who did not engage at all, to people who aggregated some expenditures, or gave expenditure details without reporting quantities purchased.

---

[20] 'The Cost of Living of the Working Classes: Report of an Enquiry by the Board of Trade into Working-Class Rents and Retail Prices together with the Rates of Wages in Certain Occupations in Industrial Towns in the united Kingdom in 1912.' Cd 6955 BPP 1912/13 pp. 299-303.
[21] Bowley, A.L. *Wages and Income in the United Kingdom since 1860* (1937, pp.119-121).

Table 1 illustrates the strong presence of returns from Scotland and Ireland in the BoTR sample relative to the original. The fifth and sixth columns give the regional distribution of what we call the useable BoTR sample. These are selected on the basis of having reliable income and total food expenditure data. By reliable, we mean that we only included cases with zero head of household income, if the head is reported as not working. We also only include cases where total food expenditure is at least remotely plausible given family structure and income. These are the two criteria for selection into the useable BoTR sample in the tables that follow.

Table 1: Regional Distributions of households

	As used in Cd 2337		Full BoTR Sample		Useable BoTR Sample	
	number	*%*	*Number*	*%*	*number*	*%*
North of England	439	*22.6*	140	*13.0*	123	*12.4*
Midlands	262	*13.5*	87	*8.1*	82	*8.3*
London and Suburbs	347	*17.8*	39	*3.6*	41	*4.1*
Rest of England and Wales	318	*16.4*	114	*10.6*	106	*10.7*
Scotland	455	*23.4*	504	*46.8*	501	*50.6*
Ireland	123	*6.3*	138	*12.8*	132	*13.3*
Region not given			56	*5.1*	5	*0.5*
Total	1944	*100*	1078	*100*	990	*100*

Sources: see text

The weekly household income distributions of the Cd 2337 and useable BoTR samples are compared in Table 2. The BoTR sample has a few more families in both extremes of the distribution, but otherwise the match between the samples is very close. The values of other important parameters are also similar. Table 3 gives numbers of children and food expenditures by income group. The useable BoTR sample has more children per household and a little higher average food expenditure.

Table 2: Distributions of families by income

Income in shillings	As used in Cd 2337		Useable BoTR Sample	
	number	%	number	%
Under 25s	261	13.1	152	15.4
25s and under 30s	289	14.5	143	14.4
30s and under 35s	416	20.9	210	21.2
35s and under 40s	382	19.7	173	17.5
over 40s	596	29.9	312	31.5
Total	1994	100	990	100

Source: see text.

Table 3: Number of children and weekly food expenditure by income class

Income in shillings	As used in Cd 2337		useable BoTR Sample	
	Average No. of children	Total food expenditure (pence)	No. of children	Total food expenditure (pence)
Under 25s	3.1	172.75	3.4	187.59
25s and under 30s	3.3	214.25	3.5	222.16
30s and under 35s	3.2	249.25	3.5	255.73
35s and under 40s	3.4	267.5	3.4	270.22
over 40s	4.4	356.0	4.6	376.40
Total	3.6	270.0	3.8	280.98

Source: see text.

In order to explore the extent of the biases in the BoTR sample, compared with the published returns, we made careful comparison with the sub-set of budgets for Scotland. The Scottish BoTR sample is not identical to that used in Cd 2337, as Table 4 reveals. From the 501 usable BoTR budgets for Scotland, we filtered out those that were marked as rejected or received late. 454 budgets remained, compared with 455 in Cd 2337. Despite the closeness in the total number of budgets, some small differences remain between Cd 2337 and filtered BoTR samples for Scotland.

Table 4: Number of children and food expenditure by income class in Scotland

Income in shillings	As used in Cd 2337			Filtered useable BoTR Sample		
	N	No. of children	Average food expenditure	N	No. of children	Average food expenditure
Under 25s	48	3.4	191.0	49	3.5	195.08
25s and under 30s	77	3.2	239.5	81	3.1	224.08
30s and under 35s	117	3.2	251.25	123	3.4	259.59
35s and under 40s	83	3.3	267.75	79	3.3	264.61
over 40s	130	5.0	389.25	122	5.1	401.32
Total	455	3.7	283.75	454	3.8	285.25

Source: see text.

Table 5 establishes that, compared to the BoTR data, the USCL 1890-1 enquiry contains many fewer families with large numbers of children and correspondingly more families with few or no children. The USCL households are also quite atypical in terms of family structure, when comparison is made with average aggregate demographic data (column 3), whereas the BoTR data are closer to the national average. The ratio of total food expenditure to household income is higher on average in BoTR, compared to USCL. In addition, the share of food spending in the 'other food' category is much smaller in the Board of trade data. [22] Table 6 compares earnings distributions from 1886 and 1906 wage censuses with the USCL and BoTR samples. Workers in the USCL sample have much higher wages than those in the other surveys, despite the rising trend in wages over the period. It is also clear that BoTR data have fewer workers earning more than £2 a week than might have been predicted from the wage census data.

Table 5: Family structures and expenditure patterns: USCL and BoTR compared

	USCL 1890-91	*BoTR 1904*	*1901 average family size (percent)*
% families with			
0 to 2 children	53.6	40.3	44.8
3 or 4 children	35.5	37.3	27.7
5 or more children	10.9	22.4	27.5
Average number of children	2.3	3.1	3.4
Average ratio of food expenditure to income, %	47.0	63.0	
Average % share of 'other foods' in total food spending	14.9	1.7	

Source: see text.

---

[22] This probably reflects the more detailed approach to food spending in the Board of Trade questionnaire. The 1904 survey had 38 food categories compared to 22 in the USCL survey.

Table 6: The distribution of earnings: USCL and BoTR compared

	1886 average weekly male earnings	*USCL 1890-1*	*BoTR 1904*	*1906 average weekly male earnings*
% with Head of Household's weekly earnings, *Y* (in 1890 £s)				
$Y \leq £1$	24	6.5	15.1	10
$£1 < Y \leq £1.5$	57.75	39.4	42.2	41
$£1.5 < Y \leq £2$	15.75	34.7	37.1	33
$£2 < Y$	2.5	19.4	5.6	16

Percentage distribution of men's full time earnings 1886 and 1906 from Bowley 1937 p.42

According to the Board of Trade's cost of living investigation, the cost of accommodation varied significantly in the 73 towns surveyed in 1905. The variance in non-rent prices was, by comparison, fairly negligible. When rents and prices were combined, the cheapest living costs were found in Lancashire and Cheshire and Midland towns, which were about 15 percent cheaper than London and about 8 percent cheaper than southern counties' towns.[23] The importance of regional differences in the cost of accommodation was confirmed in the more extensive 1912 Board of Trade survey.[24] The fact that prices did not vary significantly for non-rent items allows us to estimate regional incidence of poverty without adjusting for cost-of-living differences. Following Rowntree's and Bowley's methodology, we define a poverty line net of rent.

---

[23] Cd 3864 (1908) B.P.P. *Cost of Living of the Working Classes. Report of an Enquiry by the Board of Trade into Working-Class Rents, Housing and Retail Prices Together with Standard Rates of Wages Prevailing in Certain Occupations in Principal Industrial Towns in the United Kingdom,* pp.xxxi-xxxii.
[24] Cd 6955 (1912-13) B.P.P '*Cost of Living of the Working Classes. Report of an Enquiry by the Board of Trade into Working-Class Rents and Retail Prices Together with the rates of wages in Certain Occupations in Industrial Towns in the United Kingdom'*

3: Poverty in the British Isles in 1904

We begin by adapting the poverty lines of Booth (1887), Rowntree (1899) and Bowley (1912) for use with the BoTR. The main change is to create poverty lines that treat boys and girls the same, since the Board of Trade questionnaire did not require the respondents to specify the gender of their children. Booth gives a food equivalence scale, and Linsley and Linsley (1993) infer a total expenditure equivalence scale from his work. We take an average of the gender values, and create a household poverty threshold in pence by employing Booth's estimate of the poverty threshold for a single adult man of 90d. [25]

Rowntree calculated a scale for York in 1899 net of rent. He argued that the poor would have minimised the cost of housing and were unlikely to raise it if they became moderately better off, so it could be treated as exogenously fixed. Rowntree's equivalence scale was otherwise simpler than Booth's, treating all children the same irrespective of age. Bowley followed Rowntree in excluding rent, but like Booth he let child costs increase with age. Our approximation to his scale is given in the final column of Table 7.[26]

Table 7: Approximations of poverty lines (pence per week)

	Booth, 1887	Rowntree, 1899 (net of rent)	Bowley, 1912-13 (net of rent)
Couple	157.5	110	133
Additional adult	78.75	44	57
Child under 16		34	
Child 14-16	63		52
Child 5-13	36.5		34
Child under 5	9		25

Source: Authors' calculations discussed in the text.

---

[25] Here and throughout we denote a penny with a lowercase d (240d = £1).

[26] Bowley's measure also deducted National Insurance contributions, but we have ignored this provision here as the BoT 1904 survey pre-dates the introduction of NI. See Table VIII in *Livelihood*

Bowley's new standard was a modification of Rowntree's poverty line. When we apply these poverty lines to the BoTR data, we take account of changes in the cost of living between the date of each poverty study and the Board of Trade survey, using Gazeley's (1989) cost-of-living index. Once adjusted for inflation, the relative generosity of Rowntree's and Bowley's lines depends on family structure. For families with small children, Rowntree's was more generous than Bowley's. [27] In the detailed analysis of section 3.3 onwards we use only Bowley's poverty line as it contains a more subtle treatment of young children.

Two final issues should be taken into account before we present our findings. Firstly, the survey did not ask for the number of adults in the household. Fortuitously almost all respondents with children listed their ages, so adult (16+) children can be accounted for. Also many respondents noted if there were other additional adults and many noted if a spouse was not present. We estimate the number of adults as two plus any adult children and other recorded additions and minus any recorded subtractions. The second notable issue is the definition of income. The questionnaire asks for average weekly earnings of the head and for average weekly earnings from other sources. We have no information on how the word 'average' was to be interpreted, but most respondents clearly understand they should report their regular earnings. This means that noise in the data caused by transitory income fluctuations will be less than would have been the case if the question had been for actual earnings in the last week.

---

[27] Bowley, *Livelihood* p.79-83 Note that when Bowley calculated the proportion of families in poverty in Northampton using Rowntree's poverty line and his new standard, he found 57/619 and 53/619 in poverty respectively.

Table 8: Working Class Population Poverty Headcount Ratios, percent.

Sample:	BoTR	Rowntree (York 1889)	Bowley (4 towns 1911)
Poverty line:			
Booth	18.4		
Rowntree	17.0	15.5	
Bowley	15.5		6 – 29

Sources: own calculations from BoTR data.

Table 9: Working Class Household Poverty Incidence, %.

Sample:	BoTR	Rowntree (York 1889)	Bowley (4 towns 1911)
Poverty line:			
Booth	14.4		
Rowntree	16.1	12.7	
Bowley	12.1		7.6 - 20.4

Sources: own calculations from BoTR data.

Tables 8 and 9 give the results and compare our findings with those of the original investigators. Without adjustment to render the BoTR sample more representative of the population we find working class poverty headcount rates of between 15.5 and 18.4 percent. These sit within the range of Bowley's four towns and close to Rowntree's estimate. We also find a *household* primary poverty rate of 14.4% using Booth's poverty line, while using Rowntree's poverty line we find a rate of 16.1% and using Bowley's line we find a rate of 12.1%. In each case the standard error of the estimate is about 1.2 percentage points.

Chart 1 gives a histogram of log family income per Bowley-equivalent adult with the Bowley poverty line drawn in. The main message of the chart is that a fairly minor increase in the generosity of the poverty definition would result in a large increase in the poverty rate. For instance, a ten percent increase in the Bowley poverty line would raise the poverty rate by over 5 percentage points. This emphasises that Rowntree's and Bowley's poverty definitions were very close.

Chart 1.

A histogram of family income with a Bowley-poverty line added
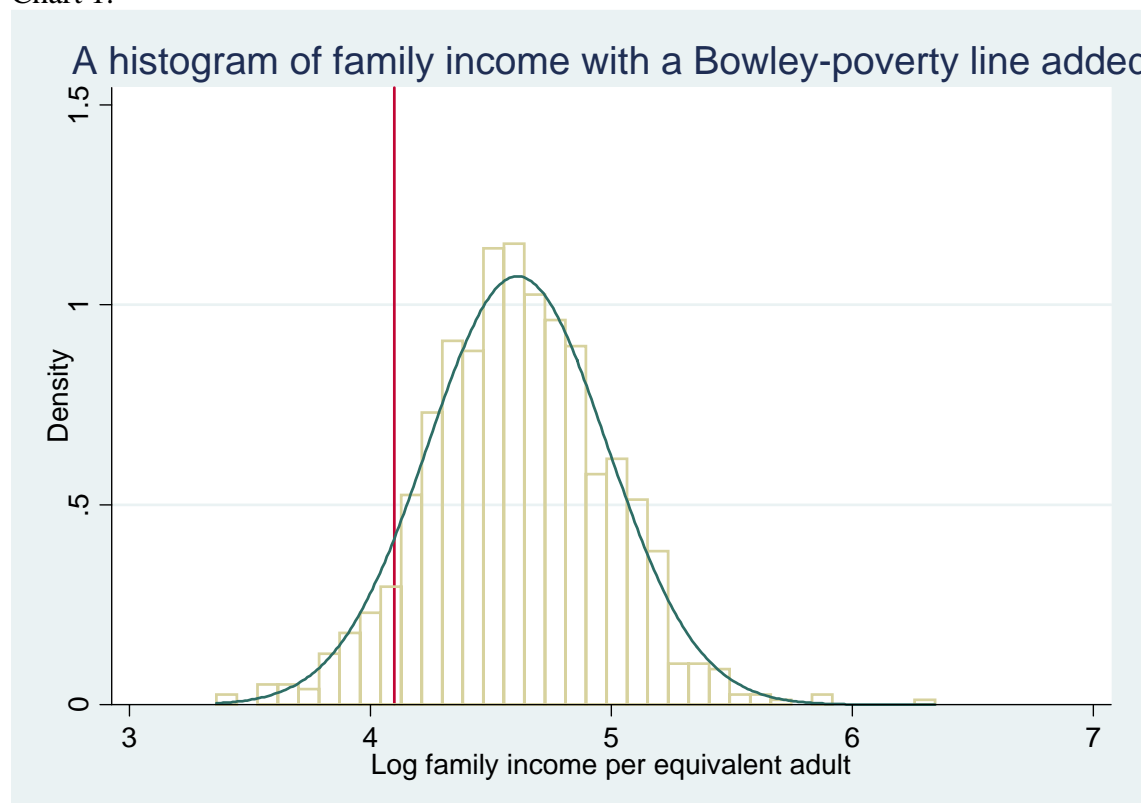
Note: the vertical line is Bowley's poverty line. Since Bowley's poverty line is not strictly linear in equivalent adults, see Table 7, the line is drawn for mean family size.

Table 10 demonstrates that among these respondents, those with larger families were more likely to be poor. Since we do not know the age of household head, we cannot investigate the experience of poverty across the life-cycle in these data. We can, however, demonstrate one life-cycle pattern.   Chart 2 gives two graphs. The upper graph shows that household per capita income rises with the age of the oldest child in the family. Since we do not have the age of the respondent recorded, this could be for two reasons. First, it could be that once the first child reaches working age, their wages, or those of an adult freed of parental duties, add to family income. Secondly, it is possible that the positive relationship in the graph reflects increased earnings due to greater experience or seniority of the head of household.   The lower plot investigates this, by plotting age of first child against head's earnings, but no simple bivariate relationship is visible. It seems more likely that once the first child reaches fifteen, their earnings tend to boost family income. Of course, this pattern may vary

across industries as Horrell and Oxley have shown.[28] Thus the upward-sloping scatter plot in the upper graph most likely reflects the increase in family earning power that occurs as children reach working age.

Table 10: Poverty by family type

Number of children under 16 years of age.	Bowley poverty incidence,% of households	Average income per capita (total=100)	Number of families
0	4.8	172	83
1	2.7	148	110
2	5.6	108	179
3	6.0	93	199
4	16.3	77	147
5	25.2	68	119
6	30.0	61	50
7	60.0	56	20
8	50.0	47	6
Total	12.5	100	914

Source: Authors' calculations from the BoTR data.

Chart 2: Plots of the age of first child against (a) log family weekly income and (b) log head of household weekly income.

---
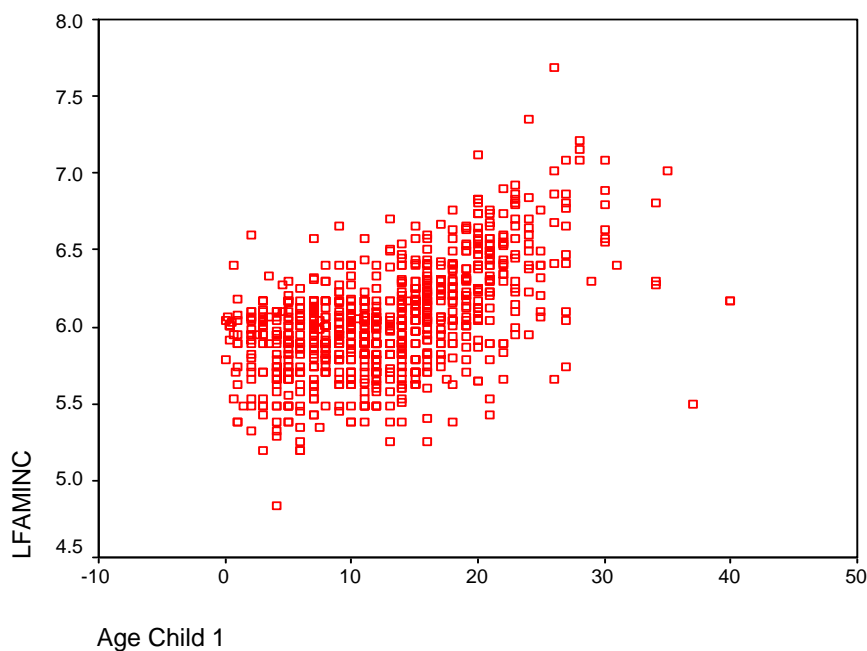
[28] Horrell, S and D. Oxley (1999), 'Crust or Crumb? Intrahousehold Resource Allocation and Male Breadwinning in Late Victorian Britain' *The Economic History Review* Vol. 52 (Aug.), pp. 494-522
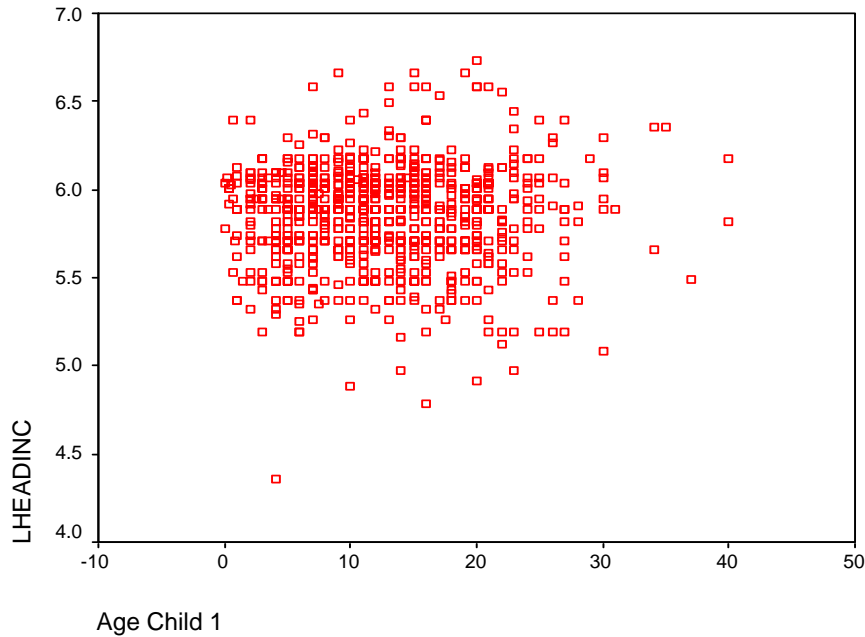
4: Poverty by region and skill.

Recall the BoTR data set includes households from all parts of the British Isles. The sampling method, mostly performed by a single investigator in each major town, makes regional comparisons of poverty incidence quite insecure. To understand why this is so, see Table 11 that gives Bowley household poverty by region as recorded in the BoT survey. The two most notable features are the high proportion of poverty among the small number of London households in the surviving survey records, and the very low level of poverty among Scottish households. Though it is fairly certain that Londoners experienced exceptionally high poverty rates, the London sample is so small that a 95% confidence interval for the true poverty rate ranges from 13% to 41%, so perhaps we should not spend too long on it.[29] More worrying is the lack of poverty estimated for urban Scotland. It is important to remember here that poverty incidence was not the objective of the survey, so that investigators were unlikely to

---

[29] Steadman-Jones, G. (1971) *Outcast London*, Oxford, Oxford University Press.

have been instructed to create a survey that was representative in terms of the income distribution.

Most of the original survey returns were attributed to named investigators, among whom Clara Collet is the best-known. Collet had previously been an Assistant Commissioner to the Royal Commission on Labour 1892 and had worked for the Board of Trade since 1893. She was to become heavily involved in the 1906 Wage Census. Collet is the named investigator on 110 of the extant returns from the 1904 Board of Trade enquiry (mainly from Ireland).[30] Collet's sample contains an average number of Bowley-poor households. In Glasgow, Mr Burgess collected the vast majority (110 out of 143) of survey returns. He interviewed only three families that we have categorised as Bowley-poor. This lack of poor families is likely to be partly due to the fact that his sample included only 19 families where the head of household is classifiable as semi-skilled or unskilled. This is far too few to be representative. It seems his method of choosing households led him away from low-earning households. Mr Mallinson, who collected the records of 53 households, mostly in Edinburgh, is a similar case with low poverty incidence and high skill levels, as is Mr Richardson, who collected returns in Dublin. These peculiarities of the survey suggest that we should not assume the statistics in Table 11 are representative of the underlying populations. Table 12 summaries the results from the main cities with substantial (more than 20) numbers in the BoTR useable sample and also provides 1906 wage survey data on pay in key occupations. The table illustrates how cities

---

[30] Of the other named investigators that accounted for more than 5 returns, 186 were carried out by Mr Burgess and 110 by Mr Johnston, 57 by Mr Mallinson, 38 by G.L Richardson, 35 by Mr Mann, 36 by Mr Tyler (several in conjunction with those previously named), 15 by Mr Kay, 12 by Mr T. Smith, 10 by Mr Cleverley, 8 by W. Gillett, 8 by Mr Millington, 7 by Mr White Deacon. Full names are rarely recorded, so it is not possible to identify these individuals.

with similar wage structures, Dublin and Dundee, for instance, have quite different

estimated poverty rates in the BoTR data. This re-emphasises the need for

circumspection over inference about regional differences from this sample.

Table 11: Poverty by region in the BoTR data

Region	Bowley poverty incidence % of h'holds	Number of households	Income per capita (average =100)	Sd log income per capita
North of England	16.8	107	99	0.47
Midlands	11.1	72	116	0.52
London & Suburbs	27.0	37	102	0.57
Rest of E & W	22.2	99	101	0.46
Scotland	7.6	476	98	0.39
Ireland	13.5	119	98	0.45
Total	12.1	910	100	0.44

Source: Authors' calculations from the BoTR data. Note that the total number of families in these tables varies a little depending on data availability. For example, for a very small number of cases, region was not recorded.

Table 12: Wages and estimated Bowley poverty in major towns in the BoTR

	Bowley poverty %	Main investigator	Bricklayer wage (d.)	Smith wage (d.)	Building labourer wage (d.)	Engineering labourer wage (d.)
Aberdeen	18.2	Mr Johnston	433.5	361.5	254	254
Belfast	10.8	Miss Collet	459	444	210	210
Cork	22.2	Miss Collet	432	408	216	216
Dublin	2.7	Mr Richardson	459	414	236	236
Dundee	11.5	Mr Mann	459	372	268	281
Edinburgh	5.1	Mr Mallinson	484.5	392	257	306
Glasgow	4.2	Mr Burgess	484.5	408	280.5	280.5
London	26.8	Mr Kay	525	468	350	350

Source: BoTR data and Cd 3864, Appendix VIII, pp. 611-3.

The relationship between poverty incidence and skill is explored in Table 13. For this

we coded the recorded occupation of the head of household using the 1911 England

and Wales Population Census classification. There is a clear negative relationship

between skill and poverty with almost 40% Bowley-poverty among households

headed by an unskilled worker. Table 13 additionally reports the headcount poverty

ratio and the poverty gap[31]. The headcount ratio for labourer's households is over 50%. The relationships between the poverty gaps and headcount ratios are similar to those by skill are similar to relationships found by the World Bank for developing countries.[32] Combining these results with those by family type emphasises where poverty was most concentrated. For families headed by an unskilled worker with more than three children the chances of being in poverty rise to over 60 percent.

Note, as discussed above, that the large majority of workers in the BoTR survey are skilled manuals. If we want to assert that our poverty estimates are representative of the British urban working population in 1904, we should address this bias. We do this very simply. We recalculate Bowley-poverty taking the skill-specific incidences reported in Table 11 and re-weight these using 1911 Census data on the proportions of workers by broad skill category given in Routh (1980). The major differences between BoTR data and the 1911 Census data are that the unskilled account for about 10% of workers in the Census rather than 17%, semi-skilled account for 39% rather than 9% and skilled workers account for 31% rather than 61%. A recalculation of Bowley household poverty using the Census weights yields 12.3% poverty, rather than 12.1%. This lack of change might seem surprising, but the recalculation puts much more weight on the semi-skilled who have close to average poverty incidence while putting lower weights on high-poverty unskilled workers and low-poverty skilled workers.

---

[31] The headcount rate is the proportion of people in poor households, rather than the proportion of households, which we have discussed hitherto. The *poverty gap* is the other commonly used measure. It is the average over the whole sample of a measure which is the percentage below the poverty line for households whose income is below the line and zero for everyone else. It measures severity of poverty as well as incidence. The relation between the two measures depends on the distribution of income.
[32] http://iresearch.worldbank.org/PovcalNet/jsp/index.jsp

We think this adjustment is the most important way to make these data more representative of the country as a whole. An alternative is to adjust for region, but in BoTR regional effects are heavily conflated with investigator effects. Measures of poverty adjusted for region, and for region and skill are report for completeness at the bottom of Table 13.

Table 13: Poverty by skill of the household head

Skill level	Poor households (%)	Poverty headcount (%)	Poverty Gap (%)	% of h'holds	Income per capita (av. =100)
Labourers	45.2	53.2	9.3	10	68
All unskilled	40.0	48.1	7.9	17	70
Semi-skilled	14.3	18.6	2.3	9	101
Skilled	5.4	7.3	0.7	61	105
Clerical	0	0	0	3	120
Foremen	0	0	0	2	119
Shopkeepers, sales and managers	11.8[1]	16.0	1.3	2	98
Professional	0.0	0.0	1	1	137
All	12.1	15.5	2.1		
All, adjusted for skill mix	12.3	15.5	2.0		
All, adjusted for region	17.5	22.3	3.3		
All, adjusted for region and skill	15.7	19.9	2.8		

Source: Authors' calculations from the BoTR data. [1] This percentage is partly due to two large families headed by insurance agents who report quite low weekly earnings.

Our final set of calculations is to estimate the impact, on household income and the probability of being poor, of skill and family structure. To do this we perform various regressions with a common small set of explanatory variables. The results are given in Table 14. The dependent variable in the first four columns is log family income per equivalent adult. The equivalence scale is Bowley's, given in Table 7.   In the first column, the estimation method is ordinary least squares, while in the next three columns we have quantile regressions at the 10th, 50th and 90th quantiles. This is to

investigate parameter stability across the income distribution. The final column is a probit regression where the dependent variable is the indicator, or dummy, variable which takes the value 1 where a family is estimated to be poor on Bowley's measure. The results for children and skills are predictable and consistent across the columns. For adults, the results are perhaps a little more subtle. An additional adult lowers income at the 10th quantile and on average, and also (insignificantly) raises the chances of being poor, but has no impact at the 90th quantile. In words, in households with high per capita incomes, given their skill levels, additional adults are more likely to be working. The results by region reflect our previous discussion. Since the assignment of cases to investigators is patchy, we include regional dummies, which could be interpreted as investigator effects. The only significant effects are for Scotland in columns 2 and 5; this is due to the nature of the sampling.

Unpacking the marginal effects from the probit regression, we find, conditional upon family structure and region (investigator), a household with an unskilled head is 26 percentage points more likely to be poor than one with a skilled head. Also, an extra child raises the probability of being poor by 4 percentage points.[33] If we compare the skill result with the poverty incidence by skill in Table 13, where an unskilled worker is 35.6 percent more likely to be poor than a skilled worker, then just about 10 percentage points of that raw gap is related to family structure and region/investigator.

---

[33] We tested whether children of different ages has different effects in these regression. We found no significant differences.

Table 14: Modelling household income and poverty incidence

Estimation method	1 OLS	2	3 Quantile regression	4	5 Probit
Dependent variable		Log(income per equivalent adult)			(poor = 1)
Quantile		10	50	90	
Family structure					
No. Adults	-0.04**	-0.09**	-0.05**	-0.01	0.09
No. Children	-0.12**	-0.13**	-0.13**	-0.12**	0.31**
Region					
London	-0.05	-0.11	-0.02	-0.06	0.51
Scotland	-0.00	0.06*	0.04	-0.06	-0.55**
Ireland	0.02	0.10	0.04	-0.02	-0.18
Skill					
Unskilled	-0.31**	-0.33**	-0.34**	-0.28**	1.27**
Semi-skilled	-0.12**	-0.19*	-0.14**	-0.12	0.78**
Clerical	0.14**	0.08	0.12	0.11	-0.36
Professional	0.15**	0.18**	0.14*	0.19*	Omitted
R-sq	0.52				
Pseudo R-sq		0.33	0.34	0.30	0.30

Notes: * and ** denote conventional significance at 5% and 1 percent levels.

Conclusion

This paper has introduced a new and valuable source of household budget data for Britain at the beginning of the twentieth century. We have shown that this newly-available data set is more representative of urban working households in Britain in the period than any other existing record, and in particular more representative, though less useful on non-food expenditures, that the USCL data set.

Employing these data, our best estimate of absolute poverty in urban Britain in 1904 using Bowley's poverty line is about 15 percent of people in working class households. We think this result is robust to the imperfections of our sample because the earnings distributions in BoTR and in the 1906 wage are, by chance, very similar. This coincidence explains why adjusting for skill makes almost no difference to our poverty estimates. Our central finding is that poverty was close to Rowntree's

estimate for York and near the middle of the range that Bowley found in Northern

towns before the First World War. Our second finding is that regular work was not

sufficient to protect families against poverty. This confirms Rowntree's conclusion

that low wages were an important cause of poverty in the period. We find household

poverty rates of over 60 percent for households with unskilled heads and more than

three children.

References

Booth, Charles (1892), *Life and Labour of the People in London*, Volume 1, Macmillan, London

Bowley, A.L. (1937), *Wages and Income in the United Kingdom since 1860*, Cambridge, Cambridge University Press.

Bowley, A.L., and Burnett-Hurst, A.R. (1915), Livelihood and Poverty, G. Bell and Sons, Ltd, London

British Parliamentary Papers (1889) *'Returns of Expenditure by Working Men'*, C.5861

British Parliamentary Papers, (1903) '*Consumption of Food and Cost of living of Working Classes in the United Kingdom and Certain Foreign Countries,' Memoranda Statistical Tables and Charts prepared in the Board of Trade with reference to various matters bearing on British and foreign trade and industrial conditions.* Cd 1761

British Parliamentary Papers, (1912-13), '*Cost of Living of the Working Classes. Report of an Enquiry by the Board of Trade into Working-Class Rents and Retail Prices Together with the rates of wages in Certain Occupations in Industrial Towns in the United Kingdom'* Cd 6955

British Parliamentary Papers, (1905) *Consumption and the Cost of Food in Workmen's Families in Urban Districts of the United Kingdom*, Cd 2337

British Parliamentary Papers, (1908) *Cost of Living of the Working Classes. Report of an Enquiry by the Board of Trade into Working-Class Rents, Housing and Retail Prices Together with Standard Rates of Wages Prevailing in Certain Occupations in Principal Industrial Towns in the United Kingdom.* Cd 3864

Coleman, D and J. Salt (1992), *The British Population*, OUP, Oxford.

Feinstein, C. H. (1991), 'A new look at the cost of living 1870-1914', in Foreman-Peck, J.S., (Ed), *New Perspectives on the Late Victorian Economy*, Cambridge, Cambridge University Press.

Gazeley, I and A Newell (2000), 'Rowntree revisited: poverty in Britain, 1900', *Explorations in Economic History*, Vol. 37, No. 2, April.

Gazeley, I. (1989), 'The Cost of Living for Urban Workers in Late Victorian and Edwardian Britain.' *Economic History Review, XLII, 2.*

Gazeley, I. S., (1985), *Working Class Living Standards in Britain, 1881-1912: The Cost of Living and the Analysis of Family Budgets,* DPhil Thesis, University of Oxford.

Gazeley, I., (2003) *Poverty in Britain 1900-1965*, Palgrave Macmillan, Basingstoke

Haines, M, (1979) 'Industrial Work and the Family Life Cycle, 1889-1890. *Research in Economic Hist*ory, Vol. 4

Hatton, T.J. and Bailey, R.E., (2000) 'Seebohm Rowntree and the Post-War Poverty Puzzle' Economic History Review, LIII.3.

Horrell, S and D. Oxley (1999), 'Crust or Crumb? Intrahousehold Resource Allocation and Male Breadwinning in Late Victorian Britain' *The Economic History Review* Vol. 52, 3.

Lancaster, G. & R. Ray (2002), 'International Poverty Comparisons on Unit Record Data of Developing and Developed Countries', *Australian Economic Papers*, June, 41, 2.

Lees, Lynn Hollen, (1980) 'Getting and Spending: The Family Budgets of English Industrial Workers in 1890' in *Consciousness and Class Experiences in nineteenth century Eur*ope, London.

Lewis, J. (1984) '*Women in England 1870-195*0', Wheatsheaf, Brighton

Linsley, C. A. and Linsley, C. L. (1993), 'Booth, Rowntree and Llewelyn-Smith, a Reassessment of interwar poverty, Economic History Review, XLV1 1

MacGregor, D.H. (1910), 'The Poverty Figures'*, The Economic Journal*, Vol.20, No 80.

Mackenzie, W.A, (1921) 'Changes in the Standard of Living in the United Kingdom, 1860-1914' *Economica* No. 3

Oddy, D.J. (1976) 'A nutritional analysis of historical evidence: the working class diet, 1880-1914' in Oddy, D.J. and Miller, D.S *The Making of the Modern British Diet*,

Routh, G., (1980) *Occupation and Pay in Great Britain, 1906-1979*, Macmillan, Basingstoke.

Rowntree, B.S., (1901) *Poverty: A Study of Town Life,* Macmillan, London.

Seventh Annual Report of the United States Commissioner of Labor, 1891 (1892) Washington, Government Printing Office

Sixth Annual Report of the United States Commissioner of Labor, 1890 (1891), Washington, Government Printing Office

Steadman-Jones, G. (1971), *Outcast London*, Oxford, Oxford University Press

Treble, J. H., (1979) *Urban Poverty in Britain*, Batsford, London

Veit-Wilson, J., (1995) 'Paradigms of Poverty: A Rehabilitation of B.S. Rowntree'. In Englander, D. and O'Day, R., (Ed) *Retrieved Riches: Social Investigation in Britain 1840-1914,* Aldershot

Vincent, David, (1991), *Poor Citizens*, Longman, London

Williams, Karel, (1981) *From Pauperism to Poverty*, Routledge, London

Williamson, J.G. (1985) *Did British Capitalism Breed Inequality*?