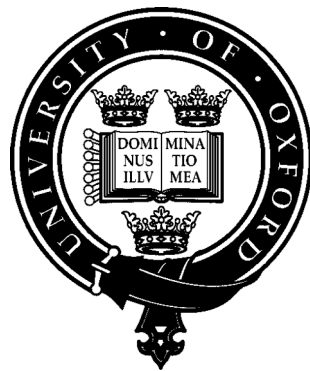


Waists, Health and History: Obesity in Nineteenth Century Britain

Volume 1: Dissertation

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Short Abstract

The scale of the current global obesity epidemic and the implications of this for health, functionality and economics, dictates that assessing the origins of overnutrition must become a priority in all research fields. To date anthropometric historians have mainly utilised institutional sources providing height and occasionally weight data for a sample of the working class who experienced deprivation. Tailoring institutions offer new, innovative sources for the field; uniquely measuring body shape in its entirety and sampling the upper-middle classes and elites. Anthropometric data for waist circumference, hip circumference and leg length has been collected from Morris & Son tailoring establishment in Barmouth, North West Wales and from Henry Poole & Co. 'Savile Row' tailors in Mayfair, London. This data from the second half of the nineteenth century has been nominally linked to census and probate records and cross-referenced with contemporary medical tracts and modern epidemiological literature to highlight obesity related health risks within both populations.

Results indicate that 'diseases of affluence' permeated many nineteenth century class groups. Both waist circumferences and hip circumferences increased over the life span. Furthermore, Barmouth's economic transition from a port to a tourist destination appears to have placed individuals' health (when measured by early adult waist-hip ratio) at greater risk than the overall wealthier customers attending Savile Row. The Barker hypothesis may be relevant - an influx of wealth being of greater detriment to health in later life than consistent affluence. For Henry Poole & Co.'s customers an elite lifestyle enabled girths to expand, increasing the risk of chronic diseases but seemingly protecting them from infectious pathogens. In later life, during the second half of the nineteenth century, it would appear that optimal waist circumferences to reduce mortality were larger than current recommended levels.

Long Abstract

This thesis examines the prevalence and mortality implications of being overweight or obese in Britain during the second half of the nineteenth century. This is achieved by appropriating a new and original anthropometric data source – tailors’ records – to examine health inequality and welfare amongst the middle- and upper classes. These tailors’ records have been combined with: modern epidemiological literature; institutional health guidelines; historical anthropometrics; contemporary medical and dietary tracts; theories of fashion and consumer culture; data linkage across censuses, the probate calendar and birth, marriage and death indices; local history; and more besides, to elucidate the early origins of obesity.

Obesity has become a global epidemic¹. Overweight pervades countries that are economically developed, transitional, and lower-income². Many developing countries experiencing a period of nutritional transition face a ‘double jeopardy’, simultaneously susceptible to ‘old regime’ infectious diseases and ‘new regime’ diseases of overnutrition³. International policy makers are dependent on epidemiologists and social scientists to determine the sources of obesity and stem the global phenomenon.

To date the historical origins of obesity have been relatively ignored⁴. Obesity is perceived as modern phenomenon due to the surge in global rates of obesity since the 1980s. Economic historians have sought to identify models to explain the growth of

¹ World Health Organisation, *Obesity: Preventing and Managing the Global Epidemic: Report of a WHO Consultation*, (Geneva: World Health Organisation, 2000).

² Popkin, B. M. and Doak, C. M., ‘The Obesity Epidemic is a Worldwide Phenomenon’, *Nutritional Reviews*, vol. 56, 4 (1998), p. 106.

³ Osmani, S. and Sen, A., ‘The Hidden Penalties of Gender Inequality: Fetal Origins of Ill-Health’, *Economics and Human Biology*, vol. 1, 1 (2003), pp. 105-21.

⁴ With a few exceptions, see: Komlos, J. and Brabec, M., ‘The Trend of BMI Values of US Adults by Deciles, Birth Cohorts 1882-1986 Stratified by Gender and Ethnicity’, *Economics and Human Biology*, vol. 9, 3 (2011), pp. 234-50; Komlos, J. and Brabec, M., ‘The Transition to Post Industrial BMI Values in the United States’, in Offer, A., Pechey, R., and Ulijaszek, S. (eds.), *Insecurity, Inequality and Obesity in Affluent Societies*, (Oxford: For the British Academy by Oxford University Press, 2012), pp. 141-59; Zweiniger-Bargielowska, I., ‘The Culture of the Abdomen: Obesity and Reducing in Britain, circa 1900-1939’, *Journal of British Studies*, vol. 44, 2 (2005), pp. 239-73; Zweiniger-Bargielowska, I., *Managing the Body: Beauty, Health and Fitness in Britain, 1880-1939*, (Oxford & New York: Oxford University Press, 2010).

obesity but these have mainly depended on data from recent decades⁵. In 2011, *The Changing Body* referenced obesity but from the perspective of the future implications of continued improvement in nutritional status⁶.

Existing sources of anthropometric data have hampered historians' ability to assess the prevalence of overnutrition in the past. Most provide height and, less commonly, weight data from institutional sources sampling the deprived and stunted working classes. Sources of anthropometric data for those with a net nutritional status above subsistence levels are largely restricted to records from officer cadets or elite schools⁷. These rarely provide anthropometric data for net nutritional status at the time of measurement and they sample children, adolescents and young adults who do not provide an accurate reflection of the susceptibility to overnutrition in later life.

Tailors' records provide a multi-faceted solution. They sample a broad range of the population, from working class individuals to royals, from early adolescence until death. Ledgers include entire body shape measurements for customers – both lengths and girths. Waist circumference and hip circumference measurements can be used to assess central adiposity and leg lengths provide a proxy for net nutritional status during the growing years. Unlike military records, there are no minimum height or health standards to truncate the data. Finally, longitudinal data is provided by the return of regular customers and their re-measurement.

Two specific tailors' ledgers have been utilised within this thesis. The first is a measurements book from Morris & Son, tailors of Barmouth, North West Wales,

⁵ Offer, A., Pechey, R., and Ulijaszek, S., 'Obesity Under Affluence Varies by Welfare Regimes', in Offer, A., Pechey, R., and Ulijaszek, S. (eds.), *Insecurity, Inequality and Obesity in Affluent Societies*, (Oxford: For the British Academy by Oxford University Press, 2012), pp. 199-223.

⁶ Floud, R., Fogel, R. W., Harris, B., and Hong, S. C., *The Changing Body: Health, Nutrition, and Human Development in the Western World Since 1700*, (Cambridge: Cambridge University Press, 2011), pp. 368-9.

⁷ Floud, R., Wachter, K. and Gregory, A., *Height, Health and History: Nutritional Status in the United Kingdom, 1750-1980*, (Cambridge: Cambridge University Press, 1990); Komlos, J., 'The Height and Weight of West Point Cadets: Dietary Change in Antebellum America', *The Journal of Economic History*, vol. 47, 4 (1987), pp. 897-927; Komlos, J., 'The Height Increments and BMI Values of Elite Central European Children and Youth in the Second Half of the 19th Century', *Annals of Human Biology*, vol. 33, 3 (2006), pp. 309-18; Komlos, J., Tanner, J. M., Davies, P. S. W., and Cole, T., 'The Growth of Boys in the Stuttgart Carlschule, 1771-93', *Annals of Human Biology*, vol. 19, 2 (1992), pp. 139-52.

covering the period March 1890 to December 1891⁸. During the second half of the nineteenth century Barmouth experienced a period of economic transition, adapting from a small port exporting local primary resources, to a seaside resort. Morris & Son's customers reflect this, stemming mainly from Barmouth's lower-middle class 'traditional' industries such as fishing, farming and mining, as well as sampling upper-middle class professionals and successful dealers catering to the influx of tourism. The second tailoring ledger that has been used is from Henry Poole & Co., luxury 'Savile Row' tailors of Mayfair in London, covering the period June 1840 to March 1904⁹. This provides clothing measurements for the wealthy elites who lived throughout Britain. Comparing the anthropometric measurements of these two tailors provides an opportunity to examine the prevalence of overweight and obesity amongst the middle and upper strata of nineteenth century society. In addition, the health impact of economic development and high absolute levels of wealth can be compared.

These tailoring samples have been nominally linked to the census, birth, marriage and death indices and the probate calendar in order to elucidate socioeconomic variables for the tailors' customers. In particular, this process has identified the customers' age, occupation, address and longevity. These variables are used to correlate Morris & Son and Henry Poole & Co. customers' body shape with their health outcomes and to speculate on explanations for their variance in net nutritional status.

Mortality statistics identify that chronic diseases were an important and rising cause of death in the second half of the nineteenth century. Contemporary medical tracts highlight that by the early decades of the mid-nineteenth century doctors were already becoming concerned by the threat from chronic diseases and attributed them to obesity. The publication of dietary and exercise manuals from the mid-nineteenth

⁸ National Library of Wales, GB 0210 MORUTH, Tailoring/Dressmaking Books, 53, March 1890 – August 1896, (Part of the business records of Morris & Son, tailor draper and dressmaker of Barmouth, Merionethshire 1847-1930).

⁹ Henry Poole & Co. Ltd., Private archive, NRA 22524 Poole, (1846-1960: accounts, clients ledgers, ledgers measurement book and papers).

century onwards introduced the notion of preventative medicine and suggested that a slim, muscular male physique was the aesthetic ideal. Thus it is erroneous to conceive overweight as having been a desired status during the nineteenth century, from the perspective of either health or beauty¹⁰.

The early adult waist circumference, hip circumference and waist-hip ratio of Morris & Son's customers, in comparison to those of Henry Poole & Co.'s customers, provides historical evidence that appears to corroborate Barker's hypothesis. In early adulthood Morris & Son's middle class customers had smaller waists and hips but a larger waist-hip ratio than Henry Poole & Co.'s elite clientele. This implies that Morris & Son's customers had a lower net nutritional status both during the growing years and in early adulthood, which impeded their waist and hip growth, but they had a higher degree of central adiposity. Barker's hypothesis provides a viable explanation for this. It is possible that the economic transition which occurred in Barmouth resulted in Morris & Son's customers achieving an adult nutritional status that exceeded their metabolic competency determined as a fetus. In such circumstances Barker identified that a hormonal imbalance makes centralised adiposity more likely, increasing the risk of chronic diseases in later life. In accordance, Morris & Son customers' large central adiposity correlates with a shorter longevity.

In later adulthood Morris & Son customers' waist circumference and waist-hip ratio changed very little; in contrast, both anthropometric markers rose markedly amongst Henry Poole & Co.'s patrons. The latter's elite lifestyles enabled them to gain weight, typically reaching modern World Health Organisation cut-off markers for overweight and obesity by middle age. Along with age, wealth was positively correlated with Henry Poole & Co. customers' central adiposity, whilst urban

¹⁰ These arguments align with those of Zweiniger-Bargielowska: Zweiniger-Bargielowska, I., 'The Culture of the Abdomen: Obesity and Reducing in Britain, circa 1900-1939', *Journal of British Studies*, vol. 44, 2 (2005), pp. 239-73; Zweiniger-Bargielowska, I., *Managing the Body: Beauty, Health and Fitness in Britain, 1880-1939*, (Oxford & New York: Oxford University Press, 2010).

disamenities and constrained incomes amongst upper-middle class professionals jeopardised girths.

Whereas Morris & Son customers' high levels of central adiposity in early adulthood appears to have curtailed their longevity, waist circumferences were positively correlated to life expectancy in older adulthood. It seems likely that although overweight and obesity increased the risk of chronic ailments, a high nutritional status also protected individuals from the ravages of infectious disease and in the second half of the nineteenth century the latter was more important. The positive linear correlation between waists and longevity implies that historically larger body sizes may have been more beneficial to health than they are currently.

These results emphasise the importance of adopting a more nuanced interpretation of the epidemiological transition in Britain during the second half of the nineteenth century. The data from tailors' records indicates that centralised adiposity transcended the highest echelons of society and affected a large portion of Morris & Son's middling clientele. Chronic diseases did not suddenly emerge after the threat of infectious diseases waned, they were a nineteenth century threat as well. As net nutritional status improved it simultaneously protected individuals from contagious pathogens and made them more susceptible to overweight and obesity, which increased their chronic disease morbidity.

The global obesity epidemic may be a feature of the last few decades but anthropometric data from British tailors identifies that its origins need to be sought in the nineteenth century. Historians should not assume that elucidating obesity depends only on examining twentieth century trends. Currently obesity is socially segregated towards the lower classes. In the past obesity was limited to the rich. Historians have ignored the turning point in the social segregation of obesity but it is a crucial juncture. Identifying when and why obesity starts disseminating amongst the middle and then lower classes has ramifications for social policy in currently developing nations. This

thesis shines a spotlight on the period when affluence began to reshape the human form.

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*Dedicated to the memory of Colin Campbell, who always maintained
an enquiring mind.*

Table of Contents

Front Matter:

Short Abstract	ii
Long Abstract	iii
Acknowledgements	ix
Dedication	x
Table of Contents	xi
List of Figures	xiii
List of Tables	xv
Abbreviations	xvii

Chapter 1. Introduction: Obesity and Nutritional Status	1
1.1. Why is it Important for Historians to Study Obesity?.....	3
1.1.1. Global Obesity Trends.....	4
1.1.2. Implications of Obesity	7
1.1.3. Causes and Prevention of Obesity	11
1.1.4. Conclusion.....	13
1.2. How Have Historians Studied Obesity Previously?	15
1.2.1. Limitations: Lack of Nineteenth Century Obesity Data	20
1.3. How Will This Thesis Examine Obesity?	23
Chapter 2. Chronic Diseases and Obesity in Britain During the Nineteenth Century	27
2.1. Introduction: Graves' Dangers	28
2.2. Chronic Disease Mortality	34
2.3. Chronic Diseases and Obesity.....	42
2.4. Preventative Action	50
2.4.1. Health and Weight Loss	51
2.4.2. Exercise.....	60
2.5. Social Status and Obesity.....	65
2.6. The Myopia of Society	67
2.7. The Timing of Rising Obesity.....	72
2.8. Conclusion	76

Part I: The Tailor's Tale

Chapter 3. Introducing Tailors' Records	81
3.1. The Case for Tailors' Records as an Anthropometric Source.....	81
3.1.1. Broad Population Sample.....	82
3.1.2. Whole Body Data	86
3.1.3. Longitudinal Data	88
3.2. The Ledgers of Morris & Son and Henry Poole & Co.	95
3.3. Nominal Linkage Process	103
3.3.1. Sources	104
3.3.2. Limitations	105
3.3.3. Methodology.....	110
3.4. Conclusion	115
Chapter 4. The Tailors' Customers.....	117
4.1. A History of Barmouth.....	118
4.2. A History of Henry Poole & Co. and Sartorial Consumption on Savile Row	122

4.3. The Tailors' Customers	130
4.3.1. Geographical Origins	130
4.3.2. Age and Birth Cohort	140
4.3.3. Social Status	142
4.3.4. Social Mobility	154
4.4. Conclusion	157
 Part II: Waists, Hips and Early Life Health Jeopardy	
Chapter 5. Lengths and Girths in Anthropometric Research	163
5.1. Legs, Waists, and Hips: Epidemiological Foundations	164
5.2. Central Adiposity and Net Nutritional Status	166
5.3. Historical Uses of Measures of Central Adiposity	170
Chapter 6. Cross Sectional Analyses of Early Life Waists, Hips and Waist-Hip Ratio	175
Chapter 7. Morris & Son's Customers and Barker's Hypothesis	193
7.1. The Economic Context of Barmouth	194
7.2. The Social Mobility of Morris & Son's Customers	196
7.3. The Infant Mortality Rate in North Wales	198
7.4. Fetal Deprivation, Morbidity and Mortality: Comparing Morris & Son's Customers to the American Military	200
7.5. Fetal Deprivation and Longevity	207
7.6. Conclusion	208
 Part III: Waists, Hips and Later Life Health Risks	
Chapter 8. Prevalence and Trends in Adult Obesity in Nineteenth Century Britain	217
8.1. Defining Overweight and Obesity	217
8.2. Historical Body Size Optima	221
8.3. Obesity in Nineteenth Century Britain	227
8.4. Ageing and Longitudinal Trends in Obesity	236
8.5. Conclusion	244
Chapter 9. The Causes of Nineteenth Century Adult Obesity	245
9.1. Wealth	245
9.2. Occupation	251
9.3. Address	258
9.4. Conclusion	263
Chapter 10. Later Life Obesity and Longevity	267
10.1. The Longevity of the Tailors' Customers	268
10.2. Later Life Central Adiposity and Longevity	272
10.3. Conclusion	283
Chapter 11. Conclusion	291
11.1. Directions for Future Research	297
 Bibliography	 303

List of Figures

Figure 1: Proportion of Male and Female Deaths from Infectious and Chronic Diseases Interpolated Between 1848 and 1947	35
Figure 2: Proportion of Male and Female Deaths from Chronic Diseases and its Components Interpolated Between 1848 and 1947	36
Figure 3: Proportion of Male and Female Deaths from Circulatory Disease by Age Interpolated Between 1848 and 1947	38
Figure 4: Trends in the Frequency of the Usage of the Terms 'Obesity', 'Overweight' and 'Corpulence' Within English Books Between 1800 and 2008	46
Figure 5: Recommended Relative Height and Weight Standards	57
Figure 6: Contemporary Recommended BMIs Based on Relative Height and Weight Tables, Compared with Modern Health Standards	59
Figure 7: Longitudinal Trends in Waist Circumference by Date of Measurement	90
Figure 8: Longitudinal Trends in Waist Circumference by Age	90
Figure 9: Longitudinal Change in Waist Circumference and Waist-Hip Ratio of Thomas Bayley Potter	94
Figure 10: Tailoring Measurements of Morris & Son Customer, Mr. W. H. Williams of 1 Fronfelan Terrace	96
Figure 11: Tailoring Measurements of Henry Poole & Co. Customer, Mr. John Bond of Yarmouth	96
Figure 12: Rows of Ledgers in the Private Archive of Henry Poole & Co.	97
Figure 13: Age Heaping Amongst Sample of Morris & Son and Henry Poole & Co. Customers	107
Figure 14: Density Map of the Address of Morris & Son's Customers in 'Measure Book 1'	132
Figure 15: Density Map of the Place of Birth of Morris & Son's Customers in 'Measure Book 1'	133
Figure 16: Region of Address of Henry Poole & Co.'s Customers Sampled	134
Figure 17: Density Map of the Address of Henry Poole & Co.'s Customers in 'Measure Book A'	135
Figure 18: Percentage of Urban and Rural Addresses Amongst Henry Poole & Co. Customers	137
Figure 19: Density Map of the Place of Birth of Henry Poole & Co.'s Customers in 'Measure Book A'	139
Figure 20: Date of Birth of Morris & Son and Henry Poole & Co. Customers Sampled	141
Figure 21: Age of Morris & Son and Henry Poole & Co. Customers Sampled at Time of Measurement	142
Figure 22: Occupational Skill Ranking of Morris & Son and Henry Poole & Co. Customers	143
Figure 23: Occupational Skill Ranking of Morris & Son Customers Divided by Addresses in Wales and Other Visitors	144
Figure 24: Value of Estate in Probate of Morris & Son and Henry Poole & Co. Customers Compared to Wills and Administrations Probated in 1858	148
Figure 25: Inside Leg Measurement of Morris & Son Customers Until Maturity	181
Figure 26: The Effect of Age on Waist Circumference Amongst Morris & Son and Henry Poole & Co. Customers	187
Figure 27: The Effect of Age on Hip Circumference Amongst Morris & Son and Henry Poole & Co. Customers	189
Figure 28: The Effect of Age on Waist-Hip Ratio Amongst Morris & Son and Henry Poole & Co. Customers	190

Figure 29: Frequency Diagram Displaying Waist Circumference Measurements of Morris & Son and Henry Poole & Co. Customers Aged Over 25.	228
Figure 30: Frequency Diagram Displaying Largest Recorded Waist Circumference measurement of Morris & Son and Henry Poole & Co. Customers Aged Over 25	230
Figure 31: Frequency Distribution of Oldest Age of Measurement of Morris & Son and Henry Poole & Co. Customers	231
Figure 32: Frequency Diagram Displaying Waist Circumference Measurements of Morris & Son and Henry Poole & Co. Customers Aged Over 25, Reduced by One Inch.....	233
Figure 33: Frequency Diagram Displaying Waist-Hip Ratio of Morris & Son and Henry Poole & Co. Customers Aged Over 25	234
Figure 34: Frequency Diagram Displaying Minimised Waist-Hip Ratio of Morris & Son and Henry Poole & Co. Customers Aged Over 25.....	235
Figure 35: Correlation Between Age and Waist Circumference of Morris & Son and Henry Poole & Co. Customers Aged Over 25	238
Figure 36: Correlation Between Age and Waist-Hip Ratio of Morris & Son and Henry Poole & Co. Customers Aged Over 25	239
Figure 37: Longitudinal Trends in Waist Circumference for Henry Poole & Co. Customers Aged Over 25.....	242
Figure 38: Longitudinal Trends in Waist-Hip Ratio for Henry Poole & Co. Customers Aged Over 25.....	243
Figure 39: Waist Circumference Measurement of Morris & Son and Henry Poole & Co. Customers Aged Over 25 by Value of Estate in Probate.....	248
Figure 40: Mean Waist Circumference by Occupational Industry Amongst Morris & Son and Henry Poole & Co. Customers Aged Over 25.....	252
Figure 41: Mean Waist Circumference of Morris & Son and Henry Poole & Co. Customers Aged Over 25 of Different Occupational Skill Levels	255
Figure 42: Mean Waist Circumference of Henry Poole & Co. Customers Aged Over 25 from Different Regions of Britain	261
Figure 43: Frequency Distribution of the Longevity of Morris & Son and Henry Poole & Co. Customers	270
Figure 44: Effect of Waist Circumference on Longevity of Morris & Son and Henry Poole & Co. Customers.....	275
Figure 45: Effect of Waist-Hip Ratio on Longevity of Morris & Son and Henry Poole & Co. Customers	277
Figure 46: Years Between Largest Waist Circumference Measurement and Death of Morris & Son and Henry Poole & Co. Customers Measured Aged Over 25 ...	280
Figure 47: The Effect of Net Nutritional Status on Chronic Disease Mortality	288

List of Tables

Table 1: Physical Health, Psychosocial, and Functional Consequences of Obesity Over the Life Course	8
Table 2: Approximate Relative Risk of Health Problems Associated with Obesity.....	9
Table 3: Industrial Classification of Morris & Son and Henry Poole & Co. Customers	146
Table 4: Mean Value of Estate in Probate of Morris & Son and Henry Poole & Co. Customers Categorised by Occupational Skill Ranking	151
Table 5: Mean Value of Estate in Probate of Morris & Son and Henry Poole & Co. Customers Categorised by Occupational Industry	151
Table 6: Occupational Skill Level of Morris & Son's Customers and their Fathers	155
Table 7: Occupational Skill Level of Henry Poole & Co.'s Customers and their Fathers	156
Table 8: Comparison of the Waist Circumference, Hip Circumference and Waist-Hip Ratio of Morris & Son and Henry Poole & Co. Customers.....	177
Table 9: Comparison of Inside and Outside Leg Measurements of Morris & Son and Henry Poole & Co. Customers	179
Table 10: Correlations Between Age and Body Shape Amongst Morris & Son and Henry Poole & Co. Customers	183
Table 11: Summary Statistics of the Waist Circumference, Hip Circumference and Waist-Hip Ratio of Morris & Son and Henry Poole & Co. Customers of Different Age Groups.....	191
Table 12: Comparison of Waist-Hip Ratio of 'Upwardly Mobile' and 'Other' Morris & Son Customers.....	197
Table 13: Mean Waist-Hip Ratio of Morris & Son Customers Compared to American Military Recruits.....	202
Table 14: Minimised Mean Waist-Hip Ratio of Morris & Son Customers Compared to American Military Recruits.....	205
Table 15: Correlation Between Longevity and Central Adiposity Amongst Morris & Son and Henry Poole & Co. Customers Aged Under 35 and 21-35.	208
Table 16: Effect of Age on Waist Circumference and Waist-Hip Ratio Amongst Morris & Son and Henry Poole & Co. Customers Aged Over 25.	237
Table 17: Effect of Age Period on Waist Circumference and Waist-Hip Ratio for Morris & Son and Henry Poole & Co. Customers Aged Over 25	240
Table 18: Effect of Age and Wealth in Probate on Waist Circumference and Waist-Hip Ratio Amongst Morris & Son and Henry Poole & Co. Customers Aged Over 25.....	246
Table 19: Descriptive Statistics of the Occupational Industries of Morris & Son and Henry Poole & Co. Customers Aged Over 25	253
Table 20: Descriptive Statistics of the Occupational Skill Level of Morris & Son and Henry Poole & Co. Customers Aged Over 25	256
Table 21: Effect of Age and Occupational Skill Level on Waist Circumference and Waist-Hip Ratio of Morris & Son and Henry Poole & Co. Customers Aged Over 25.....	258
Table 22: Effect of Urban Address on the Waist Circumference and Waist-Hip Ratio of Morris & Son and Henry Poole & Co. Customers Aged Over 25.....	260
Table 23: Descriptive Statistics of the Waist Circumference by Region of Address of Henry Poole & Co. Customers Aged Over 25	262
Table 24: Effect of Age, Occupation, Wealth and Address on Waist Circumference and Waist-Hip Ratio Among Morris & Son and Henry Poole & Co. Customers Aged Over 25	264

Table 25: Age-Specific Correlations Between Waist Circumference and Waist-Hip Ratio and Longevity Amongst Morris & Son and Henry Poole & Co. Customers	273
Table 26: Effect of Largest Recorded Waist Circumference and Waist-Hip Ratio of Morris & Son and Henry Poole & Co. Customers Aged Over 25 on Longevity...	278
Table 27: Effect of Waist Circumference and Waist-Hip Ratio on Longevity, Controlling for Time Between Measurement and Death, for Morris & Son and Henry Poole & Co. Customers measured Aged Over 25	281
Table 28: Effect of Largest Recorded Waist Circumference and Waist-Hip Ratio and other Socioeconomic Variables on the Longevity of Morris & Son and Henry Poole & Co. Customers Aged Over 25	282

Abbreviations

BMI	Body mass index
df	Degrees of freedom
GRO	General Register Office
HC	Hip circumference
M	Mean
n	Sample size
NHS	National Health Service
OECD	Organisation for Economic Co-ordination and Development
p	<i>p</i> -value
SD	Standard deviation
t	<i>t</i> -statistic
UK	United Kingdom
US	United States of America
WC	Waist circumference
WHO	World Health Organisation
WHR	Waist-hip ratio

Chapter 1. Introduction: Obesity and Nutritional Status

This thesis examines the prevalence and mortality implications of being overweight or obese in Britain during the second half of the nineteenth century. This is achieved by appropriating a new and original anthropometric data source – tailors’ records – to examine health and welfare amongst the middle- and upper classes. This introduction provides a framework for the following analyses by answering three questions: firstly, why is it important for historians to study obesity? Secondly, how have historians studied obesity previously? And finally, how will this thesis examine obesity?

Obesity is defined simply as a condition in which excess body fat has accumulated to such an extent that health is adversely affected¹. It occurs when energy intake exceeds energy outputs. However, the specific causes of obesity at an individual level are many and varied. The Foresight Report of 2007, which has since been used to inform national health policies in the UK, advocated the concept of a family of ‘obesities’, recognising the complexity and multifactorial nature of the condition².

The World Health Organisation (WHO) defines obesity as both a chronic disease in itself and a risk factor for other non-communicable diseases³. In June 2013 the American Medical Association also voted to define obesity as a disease⁴. The

¹ World Health Organisation, *Obesity: Preventing and Managing the Global Epidemic: Report of a WHO Consultation*, (Geneva: World Health Organisation, 2000), p. 40.

² Foresight, Government Office for Science, *Tackling Obesities: Future Choices*, 2nd edn., (London: Department of Innovation Universities and Skills, 2007), p. 43.

³ World Health Organisation, *Obesity: Preventing and Managing the Global Epidemic: Report of a WHO Consultation*, (Geneva: World Health Organisation, 2000), p. 6.

⁴ Pollack, A., ‘A.M.A. Recognizes Obesity as a Disease’, *The New York Times*, 18 June 2013, accessed 14 March 2014, www.nytimes.com/2013/06/19/business/ama-recognizes-obesity-as-a-disease.html?_r=0

controversy surrounding this vote highlights that the definition of obesity as a disease remains contested⁵. However, the association of overweight and obesity with a heightened relative risk of cardiovascular diseases such as hypertension, stroke and coronary heart disease, as well as type 2 diabetes, certain types of cancer, gallbladder disease, and musculoskeletal disorders such as osteoarthritis, is beyond question⁶.

Within this introduction the comparison of global overweight and obesity trends are based on body mass index (BMI) classifications⁷. BMI is defined as weight in kilograms divided by the square of height in metres (kg/m^2). Overweight, or preobese, is classified as $25 \leq \text{BMI} < 30$ and obese is defined as $\text{BMI} \geq 30$. BMI is a simple index to calculate and has become the predominant measure of weight-for-height utilised worldwide. This makes it the most appropriate gauge of global obesity in a comparative context. However, it is not the only means of classifying obesity, nor invariably the most accurate. As this introduction will outline, this thesis uses waist circumference, hip circumference and waist-hip ratio as alternative means to determine central adiposity. These indices are also approved by WHO and are more effective at measuring risky centralised weight gain, but they are less widely recorded, limiting their use as indicators of global obesity trends⁸.

Most of the institutional guidelines referred to in this thesis are available online. Due to the frequency of their reference their URL has been omitted from the footnotes but can be found in the bibliography. The URL of unpublished material remains provided in footnotes.

⁵ Dailey, K., 'Obesity is a Disease in the US. Should it be?', *BBC News Magazine*, 25 June 2013, accessed 14 March 2014, www.bbc.co.uk/news/23011804; Gaffney, K., Adam, L., and Stoner, L., 'Obesity is Driving the Cardiovascular Disease Epidemic: However, Should Obesity be Classified as a Disease?', *Journal of Atherosclerosis and Thrombosis*, vol. 21, 1 (2014), pp. 77-8; Heshka, S. and Allison, D., 'Is Obesity a Disease?', *International Journal of Obesity*, vol. 25, 10 (2001), pp. 1401-4.

⁶ World Health Organisation, *Obesity: Preventing and Managing the Global Epidemic: Report of a WHO Consultation*, (Geneva: World Health Organisation, 2000), p. 43; 'Obesity and Overweight: Factsheet No. 311', *World Health Organisation*, accessed 14 March 2014, www.who.int/mediacentre/factsheets/fs311/en/#

⁷ World Health Organisation, *Obesity: Preventing and Managing the Global Epidemic: Report of a WHO Consultation*, (Geneva: World Health Organisation, 2000), pp. 8-9.

⁸ World Health Organisation, *Obesity: Preventing and Managing the Global Epidemic: Report of a WHO Consultation*, (Geneva: World Health Organisation, 2000), pp. 9-11; World Health Organisation, *Waist Circumference and Waist-Hip Ratio: Report of a WHO Expert Consultation*, (Geneva: World Health Organisation, 2008).

1.1. Why is it Important for Historians to Study Obesity?

Broadly speaking, it is imperative that all research fields prioritise studying obesity because the scale of the current global obesity epidemic dictates that a multi-faceted, comprehensive approach is required to stem the growth in global obesity rates and, if possible, reduce them⁹. The implications of obesity for health, psychosocial performance and functionality ensure that without intervention the economic burden of obesity will become unsustainable¹⁰. There are a large number of impediments to weight loss¹¹; consequently, policies are increasingly focused on preventative measures that rely on accurately determining the complex causes of obesity¹². Where once obesity was framed as an individual's problem, a failure of personal responsibility, modern conceptualisations emphasise 'passive obesity' and the way in which, '...human biology is being overwhelmed by the effects of today's 'obesogenic' environment...'¹³.

Historians can help to determine the causes of obesity and the reasons for the development of our current 'obesogenic environment'. By examining the prevalence of obesity in the nineteenth century, a spotlight is shone on sources of obesity prior to the emergence of modern conveniences such as cars, fast-food and televisions -

⁹ Foresight, Government Office for Science, *Tackling Obesity: Future Choices*, 2nd edn., (London: Department of Innovation Universities and Skills, 2007), pp. 17-8; Organisation for Economic Co-ordination and Development, *Obesity and the Economics of Prevention: Fit not Fat: Executive Summary*, (Paris: OECD Publishing, 2010), pp. 21-2; Institute of Medicine, *Accelerating Progress in Obesity Prevention: Solving the Weight of the Nation: Report Brief*, (Washington, D.C.: National Academies Press, 2012), p. 2; Cawley, J., 'The Economics of Obesity', in Cawley, J. (ed.), *The Oxford Handbook of the Social Science of Obesity*, (New York & Oxford: Oxford University Press, 2011), p. 120.

¹⁰ Foresight, Government Office for Science, *Tackling Obesity: Future Choices*, 2nd edn., (London: Department of Innovation Universities and Skills, 2007), p. 139; Institute of Medicine, *Accelerating Progress in Obesity Prevention: Solving the Weight of the Nation: Report Brief*, (Washington, D.C.: National Academies Press, 2012), p. 41.

¹¹ Downs, J. S. and Loewenstein, G., 'Behavioral Economics and Obesity', in Cawley, J. (ed.), *The Oxford Handbook of the Social Science of Obesity*, (New York & Oxford: Oxford University Press, 2011), pp. 140-5; Foresight, Government Office for Science, *Tackling Obesity: Future Choices*, 2nd edn., (London: Department of Innovation Universities and Skills, 2007), p. 67; Institute of Medicine, *Accelerating Progress in Obesity Prevention: Solving the Weight of the Nation: Report Brief*, (Washington, D.C.: National Academies Press, 2012), p. 61; James, W. P. T., 'The Epidemiology of Obesity: The Size of the Problem', *Journal of Internal Medicine*, vol. 263, 4 (2008), p. 343.

¹² Foresight, Government Office for Science, *Tackling Obesity: Future Choices*, 2nd edn., (London: Department of Innovation Universities and Skills, 2007), pp. 60-77; James, W. P. T., 'The Epidemiology of Obesity: The Size of the Problem', *Journal of Internal Medicine*, vol. 263, 4 (2008), p. 48.

¹³ Foresight, Government Office for Science, *Tackling Obesity: Future Choices: Summary of Key Messages*, (London: Department of Innovation Universities and Skills, 2007), p. 2.

technological developments that have previously been used by some researchers to explain trends in over-consumption and under-activity¹⁴. Moreover, by examining the emergence of obesity in Britain at the end of the Industrial Revolution, the impact of economic development on obesity can be enlightened as well as the repercussions of concurrent patterns of under- and overnutrition. This is particularly relevant to currently industrialising nations, amongst whom rates of chronic disease are almost ubiquitously on the rise amidst a continued threat from infectious diseases¹⁵.

1.1.1. Global Obesity Trends

The WHO Expert Consultation on obesity in 1997 was the first time that the implications of overweight and obesity were accepted by WHO as a global problem and labelled as an epidemic¹⁶. Concern regarding rates of overweight and obesity emerged after:

Surveys began to record a sharp acceleration in the rate of increase in body mass index (BMI) in the 1980s, which in many countries grew two or three times more rapidly than in the previous century¹⁷.

In 2010, the Organisation for Economic Co-ordination and Development (OECD) recognised that, 'since then, rates have doubled or tripled in many countries'¹⁸.

¹⁴ For a glimpse into this discussion see: Hancox, R. J., Milne, B. J., and Poulton, R., 'Association Between Child and Adolescent Television Viewing and Adult Health: A Longitudinal Birth Cohort Study', *The Lancet*, vol. 364, 9430 (2004), pp. 257-62; Viner, R. M. and Cole, T. J., 'Television Viewing in Early Childhood Predicts Adult Body Mass Index', *The Journal of Pediatrics*, vol. 147, 4 (2005), p. 429-35; Rosenheck, R., 'Fast Food Consumption and Increased Caloric Intake: A Systematic Review of a Trajectory Towards Weight Gain and Obesity Risk', *Obesity Reviews*, vol. 9, 6 (2008), pp. 535-47; Fox, K. R. and Hillsdon, M., 'Physical Activity and Obesity', *Obesity Reviews*, vol. 8, Suppl. 1 (2007), pp. 115-21; and Frank, L. D., Anderson, M. A., and Schmid, T. L., 'Obesity Relationships with Community Design, Physical Activity, and Time Spent in Cars', *American Journal of Preventative Medicine*, vol. 27, 2 (2004), pp. 87-96. Although a causal relationship between these factors and obesity remains disputed.

¹⁵ For rates of obesity in developing countries see: Kelly, T., Yang, W., Chen, C.-S., Reynolds, K., and He, J., 'Global Burden of Obesity in 2005 and Projections to 2030', *International Journal of Obesity*, vol. 32, 9 (2008), pp. 1435-6; World Health Organisation, *Obesity: Preventing and Managing the Global Epidemic: Report of a WHO Consultation*, (Geneva: World Health Organisation, 2000), pp. 16-37. For impact of concurrent under- and over-nutrition see: 'Obesity and Overweight: Factsheet No. 311', *World Health Organisation*, accessed 14 March 2014, www.who.int/mediacentre/factsheets/fs311/en/#; Custodio, E., Descalzo, M. Á., Roche, J., Molina, L., Sánchez, I., Lwanga, M., Torres, A. M., Fernández-Zincke, E., Bernis, C., Villamor, E., and Baylin, A., 'The Economic and Nutrition Transition in Equatorial Guinea Coincided with a Double Burden of Over- And Under Nutrition', *Economics and Human Biology*, vol. 8, 1 (2010), pp. 80-7; Osmani, S. and Sen, A., 'The Hidden Penalties of Gender Inequality: Fetal Origins of Ill-Health', *Economics and Human Biology*, vol. 1, 1 (2003), pp. 105-21.

¹⁶ World Health Organisation, *Obesity: Preventing and Managing the Global Epidemic: Report of a WHO Consultation*, (Geneva: World Health Organisation, 2000).

¹⁷ Organisation for Economic Co-ordination and Development, *Obesity and the Economics of Prevention: Fit not Fat: Executive Summary*, (Paris: OECD Publishing, 2010), p. 16.

Now, 'obesity is the concern of most, if not all, governments who...readily accept its complexity and major public health impact'¹⁹. It is still difficult to identify global trends in obesity precisely because:

...we still do not have coherent data of rate of weight gain on a national and sub-national level in many regions, especially the Middle East, Africa, the Caribbean, Latin America and Asia. Even in Europe we still have only a few countries which systematically monitor the growth of children as well as adults on a regular basis²⁰

The latest WHO estimates in 2008 suggested that worldwide more than 1.4 billion adults aged twenty and older, or 35% of the global population were overweight or obese. Of these, 200 million men and nearly 300 million women, equating to 11% of the global population, were obese. In addition, WHO calculated that more than 40 million children under the age of five were overweight in 2011 and three-quarters of these lived in developing countries. Worldwide obesity has doubled since 1980²¹.

The OECD publication *Health at a Glance: Europe 2013* stated that 52.6% of the adult population of the European Union reported that they were overweight or obese and 18% of the adult population across OECD countries was obese. The prevalence of overweight and obesity among adults exceeds 50% in 20 of 34 OECD countries. The prevalence of obesity has increased over the past decade in all OECD countries. In 2011, at least one in five adults was obese in ten OECD countries, whereas this applied to only five countries a decade ago²².

In February 2014 the Health and Social Care Information Centre (HSCIS) published *Statistics on Obesity, Physical Activity and Diet* for England. The data used

¹⁸ Organisation for Economic Co-ordination and Development, *Obesity and the Economics of Prevention: Fit not Fat: Executive Summary*, (Paris: OECD Publishing, 2010), p. 16. For a list of OECD countries and the date of their ratification see: 'List of OECD Member Countries – Ratification of the Convention of OECD', *OECD*, accessed 14 March 2014, www.oecd.org/about/membersandpartners/list-oecd-member-countries.htm

¹⁹ James, W. P. T., 'The Epidemiology of Obesity: The Size of the Problem', *Journal of Internal Medicine*, vol. 263, 4 (2008), p. 336.

²⁰ James, W. P. T., 'The Epidemiology of Obesity: The Size of the Problem', *Journal of Internal Medicine*, vol. 263, 4 (2008), p. 350.

²¹ 'Obesity and Overweight: Factsheet No. 311', *World Health Organisation*, accessed 14 March 2014, www.who.int/mediacentre/factsheets/fs311/en/#

²² Organisation for Economic Co-operation and Development, *Health at a Glance: OECD Indicators*, (Paris: OECD Publishing, 2013), p. 58.

stemmed from the most recent *Health Survey for England, 2012*²³ and identified that 24.4% of men and 25.1% of women were obese and 66.6% of men and 57.2% of women were overweight or obese²⁴. Mean BMI in England in 2012 was 27.3 kg/m² in men and 27.0 kg/m² in women, although higher in older age groups²⁵. Similar, although slightly lower trends were identified in Wales by the *Welsh Health Survey 2012* - 23.0% of adults were classified as obese and 58.5% of adults were overweight or obese²⁶. The concern is that the number of obese adults in England has increased by 67.2% since 1993 and the number of overweight and obese adults has grown by 16.7% over the same time frame.

The prevalence and trends in overweight and obesity are harder to determine for developing countries because of a lack of macro or even micro level survey data. The WHO Global Infobase suggests that in 2010 the prevalence of overweight and obesity exceeded 35% worldwide amongst males aged fifteen or over, except for in Western, Central and Eastern Africa and Southern and South-East Asia. Throughout South America overweight and obesity affected more than 50% of the male population aged fifteen or over as well as in Libya, Egypt and much of the Middle East²⁷. Although the prevalence of overweight and obesity is higher in economically developed countries, the larger population size of developing countries may result in a larger absolute number of individuals affected. Moreover, developing regions are predicted to have a much larger proportional increase in the number of overweight and obese individuals²⁸. In China the rate of change in the prevalence of overweight and obesity has increased from less than 0.5% between 1980-1990, to 1.9% for men and 0.9% for

²³ Health and Social Care Information Centre, *Health Survey for England 2012*, (Leeds: Health and Social Care Information Centre, 2013).

²⁴ Health and Social Care Information Centre, *Statistics on Obesity, Physical Activity and Diet: England 2014*, (Leeds: Health and Social Care Information Centre, 2014), p. 5.

²⁵ Health and Social Care Information Centre, *Statistics on Obesity, Physical Activity and Diet: England 2014*, (Leeds: Health and Social Care Information Centre, 2014), p. 11.

²⁶ Welsh Government, *Welsh Health Survey 2012*, (Norwich: Her Majesty's Stationary Office, 2012), p. 61.

²⁷ 'Prevalence of Overweight and Obesity Map: Males, Aged 15+, 2010', *World Health Organisation: WHO Global Infobase*, accessed 14 March 2014, <https://apps.who.int/infobase/>

²⁸ Kelly, T., Yang, W., Chen, C.-S., Reynolds, K., and He, J., 'Global Burden of Obesity in 2005 and Projections to 2030', *International Journal of Obesity*, vol. 32, 9 (2008), pp. 1435.

women between 1997-2000, furthermore data from 2004 and 2006 suggested these trends were still accelerating²⁹.

Kelly *et. al.* estimate that worldwide, after adjusting for secular trends, there may be 2.16 billion people overweight by 2030 and 1.12 billion obese. Their projections indicate that China will exceed the established market economies in the total number of overweight and obese by 2030³⁰. In the UK, Foresight modelling indicates that 60% of adult men, 50% of adult women and about 25% of children under sixteen could be obese by 2050³¹.

1.1.2. Implications of Obesity

These trends matter because of the wide-ranging implications of obesity. As Table 1 summarises, obesity is associated with major health as well as psychosocial consequences that impair functioning and quality of life. The Department of Health estimated that after factoring in both direct and indirect costs, overweight and obesity cost the UK £16 billion in 2007 – over 1% of gross domestic product³². In America, the Medical Expenditure Panel Survey for 2000-2005 estimated that obesity related illness carried an annual cost of \$190.2 billion – 20.6% of annual healthcare spending in the US³³.

²⁹ Wang, H., Du, S., Zhai, F., and Popkin, B. M., 'Trends in the Distribution of Body Mass index Among Chinese Adults, Aged 20-45 Years (1989-2000)', *International Journal of Obesity*, vol. 31, (2007), pp. 272-8 and Popkin, B. M., 'Will China's Nutrition Transition Overwhelm Its Health Care System and Slow Economic Growth?', *Health Affairs (Millwood)*, vol. 27, 4 (2008), pp. 1064-76, as cited in Popkin, B. M. 'The Nutrition Transition and Obesity', in Cawley, J. (ed.), *The Oxford Handbook of the Social Science of Obesity*, (New York & Oxford: Oxford University Press, 2011), p. 293.

³⁰ Kelly, T., Yang, W., Chen, C.-S., Reynolds, K., and He, J., 'Global Burden of Obesity in 2005 and Projections to 2030', *International Journal of Obesity*, vol. 32, 9 (2008), pp. 1435.

³¹ Foresight, Government Office for Science, *Tackling Obesities: Future Choices: Summary of Key Messages*, (London: Department of Innovation Universities and Skills, 2007), p. 2.

³² Department of Health, *Healthy Lives, Healthy People: A Call to Action on Obesity in England*, (London: Her Majesty's Stationary Office, 2011), p. 17.

³³ Crawley, J. and Meyerhoefer, C., 'The Medical Care Costs of Obesity: An Instrumental Variables Approach', *Journal of Health Economics*, vol. 31, 1 (2011), pp. 219-30, as cited in Institute of Medicine, *Accelerating Progress in Obesity Prevention: Solving the Weight of the Nation*, (Washington, D.C.: National Academies Press, 2012), p. 36.

Table 1: Physical Health, Psychosocial, and Functional Consequences of Obesity Over the Life Course

Physical Health	Psychosocial	Functional
• Cardiovascular disease • Cancer • Glucose intolerance and insulin resistance • Type 2 diabetes • Hypertension • Dyslipidaemia • Hepatic steatosis • Cholestasis • Sleep apnoea • Reduction of cerebral blood flow • Menstrual abnormalities • Orthopaedic problems • Gallbladder disease • Hyperuricaemia and gout	• Stigma • Negative stereotyping • Discrimination • Teasing and bullying • Social marginalisation • Low self-esteem • Negative body image • Depression	• Unemployment • Mobility limitations • Disability • Low physical fitness • Absenteeism from school or work • Disqualification from active service in jobs such as the military, fire and police services • Reduced productivity • Reduced academic performance

Source: Institute of Medicine, *Accelerating Progress in Obesity Prevention: Solving the Weight of the Nation*, (Washington, D.C.: National Academies Press, 2012), p. 35.

Obesity imparts an enormous direct burden of disease. WHO labels overweight and obesity as the fifth leading risk for global deaths³⁴. The risk of developing type 2 diabetes is about twenty times more likely for obese people compared to those with a healthy weight-for-height. There is also approximately a five-fold risk of hypertension amongst the obese and a three-fold risk of gallbladder disease³⁵. The relative risk of health problems exacerbated by obesity are summarised in Table 2 in greater detail. Furthermore, the risks associated with increasing overweight are continuous and graded and begin at a BMI lower than 25, although this is currently used as a marker of overweight³⁶. The lifespan of an obese person is up to 8-10 years shorter (for a BMI of 40-45) than a normal weight person. An overweight person of average height will

³⁴ 'Obesity and Overweight: Factsheet No. 311', *World Health Organisation*, accessed 14 March 2014, www.who.int/mediacentre/factsheets/fs311/en/#

³⁵ Foresight, Government Office for Science, *Tackling Obesity: Future Choices*, 2nd edn., (London: Department of Innovation Universities and Skills, 2007), pp. 32-3.

³⁶ World Health Organisation, *Obesity: Preventing and Managing the Global Epidemic: Report of a WHO Consultation*, (Geneva: World Health Organisation, 2000), p. 9.

increase their risk of death by approximately 30% for every 15 additional kilograms of weight³⁷.

Table 2: Approximate Relative Risk of Health Problems Associated with Obesity

Greatly Increased (relative risk much greater than 3)	Moderately Increased (relative risk 2-3)	Slightly Increased (relative risk 1-2)
• Type 2 diabetes • Gallbladder disease • Dyslipidaemia • Insulin resistance • Breathlessness • Sleep apnoea • Hypertension	• Coronary heart disease • Osteoarthritis (knees) • Hyperuricaemia and gout • Stroke • Psychological problems	• Cancer (breast cancer in postmenopausal women, endometrial cancer, colon cancer) • Reproductive hormone abnormalities • Polycystic ovary syndrome • Impaired fertility • Low back pain • Anaesthesia complications • Fetal defects associated with maternal obesity

Sources: World Health Organisation, *Obesity: Preventing and Managing the Global Epidemic: Report of a WHO Consultation*, (Geneva: World Health Organisation, 2000), p. 43 updated according to Foresight, Government Office for Science, *Tackling Obesity: Future Choices*, 2nd edn., (London: Department of Innovation Universities and Skills, 2007), pp. 32-3.

In the UK, the Foresight Report estimated that the NHS costs attributable to overweight and obesity in 2007 were £4.2 billion, potentially rising to £6.3 billion in 2015 and up to £9.7 billion by 2050³⁸. Currently around 5-6% of the NHS's total budget is spent on the disease consequences of overweight and obesity³⁹. In America, the excess medical costs attributable to overweight and obesity were estimated as \$147 billion in 2008⁴⁰.

³⁷ Organisation for Economic Co-ordination and Development, *Obesity and the Economics of Prevention: Fit not Fat: Executive Summary*, (Paris: OECD Publishing, 2010), p. 15.

³⁸ Foresight, Government Office for Science, *Tackling Obesity: Future Choices*, 2nd edn., (London: Department of Innovation Universities and Skills, 2007), p. 40.

³⁹ Department of Health, *Healthy Lives, Healthy People: A Call to Action on Obesity in England*, (London: Her Majesty's Stationary Office, 2011), p. 16.

⁴⁰ Finkelstein, E. A., Trogon, J. G., Cohen, J. W., and Dietz, W., 'Annual Medical Spending Attributable to Obesity: Payer- And Service-Specific Estimates', *Health Affairs*, vol. 28, 5 (2009), pp. w822-w831.

The annual costs associated with overweight and obesity are much greater than these estimates due to indirect costs associated with reduced functionality. In the UK, premature deaths attributable to obesity lead to the annual loss of around 45,000 years of working life and sickness absence attributable to obesity is estimated at between 15.5 million and 16 million days per year. Lost earnings attributable to obesity amount to £2.35-2.6 billion per year, of this £1.05-1.15 billion is due to premature mortality attributable to obesity and £1.3-1.45 billion due to lost earnings from certified sickness⁴¹. Obese people are much less likely to be in employment than those of healthy weight, with associated welfare costs estimated at £1-6 billion⁴². Wage penalties of up to 18% have also been associated with obesity⁴³.

In developing countries, increasing rates of obesity and chronic disease are particularly worrying because they are emerging whilst undernutrition and infectious disease still pose a threat. Thus developing nations face the 'double burden' of under- and overnutrition inflicted by an 'overlapping health transition'⁴⁴. Evidence of nutritional transition, with a degree of stunting combined with an increasing prevalence of overweight, has been identified within some of the poorest countries of sub-Saharan Africa, to those in South America, the Middle East and South-East Asia⁴⁵. WHO

⁴¹ House of Commons Health Committee, *Obesity*, Third Report of Session 2003-04, HC 23-I, May 2004, as cited in Department of Health, *An Update on the Government's Approach to Tackling Obesity*, (London: National Audit Office, 2012), p. 10 and Department of Health, *Healthy Lives, Healthy People: A Call to Action on Obesity in England*, (London: Her Majesty's Stationary Office, 2011), pp. 16-17.

⁴² McCormick, B. and Stone, I., 'Economic Cost of Obesity and the Case for Government Intervention', *Obesity Reviews*, vol. 8, (2007), pp. 161-4, as cited in Department of Health, *An Update on the Government's Approach to Tackling Obesity*, (London: National Audit Office, 2012), p. 10.

⁴³ Organisation for Economic Co-ordination and Development, *Obesity and the Economics of Prevention: Fit not Fat: Executive Summary*, (Paris: OECD Publishing, 2010), p. 17.

⁴⁴ Custodio, E., Descalzo, M. A., Roche, J., Molina, L., Sánchez, I., Lwanga, M., Torres, A. M., Fernández-Zincke, E., Bernis, C., Villamor, E., and Baylin, A., 'The Economic and Nutrition Transition in Equatorial Guinea Coincided with a Double Burden of Over- And Under Nutrition', *Economics and Human Biology*, vol. 8, 1 (2010), pp. 80-7; Osmani, S. and Sen, A., 'The Hidden Penalties of Gender Inequality: Fetal Origins of Ill-Health', *Economics and Human Biology*, vol. 1, 1 (2003), pp. 105-21.

⁴⁵ Popkin, B. M., Adair, L. S., and Ng, S. W., 'Global Nutrition Transition and the Pandemic of Obesity in Developing Countries', *Nutrition Reviews*, vol. 10, 1 (2011), pp. 3-21; Mattei, J., Malik, V., Wedick, N. M., Campos, H., Spiegelman, D., Willett, W., and Hu, F. B., 'A Symposium and Workshop Report from the Global Nutrition and Epidemiologic Transition Initiative: Nutrition Transition and the Global Burden of Type 2 Diabetes', *British Journal of Nutrition*, vol. 108, 7 (2012), pp. 1325-35; Popkin, B. M., 'An Overview on the Nutrition Transition and its Health Implications: the Bellagio Meeting', *Public Health Nutrition*, vol. 5, 1a (2002), pp. 93-103.

recognises that 65% of the world's population now live in countries where overweight and obesity kills more people than underweight⁴⁶.

1.1.3. Causes and Prevention of Obesity

When rising rates of obesity first began to be recognised there was a, '...temptation to blame the individual for a lack of willpower'⁴⁷. Those who became overweight were failing to take responsibility for their health, consuming too much and doing too little. Yet it is now recognised that there are:

...adaptive biological mechanisms which limit weight loss after weight gain and thereby in part account for the continuing epidemic despite the widespread desire to slim⁴⁸

Furthermore, it is now appreciated that individuals are incapable of measuring their diet with sufficient accuracy to detect imbalance. On average, weight gain is caused by an energy surplus of just 10-20 kcal per day⁻¹ – less than 1% of normal daily intake and expenditure – whereas we can rarely be confident of measuring energy intake within 500 kcal per day⁻¹⁴⁹. The inherent difficulties associated with losing weight have placed more emphasis on obesity prevention rather than cure; however, the time-delay in the impact of preventative strategies means that treatment cannot be ignored.

The scale of global trends in obesity and the severity of their implications emphasise:

The problem is so severe that an overwhelming medical crisis is inevitable unless the problem is seen as a huge multidimensional issue which requires everybody to change their policies and practice. This means that it is no longer reasonable to simply specify the individual changes needed but now every branch of society has to be involved if we are to avoid an overwhelming financial and societal burden⁵⁰

Fortunately, many policy makers, at least in the developed world, do appear to have taken this message on board. The Foresight Report stated categorically:

⁴⁶ 'Obesity and Overweight: Factsheet No. 311', *World Health Organisation*, accessed 14 March 2014, www.who.int/mediacentre/factsheets/fs311/en/#

⁴⁷ James, W. P. T., 'The Epidemiology of Obesity: The Size of the Problem', *Journal of Internal Medicine*, vol. 263, 4 (2008), p. 336

⁴⁸ James, W. P. T., 'The Epidemiology of Obesity: The Size of the Problem', *Journal of Internal Medicine*, vol. 263, 4 (2008), p. 336.

⁴⁹ James, W. P. T., 'The Epidemiology of Obesity: The Size of the Problem', *Journal of Internal Medicine*, vol. 263, 4 (2008), p. 343.

⁵⁰ James, W. P. T., 'The Epidemiology of Obesity: The Size of the Problem', *Journal of Internal Medicine*, vol. 263, 4 (2008), p. 347.

The evidence is very clear that policies aimed solely at individuals will be inadequate and that simply increasing the number or type of small scale interventions will not be sufficient to reverse this trend. Significant effective action to prevent obesity at a population level is required⁵¹

This advice formed the bedrock of the UK Government's approach towards tackling obesity in the White Paper, *Healthy Lives, Healthy People: Our Strategy for Public Health in England*, published in November 2010⁵².

Determining policies to prevent obesity depends on understanding the causes of the problem, evaluating key levers and then identifying suitable options to change them. To this end, the Foresight Report created an 'obesity system map' illustrating the interplay between 108 variables that directly or indirectly influence energy imbalance and the relative strength of their impact⁵³. Based on this, the Foresight Report emerged with a pivotal and comprehensive message:

The causes of obesity are extremely complex encompassing biology and behaviour, but set within a cultural, environmental and social framework. There is compelling evidence that humans are predisposed to put on weight by their biology. This has previously been concealed in all but a few but exposure to modern lifestyles has revealed it in the majority. Although personal responsibility plays a crucial part in weight gain, human biology is being overwhelmed by the effects of today's 'obesogenic' environment, with its abundance of energy dense food, motorised transport and sedentary lifestyles. As a result, the people of the UK are inexorably becoming heavier simply by living in the Britain of today. This process has been coined 'passive obesity'. Some members of the population, including the most disadvantaged, are especially vulnerable to the conditions⁵⁴

In other words:

...for an increasing number of people, weight gain is the inevitable – and largely involuntary – consequence of exposure to a modern lifestyle. This is not to dismiss personal responsibility altogether, but to highlight a reality: that the forces that drive obesity are, for many people, overwhelming⁵⁵

These conclusions led Foresight to recommend that preventing obesity depends upon:

...a broadly based, integrated system...in which social and individual priorities favour healthy behaviours and where underlying biological mechanisms to control body weight are continually reinforced...To be successful, a comprehensive long-term strategy to

⁵¹ Foresight, Government Office for Science, *Tackling Obesities: Future Choices: Summary of Key Messages*, (London: Department of Innovation Universities and Skills, 2007), p. 2.

⁵² Department of Health, *White Paper: Healthy Lives, Healthy People: Our Strategy for Public Health in England*, (Norwich: Her Majesty's Stationary Office, 2010), as cited in Department of Health, *An Update on the Government's Approach to Tackling Obesity*, (London: National Audit Office, 2012), p. 5.

⁵³ Foresight, Government Office for Science, *Tackling Obesities: Future Choices*, 2nd edn., (London: Department of Innovation Universities and Skills, 2007), pp. 90-1.

⁵⁴ Foresight, Government Office for Science, *Tackling Obesities: Future Choices: Summary of Key Messages*, (London: Department of Innovation Universities and Skills, 2007), p. 2.

⁵⁵ Foresight, Government Office for Science, *Tackling Obesities: Future Choices*, 2nd edn., (London: Department of Innovation Universities and Skills, 2007), p. 5.

tackle obesity must act in two complementary ways to achieve and maintain a healthy population weight distribution. First, an environment that supports and facilitates healthy choices must be actively established and maintained. Second, individuals need to be encouraged to desire, seek and make different choices...⁵⁶

Recommended interventions included: providing healthy school meals; improving knowledge of the importance of a healthy lifestyle; creating cycle lanes; controlling food advertising; introducing congestion charging; promoting healthy working environments, leading by example in the public sector; and maintaining and regenerating green areas for walking and activity⁵⁷.

1.1.4. Conclusion

In his personal chapter of his self-edited tome, *The Oxford Handbook of the Social Science of Obesity*, Cawley states:

For complex issues such as obesity, no single discipline has all of the answers to important questions. If one wishes to understand obesity, there is much to learn from many disciplines, including sociology, epidemiology, and psychology⁵⁸

He neglects to add history to this list. In the pivotal message of the Foresight Report, cited above, the effect of an obesogenic environment on biology is described as having previously been concealed 'in all but a few' – it is the responsibility of historians to identify those few, determine how few they really were, and highlight the origins of our current obesogenic environment. This is the ambition of this thesis.

In Harris' review of *Insecurity, Inequality and Obesity in Affluent Societies*, he concludes that the book stresses, '...we need to search for the origins of today's obesity patterns in earlier periods'⁵⁹. The OECD acknowledges:

...weight [has] been increasing since the 18th century in many of the current OECD countries, as income, education and living conditions [have] gradually improved over time⁶⁰

⁵⁶ Foresight, Government Office for Science, *Tackling Obesities: Future Choices*, 2nd edn., (London: Department of Innovation Universities and Skills, 2007), pp. 119-22.

⁵⁷ Foresight, Government Office for Science, *Tackling Obesities: Future Choices*, 2nd edn., (London: Department of Innovation Universities and Skills, 2007), p. 125.

⁵⁸ Cawley, J., 'The Economics of Obesity', in Cawley, J. (ed.), *The Oxford Handbook of the Social Science of Obesity*, (New York & Oxford: Oxford University Press, 2011), p. 120.

⁵⁹ Harris, B., 'Book Review: Insecurity, Inequality and Obesity in Affluent Societies, A. Offer, R. Pechey, S. Ulijaszek (eds.). Oxford University Press, Oxford (2012), ISBN: 978-0-19-726498-0', *Economics and Human Biology*, vol. 11, 3 (2013), p. 401.

⁶⁰ Organisation for Economic Co-ordination and Development, *Obesity and the Economics of Prevention: Fit not Fat: Executive Summary*, (Paris: OECD Publishing, 2010), p. 16.

In order to implement comprehensive policies to tackle the current obesity epidemic the original sources of energy surplus need to be identified, not just those that have accelerated rates of increase in obesity in the last thirty-five years. Komlos and Brabec agree, arguing:

...before we can devise appropriate policy measures to counter the trend, it would be useful to know more about its development over time⁶¹

Furthermore, a historical approach towards assessing obesity may prove useful because, as Sørensen *et. al.* have suggested,

...the historical approach takes advantage of the fact that time has passed and that information about what caused the changes may have been stored in accessible and interpretable ways⁶²

Introducing a new perspective towards the causes of obesity, based on historical evidence, can emphasise new levers for change.

Examining the emergence of obesity in nineteenth century Britain is important to determine both whether the causes of obesity and the strength of their role have remained consistent through time, at different levels of economic development. This is something that Foresight's 'obesity system map' does not refer to but seemingly assumes. It is something that is important to clarify because the mid-term review of *Tackling Obesities* highlighted that, '...the Report has not only had impact in the UK, but also internationally'⁶³. To date the Report has been used to inform policy in Australia and America, countries of similar level of economic development to the UK, but could it be used to inform policy in developing countries? This thesis does not answer this question directly, but by examining the emergence of a more obesogenic environment in the past, and the effect of this on biology, causes of obesity prior to modern levels of development are highlighted.

⁶¹ Komlos, J. and Brabec, M., 'The Transition to Post Industrial BMI Values in the United States', in Offer, A., Pechey, R., and Ulijaszek, S. (eds.), *Insecurity, Inequality and Obesity in Affluent Societies*, (Oxford: For the British Academy by Oxford University Press, 2012), p. 141.

⁶² Sørensen, T. I. A., Rokholm, B., and Ajslev, T. A., 'The History of the Obesity Epidemic in Denmark', in Offer, A., Pechey, R., and Ulijaszek, S. (eds.), *Insecurity, Inequality and Obesity in Affluent Societies*, (Oxford: For the British Academy by Oxford University Press, 2012), p. 173.

⁶³ Foresight, Government Office for Science, *Tackling Obesities: Future Choices: Mid-Term Review*, (London: Foresight, 2012), p. 24.

This also enables this thesis to determine whether the ‘double burden’ of currently developing countries, suffering simultaneously from the ravages of under- and overnutrition, had historical antecedents. Lessons may be learnt from the impact of economic development on obesity and health in the past, aiding modern nations to develop in more sustainable ways. Again, achieving this is beyond the scope of this thesis, but it introduces a research agenda for the future.

The history of the emergence of obesity in Britain during the second half of the nineteenth century can provide insights into our current global obesity epidemic in the same way as the other social sciences referred to by Crawley above. Furthermore, the scale of our current obesity problem and the gravity of its implications ensures that methods of advancing our understanding of the complexity of the causes of obesity cannot be ignored.

1.2. How Have Historians Studied Obesity Previously?

Given the value of studying the historical origins of our current obesity epidemic, outlined above, it is somewhat surprising that historians have not paid more attention to obesity trends prior to the second half of the twentieth century, and more specifically, since the 1980s. In recent years obesity has been one of the most recurrent themes in the journal *Economics and Human Biology*. Volume 12, issue 1 (January 2014) was dedicated to obesity and the consequences of obesity and volume 10, issue 4 (December 2012) was dedicated to ‘Obesity and the Family across the Life Course’, yet despite the journal’s scope not being bound by temporal limitations, the earliest data used in either of these issues was from 1979⁶⁴. Obesity is referred to twelve times in the index of *The Changing Body* but it is defined as a ‘recent

⁶⁴ *Economics and Human Biology*, vol. 12, 1 (2014) and *Economics and Human Biology*, vol. 10, 4 (2012).

phenomenon' and mainly used to discuss the future implications of continued improvement in nutritional status⁶⁵.

In the main, historical approaches to the study of obesity have tended to adopt a socio-cultural framework and describe changing attitudes to body shape, beauty and diet as well as the lives of those that promoted them⁶⁶. Although motivated by growing interest in obesity, these contributions to the field are unable to systematically explain trends in body weight. As a consequence they are of little help to policy makers trying to determine the causes of obesity.

Zweiniger-Bargielowska has adopted a more rigorous qualitative approach, tracking the rise in obesity and 'reducing culture' in Britain from the last decades of the nineteenth century until the Second World War using evidence from life reformers, physical culture promoters, doctors, public health campaigners and policy makers. She highlights that by the end of the nineteenth century corpulence was already being attacked as a 'countertype' and a subversion of classical notions of beauty. She notes that the first popular dieting manuals emerged in the second half of the nineteenth century. At the same time, medical doctors noticed a rise in obesity amongst their middle-class patients and identified a link between overweight and mortality, offering various medical cures. Concurrently, 'quack' remedies for obesity began appearing. By the early twentieth century life reformers were promoting exercise regimes to tackle the effects of obesity⁶⁷.

⁶⁵ Floud, R., Fogel, R. W., Harris, B., and Hong, S. C., *The Changing Body: Health, Nutrition, and Human Development in the Western World Since 1700*, (Cambridge: Cambridge University Press, 2011), pp. 368-9.

⁶⁶ For example, see: Hau, M., 'The Normal, the Ideal, and the Beautiful', in Sappol, M. and Rice, S. P. (eds.), *A Cultural History of the Human Body: In the Age of Empire*, vol. 5, (Oxford: Berg, 2010), pp. 149-69; Gilman, S. L., *Fat: A Cultural History of Obesity*, (Cambridge: Polity, 2008); Stearns, P. N., *Fat History: Bodies and Beauty in the Modern World*, (New York & London: New York University Press, 2002); Schwartz, H., *Never Satisfied: A Cultural History of Diets, Fantasies and Fat*, (New York and London: Free Press, 1986); Waller, D., *The Perfect Man: The Muscular Life and Times of Eugen Sandow, Victorian Strongman*, (Brighton: Victorian Secrets, 2011).

⁶⁷ Zweiniger-Bargielowska, I., 'The Culture of the Abdomen: Obesity and Reducing in Britain, circa 1900-1939', *Journal of British Studies*, vol. 44, 2 (2005), pp. 239-73; Zweiniger-Bargielowska, I., *Managing the Body: Beauty, Health and Fitness in Britain, 1880-1939*, (Oxford & New York: Oxford University Press, 2010).

Although Zweiniger-Bargielowska's work is still unable to outline the specific prevalence of historical obesity, by tracing the emergence of reducing culture she is able to speculatively conclude:

The rise of obesity was caused by increased living standards, abundant food, and sedentary lifestyles that emerged in the late nineteenth century. The middle classes above all benefited from these developments and were, not surprisingly, the first social group to experience the negative implications of abundance illustrated by increased obesity and disproportional mortality from heart disease. The imperative of restraint in the context of abundance explains the rise of reducing culture that was part of a wider campaign to raise the standards of health and fitness. Given the massive inequalities in Edwardian Britain and during the interwar years, excess consumption and obesity coincided with widespread poverty and unemployment and hunger⁶⁸

Quantitative assessments of past obesity trends have depended on economic and anthropometric historians. Economic historians have sought to develop models to explain the emergence of obesity. According to rational choice theory, individuals seek to maximise their happiness, or utility, subject to the constraints of their time, budget and biology. This rationale asserts that individuals put on weight because the enjoyment of eating or being sedentary exceeds its costs⁶⁹. It has been argued that this has occurred because technological change has lowered both the real price of food and the expenditure of calories in household and market production⁷⁰.

This rational choice model fails to account for why individuals invest a large amount of time, effort and money in trying to lose weight. Consequently, alternative behavioural economics approaches have been posited which, for example, suggest that time-inconsistencies may explain trends in the growth of body weight. This theory suggests that people put disproportionate influence on immediate costs and benefits

⁶⁸ Zweiniger-Bargielowska, I., 'The Culture of the Abdomen: Obesity and Reducing in Britain, circa 1900-1939', *Journal of British Studies*, vol. 44, 2 (2005), p. 272.

⁶⁹ Cawley, J., 'The Economics of Obesity', in Cawley, J. (ed.), *The Oxford Handbook of the Social Science of Obesity*, (New York & Oxford: Oxford University Press, 2011), pp. 120-37.

⁷⁰ Philipson, T. J., and Posner, R. A., 'The Long-Run Growth in Obesity as a Function of Technological Change', John M. Olin Program in Law & Economics, University of Chicago Law School, 1999, as cited in Philipson, T., 'The World-Wide Growth in Obesity: An Economic Research Agenda', *Health Economics*, vol. 10, 1 (2001), p. 2; Finkelstein, E. A., Ruhm, C. J., and Kosa, K. M., 'Economic Causes and Consequences of Obesity', *Annual Review of Public Health*, vol. 26, 1 (2005), pp. 239-57.

over those that are delayed, so they succumb to a dessert believing that they will start their diet tomorrow, but when tomorrow arrives another dessert looks tasty⁷¹.

The premise of Offer *et. al.*'s recent publication, *Insecurity, Inequality and Obesity in Affluent Societies*, is that a 'welfare regimes' mechanism provides a better economic model for the emergence of obesity⁷². The overarching theme of all the chapters, but particularly that of the editors themselves, is that obesity is a personal response to stress, and stress is more commonly found in market liberal societies because they have a greater degree of economic insecurity⁷³.

Komlos and Baur have previously explored the 'welfare regimes' hypothesis using anthropometric data. They note that despite Americans being the tallest in the world in the second half of the nineteenth century and having now gained one of the highest rates of obesity in the developed world, there are signs that during the twentieth century the average physical stature of Americans did not keep pace with European trends. Average heights of American cohorts born since the mid-twentieth century appear to have stagnated and the heights of those born in the 1960s may have decreased. Whilst they are unable to explain why these trends have emerged, they point to higher levels of socio-economic inequality, an inferior healthcare system and fewer social safety nets in America compared with Western and Northern Europe as possible explanations⁷⁴.

Whilst some of the economic explanations for the rise in body weight have utilised historical data and/or been conducted by academics based in history departments, on the whole they have either been theoretical or relied on modern data

⁷¹ Downs, J. S. and Loewenstein, G., 'Behavioral Economics and Obesity', in Cawley, J. (ed.), *The Oxford Handbook of the Social Science of Obesity*, (New York & Oxford: Oxford University Press, 2011), pp. 138-57.

⁷² Offer, A., Pechey, R., and Ulijaszek, S. (eds.), *Insecurity, Inequality and Obesity in Affluent Societies*, (Oxford: For the British Academy by Oxford University Press, 2012), pp. 199-223.

⁷³ Offer, A., Pechey, R., and Ulijaszek, S., 'Obesity Under Affluence Varies by Welfare Regimes', in Offer, A., Pechey, R., and Ulijaszek, S. (eds.), *Insecurity, Inequality and Obesity in Affluent Societies*, (Oxford: For the British Academy by Oxford University Press, 2012), pp. 199-223.

⁷⁴ Komlos, J. and Baur, M., 'From the Tallest to One of the Fattest: The Enigmatic Fat of the American Population in the 20th Century', *Economics and Human Biology*, vol. 2, 1 (2004), pp. 57-74.

from the last decades of the twentieth century. They provide new methods of conceiving the causes of the rise in obesity but they do not assess its early origins.

There have been very few anthropometric analyses of historical trends in obesity prior to the twentieth century. Komlos and Brabec have suggested that BMI values were already increasing amongst American birth cohorts born at the end of the nineteenth century, which improved the biological well-being of the underweight but also quickly pushed upper-bound BMI values towards dangerous levels. They found that BMI showed creeping changes, rather than a shock, implying that the obesity epidemic is a response to environmental forces⁷⁵.

Costa and Steckel have not attempted to examine historical trends in obesity directly, but their data showed that US Union Army recruits from the mid-nineteenth century had higher levels of central body fat, measured by waist-hip ratio, than World War Two soldiers. They associated this propensity towards centralised adiposity with a higher prevalence of chronic disease mortality and morbidity and suggested that it might be a consequence of fetal undernutrition impacting metabolism⁷⁶. This linked disadvantage with overweight status.

More recently, Bodenhorn has identified height and weight data for middle- to upper-middle class New York legislators serving between 1853 and 1873. He found that 22% of his sample had a BMI value over 26, which he used to label them as overweight. Bodenhorn's small sample size prohibited him from being able to identify statistically significant determinants of an overweight BMI, however he did find that men under the age of 35 had a smaller BMI by approximately one unit, than those aged 40-44 and professionals and proprietors had smaller BMI values than farmers. By comparing his data with Fogel's calculations of height-weight mortality optima, Bodenhorn showed that the BMI of well-off mid-nineteenth century American men was

⁷⁵ Komlos, J. and Brabec, M., 'The Transition to Post Industrial BMI Values in the United States', in Offer, A., Pechey, R., and Ulijaszek, S. (eds.), *Insecurity, Inequality and Obesity in Affluent Societies*, (Oxford: For the British Academy by Oxford University Press, 2012), pp. 141-59.

⁷⁶ Costa, D. L. and Steckel, R. H., 'Long-Term Trends in Health, Welfare, and Economic Growth in the United States', in Steckel, R. H. and Floud, R. (eds.), *Health and Welfare During Industrialisation*, (Chicago & London: University of Chicago Press, 1997), pp. 69-70.

clustered around the modern optimum level, with a handful of notably overweight individuals with heights above 180 cm departing from the mortality optimum⁷⁷.

Thus we see that although there have been few anthropometric analyses of the prevalence of obesity prior to the twentieth century, those that have emerged suggest that a substantial sub-set of the middle- and upper-middle classes may have suffered from obesity in the second half of the nineteenth century. These findings corroborate qualitative assessments of the rise of a reducing culture. Furthermore, trend data suggests that levels of obesity may have been on the rise from at least the last decades of the nineteenth century. The existing literature emphasises that the origins of our current global obesity epidemic should be sought in history.

1.2.1. Limitations: Lack of Nineteenth Century Obesity Data

Bodenhorn's data for well-off New York legislators is unusual in that it combines measures of current net nutritional status for the relatively affluent throughout adulthood. Generally, anthropometric historians have been hampered in their assessment of the origins of the obesity epidemic by a lack of evidence that meets this standard. To study historical trends in obesity depends on evidence that fulfils two demands: firstly, it provides evidence of current net nutritional status; and secondly, it samples those with an energy surplus. An energy surplus does not necessarily depend on wealth: very small degrees of excess will result in weight gain. However obesity cannot occur without access to sufficient resources to exceed subsistence. Early indications that the prevalence of obesity increases at older ages might add a third demand on evidence: that it samples those in middle- and old age.

In the past anthropometric historians have mainly relied on height data from military, prison, slave, school and skeletal records to reconstruct the nutritional conditions of previous populations. More recently, sources of weight data have been

⁷⁷ Bodenhorn, H., 'Height and Body Mass Index Values of Nineteenth-Century New York Legislators', *Economics and Human Biology*, vol. 8, 1 (2010), pp. 121-6. Using: Fogel, R. W., 'Economic Growth, Population Theory, and Physiology: The Bearing of Long-Term Processes on the Making of Economic Policy', *American Economic Review*, vol. 84, 3 (1994), pp. 369-95.

uncovered, again mainly from military and prison sources, which in combination with height data have been used to calculate BMI as a measure of current net nutritional status⁷⁸. These sources overwhelmingly sample the working classes and mainly contribute to analyses of under-nutrition, stunting and deprivation. In 1998 Komlos bemoaned that, 'the available evidence on the upper and middle classes is insufficient' and yet fifteen years later, still not enough has been done to remedy the situation⁷⁹.

Sources of data for the middle and upper classes do exist, as Bodenhorn's evidence reveals. In one of the earliest contributions to British anthropometric history, Floud, Wachter and Gregory analysed the data of 20,000 exclusively upper and upper-middle class recruits to the Royal Military Academy at Sandhurst⁸⁰. Similarly, Komlos has identified individuals of a higher than average socioeconomic stratum entering the West Point Military Academy in America and the Habsburg Military schools⁸¹.

Upper and middle class samples of children and youths can also be found amongst the records of elite schools with expensive fees. Komlos and other authors have assessed the height of boys entering the Stuttgart Carlschule at the end of the eighteenth century and Komlos has also analysed the heights of high social status students entering the French École Polytechnique between 1794 and 1887⁸². Hitchcock, Jackson and Bowles provide anthropometric data for male and female students of American elite colleges⁸³.

⁷⁸ For a summary of previous anthropometric history sources and topics see: Steckel, R. H., 'Heights and Human Welfare: Recent Developments and New Directions', *Explorations in Economic History*, vol. 46, 1 (2009), pp. 1-23.

⁷⁹ Komlos, J., 'Shrinking in a Growing Economy? The Mystery of Physical Stature During the Industrial Revolution', *The Journal of Economic History*, vol. 58, 3 (1998), pp. 793.

⁸⁰ Floud, R., Wachter, K. and Gregory, A., *Height, Health and History: Nutritional Status in the United Kingdom, 1750-1980*, (Cambridge: Cambridge University Press, 1990).

⁸¹ Komlos, J., 'The Height Increments and BMI Values of Elite Central European Children and Youth in the Second Half of the 19th Century', *Annals of Human Biology*, vol. 33, 3 (2006), pp. 309-18; Komlos, J., 'The Height and Weight of West Point Cadets: Dietary Change in Antebellum America', *The Journal of Economic History*, vol. 47, 4 (1987), pp. 897-927.

⁸² Komlos, J., Tanner, J. M., Davies, P. S. W., and Cole, T., 'The Growth of Boys in the Stuttgart Carlschule, 1771-93', *Annals of Human Biology*, vol. 19, 2 (1992), pp. 139-52; Komlos, J., 'The Nutritional Status of French Students', *The Journal of Interdisciplinary History*, vol. 24, 3 (1994), pp. 493-508.

⁸³ Hitchcock, E., 'Anthropometric Statistics of Amherst College', *Publications of the American Statistical Association*, vol. 3, 24 (1893), pp. 588-99; Jackson, C. M., 'Physical Measurements of the Female Students at the University of Minnesota with Special Reference to Body Build and Vital Capacity', *American Journal of Physical Anthropology*, vol. 12, 3 (1929), pp. 365-413; Bowles, G. T., *New Types of*

Another key source of anthropometric data for the upper classes has stemmed from nineteenth century passport applications, restricted as they were to those who could afford, and had motive for, international travel. The differential height of wealthy men and women within passport applications has been a recent research interest of Sunder⁸⁴.

Unfortunately, despite sampling the middle- and upper classes that might have been more capable of achieving an energy surplus, none of these sources has been able to contribute to an analysis of obesity trends for two main reasons:

Firstly, some of the sources only provide height data rather than measures of current net nutritional status such as weight or waist circumference. This means that whilst they have often managed to effectively outline a nutritional advantage amongst elites in comparison to lower socioeconomic groups based on net nutritional status during the growing years, they have been unable to comment on the short-term nutritional status of the well-off after full development.

Secondly, samples of officer recruits and students, which form the majority of the current evidence available for the upper classes, provide anthropometric data for children, adolescents and young adults. These youths are unlikely to have completed their growing period, complicating the analysis of their body shape. Moreover, it has been identified that body weight increases with age, especially after midlife, and therefore samples of young persons are unlikely to identify the true prevalence of overweight within the broader population. This may partly explain why overweight BMIs have not been often identified within existing sources of anthropometric data for the elites. Of course another option is that these historical population were simply not fat, although this conflicts with the identification of overweight amongst older members of the middle classes from a variety of sources cited above.

Old Americans at Harvard: And at Eastern Women's Colleges, (Cambridge: Harvard University Press, 1932).

⁸⁴ Sunder, M., 'The Height Gap in 19th-Century America: Net-Nutritional Advantage of the Elite Increased at the Onset of Modern Economic Growth', *Economics and Human Biology*, vol. 11, 3 (2013), pp. 245-58; Sunder, M., 'Upward and Onward: High-Society American Women Eluded the Antebellum Puzzle', *Economics and Human Biology*, vol. 9, 2 (2011), pp. 119-220.

1.3. How Will This Thesis Examine Obesity?

This thesis introduces a new and original anthropometric data source – tailors’ records – with which to analyse the prevalence of overweight and obesity amongst the middle- and upper classes in nineteenth century Britain. Waist circumference, hip circumference and waist-hip ratio are used to gauge the prevalence of historical central adiposity, whilst inside and outside leg measurements are used as a proxy for net nutritional status during the growing years.

Two specific tailors’ measurement books are colonised within this thesis: the first from Morris & Son’s tailors, drapers and dressmakers in Barmouth, North West Wales covering the period from 1890 to 1896; the second from Henry Poole & Co., luxury tailors of Savile Row in central London, with measurements from 1840 to 1904.

During the second half of the nineteenth century Barmouth experienced an economic transformation, adapting from a small port to a seaside resort. Morris & Son’s customers reflect this transition, stemming both from Barmouth’s ‘traditional’ primary industries of farming, mining and fishing, as well as the growing service and professional sectors supplying Barmouth’s new influx of tourists. Consequently, Morris & Son’s customers range from amongst the lower- to upper-middle classes.

The anthropometric measurements of Morris & Son’s customers provide an opportunity to examine the accuracy of previous common assumptions that:

To the extent that obesity existed at all [in pre-modern times], it was reserved for the upper class⁸⁵

In particular, the economic transition in Barmouth provides an opportunity to explore the effect of economic development on the propensity to store fat abdominally.

Analyses will seek to identify whether Morris & Son’s customers show signs that they suffered from both stunting and overnutrition and provide a historical antecedent for the ‘double burden’ faced by currently developing nations.

⁸⁵ Wisman, J. D. and Capehart, K. W., ‘Creative Destruction, Economic Insecurity, Stress, and Epidemic Obesity’, in Offer, A., Pechey, R., and Ulijaszek, S. (eds.), *Insecurity, Inequality and Obesity in Affluent Societies*, (Oxford: For the British Academy by Oxford University Press, 2012), p. 19.

In contrast, Henry Poole & Co.'s customers can broadly be described as elite, although those in the particular record book sampled tended to be professionals and landowners rather than noblemen. The measurement book of this exclusive and expensive tailor provides a sample of anthropometric measurements for the upper classes whose consumption was in effect unconstrained by economic limitations. It provides an opportunity to examine the effect of wealth on health, to determine the prevalence and determinants of obesity in the second half of the nineteenth century.

The anthropometric data provided by these two tailors' measurement books has been nominally linked with census records; birth, marriage and death indices; probate records and other sources in order to elucidate variables such as age, address, occupation, and longevity, with which to explain the prevalence of obesity.

Prior to these anthropometric analyses, contemporary doctor's tracts, dieting manuals and mortality statistics have been used to examine the extent to which contemporaries identified a threat from overweight and obesity and perceptions towards those who became fat. There is a common assumption that historically, 'big was beautiful', that:

In the nineteenth century, thinness was a signal of malnutrition and tuberculosis, and fatness a signal of prosperity; stout men and women were therefore considered handsome and stout women beautiful and sexy⁸⁶

Yet Zweniger-Bargielowska has already suggested that this may be an erroneous perception, that overweight was a countertype that contradicted masculine ideals⁸⁷. Her evidence stems mainly from the first half of the twentieth century and to a lesser degree the last decades of the nineteenth century. In this thesis, qualitative data from earlier in the nineteenth century will be used to examine whether her conclusions apply to earlier periods.

⁸⁶ Philipson, T., 'The World-Wide Growth in Obesity: An Economic Research Agenda', *Health Economics*, vol. 10, 1 (2001), p. 2. See also: Cassell, J., 'Social Anthropology and Nutrition: A Different Look at Obesity in America', *Journal of American Dietetic Association*, vol. 95, 4 (1995), pp. 424-5.

⁸⁷ Zweniger-Bargielowska, I., 'The Culture of the Abdomen: Obesity and Reducing in Britain, circa 1900-1939', *Journal of British Studies*, vol. 44, 2 (2005), pp. 239-73; Zweniger-Bargielowska, I., *Managing the Body: Beauty, Health and Fitness in Britain, 1880-1939*, (Oxford & New York: Oxford University Press, 2010).

Overall this thesis aims to promote a more nuanced interpretation of Britain's epidemiological transition. Rather than conceptualising obesity and chronic disease morbidity and mortality as twentieth century problems that emerged after the threat of infectious diseases had waned, this thesis aims to seek the historical origins of obesity and challenge whether chronic diseases are a modern phenomenon.

As the OECD have emphasised:

A complex relationship exists between socio-economic conditions and obesity. For example, this relationship changes as economies become more developed, with poorer people more likely to be affected in rich countries⁸⁸

There is a critical moment in the epidemiological or nutritional transition which, to date, has been relatively ignored. During the economic development process the social gradient of obesity reverses. Where at one stage obesity is restricted to the highest echelons of society, by another it predominates amongst the lower classes. Policy makers have failed to target this point of juncture as a source of explanation for the current obesity crisis. Perhaps they are missing something. If this crossroad was avoided, obesity could be restricted to the rich margins of society and with it the implications of obesity would be greatly reduced. This seems unlikely to be achievable. Certainly this thesis cannot pinpoint the surely complicated causes of the reversal in the social gradient of obesity. However, by examining the middle classes in economic transition and those who were already very wealthy towards the end of Britain's Industrial Revolution, this thesis aspires to illuminate the period when affluence began to reshape the British human form.

The thesis is organised as follows. Chapter 2 outlines 'Graves' dangers' in nineteenth century Britain, canvassing contemporary medical and popular perceptions towards overweight and chronic disease. The tailors' records are then introduced in Part I. Chapter 3 outlines the advantage of tailors' records as a new anthropometric source and details sample selection methods and biases. Chapter 4 analyses the

⁸⁸ Organisation for Economic Co-ordination and Development, *Obesity and the Economics of Prevention: Fit not Fat: Executive Summary*, (Paris: OECD Publishing, 2010), p. 17.

sample of Morris & Son and Henry Poole & Co. customers, providing a historical context to the nature of individuals in Barmouth and on Savile Row and then defining the samples by their geographical origins, age, occupations, social status and social mobility. Part II focuses on early life health jeopardy. Chapter 5 introduces the use of lengths and girths as anthropometric variables and outlines their epidemiological foundations and historical precedent. Chapter 6 moves on to compare the early life waists, hips and waist-hip ratio of Morris & Son and Henry Poole & Co. customers and uses these to identify signs of disadvantage during development amongst Morris & Son's clientele. Chapter 7 considers Morris & Son's anthropometric measures in light of Barmouth's economic history and in comparison to alternative data for central adiposity amongst the American military. It is posed that Barker's hypothesis may be relevant to Morris & Son's customers whose high levels of central adiposity in early adulthood correlate to a shorter longevity. Part III then considers the accumulation of body fat over the life course and its consequences for health and longevity. Chapter 8 suggests methods of defining overweight and obesity based on waist circumference and waist-hip ratio cut-off points suggested by WHO. These are then used to identify the prevalence of overweight and obesity amongst Morris & Son and Henry Poole & Co. customers and their trends by age and longitudinally. Chapter 9 explores potential causes of later life obesity, examining the relationship between variance in the customers' central adiposity and their wealth, occupations and address. Chapter 10 assesses the health repercussions of later life obesity in the second half of the nineteenth century and evaluates what constituted optimal body shape in the past. Finally, Chapter 11 provides a conclusion and identifies avenues for further research in the future.

Chapter 2. Chronic Diseases and Obesity in Britain During the Nineteenth Century

Think not, ye candidates for health,
That aught can gain the wish'd-for prize;
(or pill or potion, power or wealth)
But temperance and exercise.

How can a magic box of pills,
"Syrup: or "vegetable juice",
Eradicate at once those ills
Which years of luxury produce?

Your health the doctor may restore,
When by intemperance 'tis lost;
But you yourself may do still more,
Escape much pain and save much cost.

Let not the splendour of a feast
Relax your well-form'd resolution;
The dish most savoury to the taste,
Is hostile to the constitution.

But if you've err'd in thoughtless youth,
By strong temptation led astray;
Oh! listen to the voice of Truth,
Who now to health points out the way.

For be assur'd, not health alone
Receives from hence its certain source;
But that each dainty, all must own,
From temperance acquires new force.

To epicures, my friend, like you,
Critics in pleasure! I appeal;
Whether, like me, they ever knew
The lux'ry of a temperate meal.

Who but an idiot then would chuse
A wretched Invalid to live?
And, deaf to reason, would refuse
The blessings Temp'rance has to give.

Richard Graves, 'The Valetudinarian', 1804

2.1. Introduction: Graves' Dangers

The sentiments expressed by Richard Graves in *The Valetudinarian* remain salient today¹. Graves connected indulgence with ill-health, vitality with 'temperance and exercise'. His audience was the wealthy who could afford to over-eat. Two hundred years later, Britain is awash with cheap calories and Graves' dangers have been democratised. Today, chronic ill-health caused by obesity preoccupies policy makers and fills hospital beds and doctors' waiting rooms. In contrast, historians remain stubbornly silent on the matter. Under nutrition was the pre-eminent nineteenth century problem, leading historians to concentrate on the infectious diseases that flourished in this environment. But obesity has a history, as *The Valetudinarian* testifies. This thesis shines a spotlight on the historical evolution and impact of obesity-related health risk over the nineteenth century.

In the mid-nineteenth century infectious diseases were the single greatest killer. The General Register Offices (GRO) were established in London in 1837 as a government statistical bureaucracy which compiled the nation's vital statistics and perpetuated the public health movement². GRO data shows that infectious diseases accounted for 32.1 percent and 33.8 percent of all male and female deaths respectively between 1848 and 1872. However, by 1947 only 7.1 percent of male deaths and 5.8 percent of female deaths were attributable to infectious diseases. One disease stood out: restricting respiratory tuberculosis was responsible for one quarter of the reduction in male deaths from infectious diseases and a third of that of women³.

These statistics are striking and between the 1960s and 1980s, they contributed to McKeown's arguments attributing the modern rise of population to the

¹ Graves, R., 'The Valetudinarian', *The Invalid: With the Obvious Means of Enjoying Health and Long Life*, (London: R. Phillips, 1804), pp. 79-81.

² Szreter, S., *Fertility, Class and Gender in Britain 1860-1940*, (Cambridge: Cambridge University Press, 1996), pp. 76-128; Szreter, S., *The General Register Office of England and Wales and the Public Health Movement 1837-1914: A Comparative Perspective*, (Oxford: Oxford University Press for the Society for the Social History of Medicine, 1991).

³ Logan, W. P. D., 'Mortality in England and Wales from 1848 to 1947', *Population Studies*, vol. 4, 2 (1950), pp. 138-9.

secular decline in mortality⁴. His interpretation has since been accused of overemphasising the role of mortality compared with fertility and being too economically deterministic, ignoring the role of clinical medicine, public health and distributional variation⁵. Whilst McKeown credited sanitary reforms and changes in the character of particular diseases (specifically scarlet fever) for some of the decline in mortality from micro-organisms, controversially he argued that half of the total reduction in mortality was due to increased standards of living and in particular, improved diets reducing tuberculosis mortality⁶.

Since McKeown's controversial account of the fall in the rate of infectious diseases over the second half of the nineteenth century alternative explanations for the mortality decline have been posed. Height data bolsters McKeown's theory that there was an improvement in nutritional status during the second half of the nineteenth century⁷. Szreter has argued that rather than nutrition, public health provision and municipal sanitation measures achieved by provincial voices and local government were the principle causes of the mortality decline⁸. And Woods stated that, 'the simplest explanation is that...disease became less virulent and that this was the principle reason for a reduction in the risk of the disease developing and leading to early death'⁹.

Reaction to McKeown has generated a very narrow debate. Historians have become fixated with the role of infectious diseases in the decline of nineteenth century mortality and failed to assess other important features of the mortality context. In

⁴ McKeown, T. and Record, R. G., 'Reasons for the Decline in Mortality in England and Wales During the Nineteenth Century', *Population Studies*, vol. 16, 2 (1962), p. 99.

⁵ Woods, R., *The Population of Britain in the Nineteenth Century*, (Cambridge: Cambridge University Press, 1995), p. 44, and Szreter, S., *Health and Wealth: Studies in History and Policy*, (Rochester, NY: University of Rochester Press, 2005), pp. 36-8.

⁶ McKeown, T. and Record, R. G., 'Reasons for the Decline in Mortality in England and Wales during the Nineteenth Century', *Population Studies*, vol. 16, 2 (1962), pp. 120-1.

⁷ Floud, R., Wachter, K., and Gregory, A., *Height, Health and History: Nutritional Status in the United Kingdom, 1750-1850*, (Cambridge: Cambridge University Press, 1990).

⁸ Szreter, S., *Health and Wealth: Studies in History and Policy*, (Rochester, NY: University of Rochester Press, 2005), pp. 6-7.

⁹ Woods, R., *The Demography of Victorian England and Wales*, (Cambridge: Cambridge University Press, 2000), p. 340.

particular, the role of chronic diseases has been largely overlooked. Woods himself acknowledges that:

...while McKeown was quite justified in stressing the importance of infectious diseases in the nineteenth-century mortality decline, this was done by neglecting the causes to which an increasing number of deaths were assigned: Cancer, Diseases of the Heart, Lung, Stomach and Kidneys...¹⁰

Occasionally chronic diseases have faced scrutiny from historians. For example, chronic diseases have been examined to determine gender variations in mortality. On the whole this has been limited to accounting for inflated twentieth-century male mortality rates, explained by a greater engagement amongst men in activities that exacerbate chronic diseases¹¹. During the nineteenth century, differential mortality is not attributed to chronic diseases and therefore the field neglects their role during this period.

Historians who have analysed morbidity, rather than mortality, have also paid attention to chronic diseases. Riley has explored the sickness of friendly society members, however his data makes it difficult to distinguish between claims made for illness or injury¹². Fogel, Costa, Linares and Su have used Union Army data to analyse rejection rates and pension claims based on chronic disease. They identify that, 'hypertension and ischemic and cerebrovascular heart disease were present in [the] past population'¹³.

¹⁰ Woods, R., *The Demography of Victorian England and Wales*, (Cambridge: Cambridge University Press, 2000), p. 352.

¹¹ Harris, B., 'Gender, Height and Mortality in Nineteenth and Twentieth Century Britain: Some Preliminary Reflections', in Komlos, J. and Baten, J. (eds.), *The Biological Standard of Living in Comparative Perspective*, (Stuttgart: Steiner, 1998), p. 438; Harris, B., 'Gender, Health, and Welfare in England and Wales Since Industrialisation', *Research in Economic History*, vol. 26 (2008), p. 185; Johansson, S. R., 'Welfare, Mortality, and Gender. Continuity and Change in Explanations for Male/Female Mortality Differences Over Three Centuries', *Continuity and Change*, vol. 6, 2 (1991), p. 143, pp. 165-6.

¹² Riley, J. C., *Sickness, Recovery and Death: A History and Forecast of Ill Health*, (London: Macmillan, 1989); Riley, J. C., *Sick, Not Dead: The Health of British Workingmen During the Mortality Decline*, (London: John Hopkins University Press, 1997).

¹³ Costa, D. L., 'The Measure of Man and Older Age Mortality: Evidence from the Gould Sample', *Journal of Economic History*, vol. 64, 1, (2004), p. 23. See also: Fogel, R. W., 'New Sources and New Techniques for the Study of Secular Trends in Nutritional Status, Health, Mortality, and the Process of Ageing', *Historical Methods*, vol. 26, 1 (1993), pp. 5-43; Linares, C. and Su, D., 'Body Mass Index and Health Among Union Army Veterans: 1891-1905', *Economics and Human Biology*, vol. 3, 3 (2005), pp. 367-87.

Finally, Zweiniger-Bargielowska has examined beauty, health and fitness at the end of the nineteenth century and the first half of the twentieth century¹⁴. Her evidence that, ‘the life reform and physical culture movement took off in the early twentieth century’ is emphatic, and she highlights that this was intertwined with, even partly instigated by, a rising concern for obesity and chronic diseases that featured at the end of the nineteenth century¹⁵.

The arguments of this chapter align with those of Zweiniger-Bargielowska and those based on Union Army anthropometric data. In accordance with Costa, this chapter will identify that, ‘although infectious and parasitic diseases were highly visible in the past, the burden of “modern” chronic disease was still there’¹⁶. The ‘culture of the abdomen’ which Zweiniger-Bargielowska identifies mainly in the twentieth century and to a lesser extent in the last decades of the nineteenth century, will be more comprehensively dated to at least the mid-nineteenth century¹⁷.

This chapter will highlight that chronic diseases were an important and dramatically increasing cause of death in the second half of the nineteenth century, despite the dominance and early onset of infectious diseases and the underreporting of chronic diseases. Medical reports identify that by the early decades of the nineteenth century, and certainly by the mid-nineteenth century, doctors were concerned about the rising mortality from chronic diseases and they associated this with lifestyle, in particular obesity.

The recognition that obesity reduced longevity by increasing the likelihood of chronic diseases stimulated a corresponding dietary literature. This was quite radical because it represented a medical shift from curative to preventative health care.

¹⁴ Zweiniger-Bargielowska, I., ‘*The Culture of the Abdomen: Obesity and Reducing in Britain, circa 1900-1939*’, *Journal of British Studies*, vol. 44, 2 (2005), pp. 239-73; Zweiniger-Bargielowska, I., *Managing the Body: Beauty, Health and Fitness in Britain, 1880-1939*, (Oxford & New York: Oxford University Press, 2010).

¹⁵ Zweiniger-Bargielowska, I., *Managing the Body: Beauty, Health and Fitness in Britain, 1880-1939*, (Oxford & New York: Oxford University Press, 2010), p. 61.

¹⁶ Costa, D. L., ‘The Measure of Man and Older Age Mortality: Evidence from the Gould Sample’, *Journal of Economic History*, vol. 64, 1, (2004), p. 18.

¹⁷ Zweiniger-Bargielowska, I., ‘*The Culture of the Abdomen: Obesity and Reducing in Britain, circa 1900-1939*’, *Journal of British Studies*, vol. 44, 2 (2005), pp. 239-73.

Furthermore, it introduced health as a personal responsibility. Whilst there was little (beyond basic hygiene) that lay individuals could do to avoid micro-organisms, chronic diseases depended on lifestyle choices. Another radical implication of this was that it legitimised the provision of medical advice from non-professionals. Banting's *Letter on Corpulence*, first published in 1863, paved the way for popular dieting systems based solely on personal experience. Although unqualified physicians, druggists and 'quacks' had all performed for centuries, dietary tracts were the first health aid that made no claim to medical expertise. In agreement with Zweiniger-Bargielowska, 'it is not argued here that obesity eclipsed the dominant "hungry England" debate but rather that reducing culture provided an important and neglected undercurrent'¹⁸.

The popularity of dietetic manuals in the second half of the nineteenth century stemmed from a slim, and moreover muscular, physique representing both the healthy and aesthetic ideal. The ancients provided the paradigm of beauty, embodied at the end of the nineteenth century by Eugen Sandow, the world-famous body-builder and music hall performer. The preference for classical beauty, combined with the introduction of health as a personal responsibility, ensured that in the second half of the nineteenth century obesity was an indictment on individuals' character and morality.

Collectively this evidence of rising rates of chronic diseases, a corresponding popular dietary literature, and the promotion of a slim and muscular aesthetic ideal, highlight that obesity was much more of a widespread concern during the nineteenth century than has previously been determined. Historians currently argue that obesity only began to disseminate below the upper-most echelons of society and become a major public health problem during the twentieth century. Specifically, Komlos and Brabec time the transition to post-industrial BMI values to post-World War One¹⁹;

¹⁸ Zweiniger-Bargielowska, I., 'The Culture of the Abdomen: Obesity and Reducing in Britain, circa 1900-1939', *Journal of British Studies*, vol. 44, 2 (2005), p. 242.

¹⁹ Komlos, J. and Brabec, M., 'The Trend of BMI Values of US Adults by Deciles, Birth Cohorts 1882-1986 Stratified by Gender and Ethnicity', *Economics and Human Biology*, vol. 9, 3 (2011), pp. 234-50; Komlos, J. and Brabec, M., 'The Transition to Post Industrial BMI Values in the United States', in Offer,

however, qualitative evidence will reveal that by the second half of the nineteenth century contemporaries already worried that obesity had become a middle-class problem.

The purpose of this chapter is to provide a contextual framework justifying the quantitative analysis of the prevalence and trends in nineteenth century obesity to follow in future chapters. It is not proposed here that the sources used provide an exhaustive sweep of all the chronic disease and obesity literature available from the nineteenth century. Nor is it suggested that there were no occasional commentators discussing obesity and chronic disease in earlier centuries²⁰. For example, in the sixteenth century French author Pierre Boistuaue wrote *Histoires prodigieuses*, a collection of tales about monsters and freaks of nature which included the story of a king who used leeches to suck out his excess fat. The king was featured in a chapter dedicated to gluttons and drunkards suggesting the connection between obesity and moral degeneracy²¹. However, despite anomalous references to obesity such as this, it was during the nineteenth century that attention was more generally drawn to overweight and rising rates of chronic diseases. Consequently, the qualitative sources used in this chapter prove that, from particularly the mid-nineteenth century, interest in chronic diseases and obesity had become widespread and medicalised.

Ultimately what is sought is a more nuanced understanding of the 'epidemiological transition'. By identifying that obesity and chronic diseases were a serious middle class problem during the second-half of the nineteenth century, this challenges assumptions about the extent to which economic growth improves population health. In the early modern period only the elites were overweight. Currently obesity is socially segregated towards the lower classes. Historians have

A., Pechey, R., and Ulijaszek, S. (eds.), *Insecurity, Inequality and Obesity in Affluent Societies*, (Oxford: For the British Academy by Oxford University Press, 2012), pp. 141-59.

²⁰ For a brief summary see: Wells, J. C. K., *The Evolutionary Biology of Human Body Fatness: Thrift and Control*, (Cambridge: Cambridge University Press, 2010), pp. 271-4.

²¹ Boistuaue, P., *Histoires prodigieuses*, (A Paris: n.p., 1566), as cited in 'Obesity', *Wellcome Collection*, accessed 7 March 2014, www.wellcomecollection.org/explore/sickness--health/topics/obesity/obesity.aspx

ignored this reversal of the social gradient of obesity but it is crucial and, it will be argued, can be timed to the second half of the nineteenth century. By identifying *who* became obese during industrialisation, this paves the way to ask, and eventually answer, *why* industrial capitalism makes individuals obese. Thus an economic explanation for the dissemination of obesity in Britain during the second-half of the nineteenth century might be relevant to the current developing world threatening to exacerbate the global obesity epidemic.

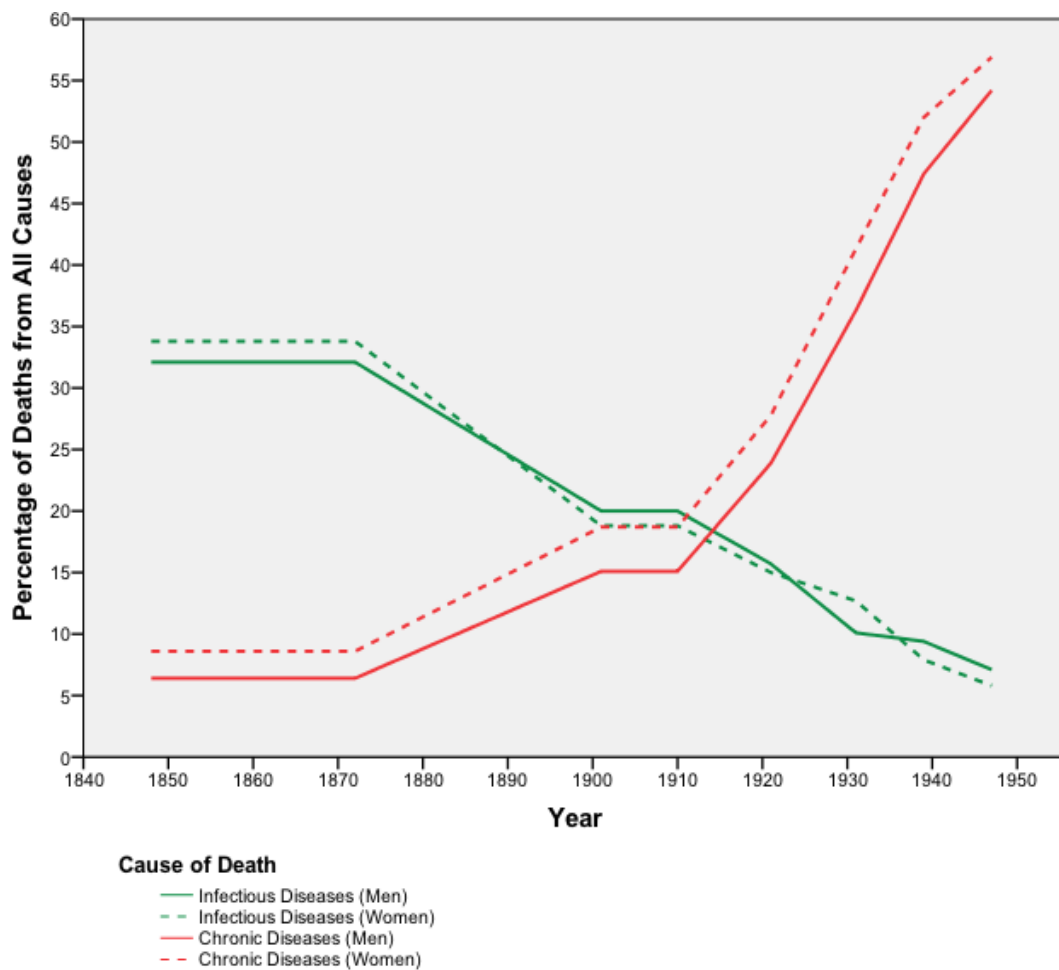
2.2. Chronic Disease Mortality

Trends in mortality from chronic diseases between the mid-nineteenth century and mid-twentieth century are equally worthy of attention as those of infectious diseases. In Figure 1, 'infectious diseases' are taken to be all those labelled as such within Logan's tables using the Registrar-General's statistics; 'chronic diseases' include the categories of 'diseases of the circulatory system', 'cancer' and 'diabetes mellitus'. Although there are many other chronic diseases, they are not easy to distinguish within the Registrar-General's statistics – for example, it is impossible to disentangle chronic respiratory diseases from infectious pneumonia within the category, 'diseases of the respiratory system'. Thus Figure 1 underestimates the true proportion of deaths from chronic disease.

Figure 1 shows that by 1900 the same proportion of women, roughly eighteen percent, died of infectious diseases and diseases of the circulatory system, cancer and diabetes. Amongst men, mortality from these chronic diseases and infectious diseases reached equal proportions by 1915. At all times, it appears that a higher proportion of women died of chronic diseases than men. Over the course of the second-half of the nineteenth century, the rate of decline in mortality from infectious diseases was almost identical to the rate of increase in mortality from these three key chronic diseases for both men and women. Thus if the downward trend in infectious diseases is interesting, the upward trend in chronic diseases is also. To understand

the twentieth century take-off in mortality from chronic diseases, one needs to assess the origins of the growth of chronic diseases in the second-half of the nineteenth century.

Figure 1: Proportion of Male and Female Deaths from Infectious and Chronic Diseases Interpolated Between 1848 and 1947

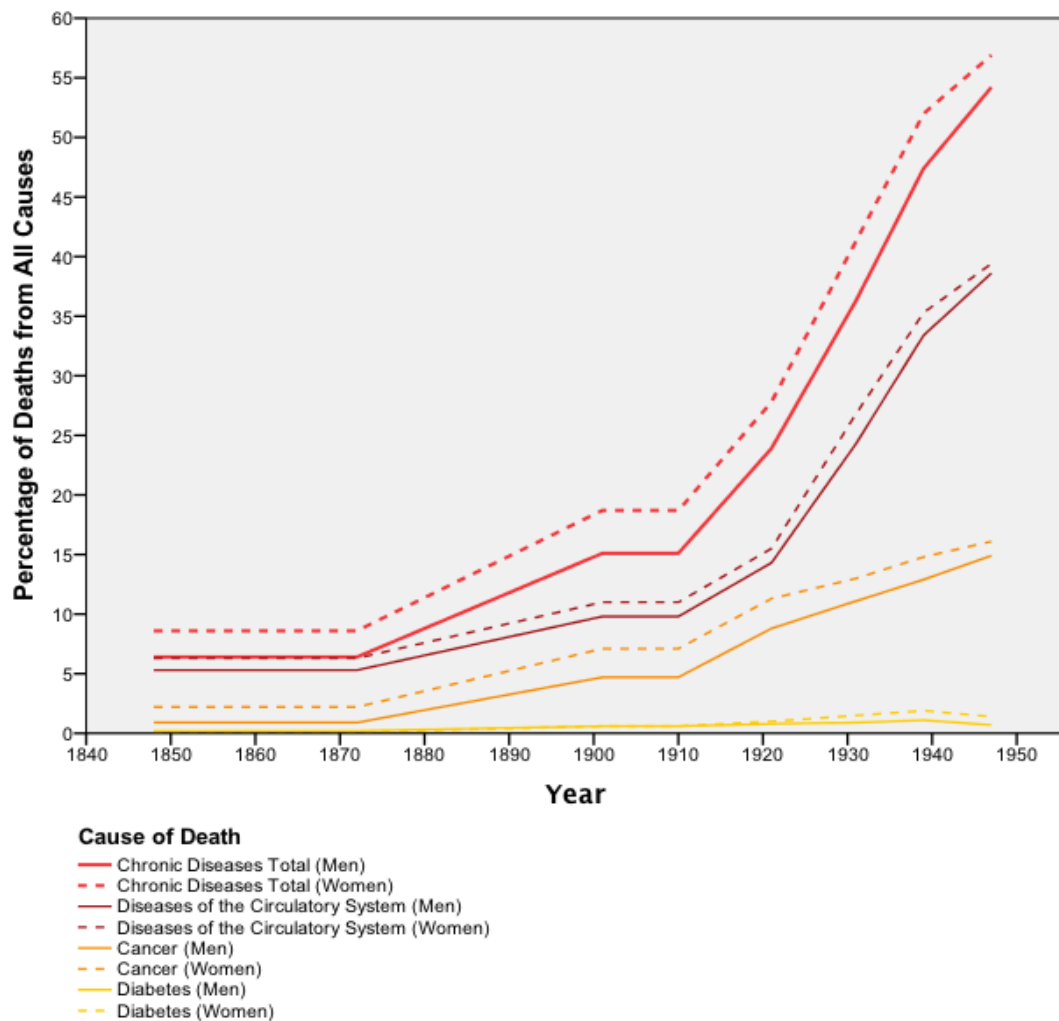


Source: Computed from Logan, W. P. D., 'Mortality in England and Wales from 1848 to 1947', *Population Studies*, vol. 4, 2 (1950), pp. 138-9.

Figure 2 reveals that diseases of the circulatory system accounted for roughly five percent of all deaths until the 1880s, doubling to ten percent by 1900, then fifteen percent by 1920 and forty percent by the 1940s. Until 1920, the rate of increase in mortality from heart disease was equal to the rate of increase in mortality from cancer, but since then the growth in mortality from circulatory disease has risen much more

sharply. Although diabetes is a chronic disease that impedes quality of life, it has never caused more than two percent of male or female mortality. At all times a higher proportion of women than men have died of both cardiovascular disease and cancers.

Figure 2: Proportion of Male and Female Deaths from Chronic Diseases and its Components Interpolated Between 1848 and 1947



Source: Computed from Logan, W. P. D., 'Mortality in England and Wales from 1848 to 1947', *Population Studies*, vol. 4, 2 (1950), pp. 138-9.

Figure 1 and Figure 2 do not account for change in the age structure of the population between 1848 and 1947. It is likely that the rise in mortality from chronic diseases during this period was partly because mortality from early onset infectious

diseases waned and therefore there were more individuals living to old age and becoming susceptible to the ravages of chronic ailments.

Figure 3 proves that the age structure of the population is relevant to the prevalence of chronic diseases because diseases of the circulatory system caused more deaths amongst men and women aged forty-five to sixty-four than any other age group. The highest rates of increased mortality from cardiovascular disease has been amongst those aged over sixty-five. Contemporaries such as Dr. Yorke-Davies recognised the threat of chronic diseases in later life:

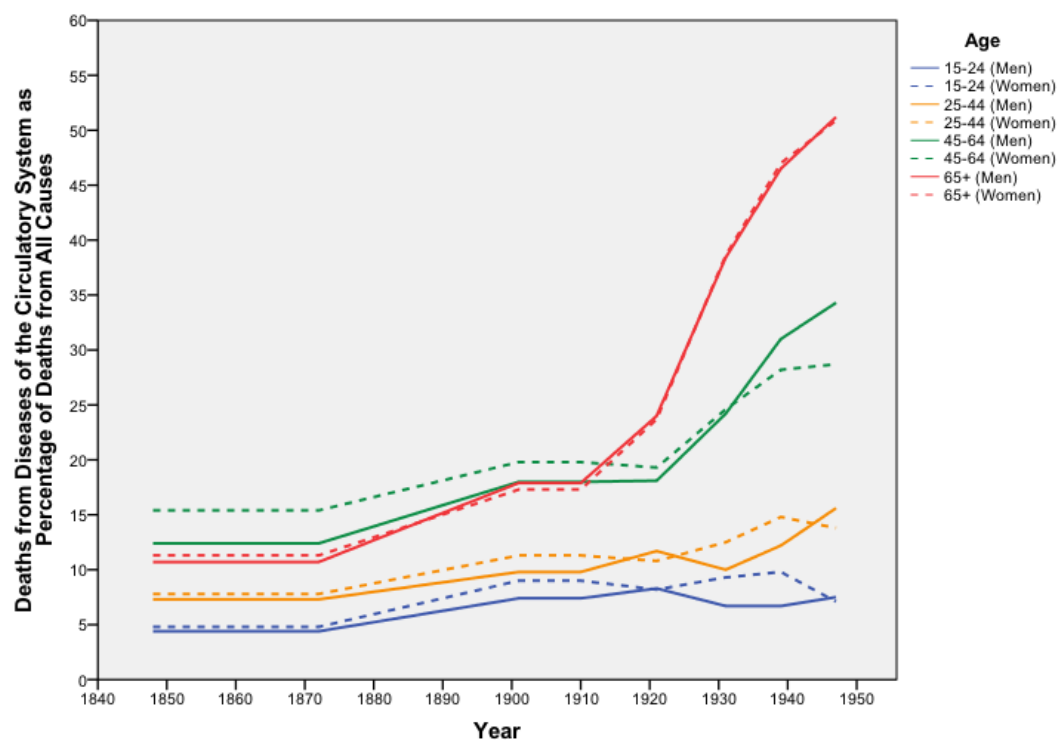
After middle life the tendency to acute inflammatory disease becomes lessened, and attacks of illness assume a more congestive character, while those due to inherited constitutional defects and to the indiscretion of former years develop themselves. In this category may be mentioned gout, tumours, rheumatism, and Bright's diseases [*sic.*] of the kidneys etc.²²

Referring specifically to heart disease, Dr. Fothergill remarked that, 'it is in the more advanced periods of life that angina pectoris [chest pain] is most commonly found'²³.

²² Yorke-Davies, N. E., *Aids to Long Life: A Medical Dietetic and General Guide in Middle and Old Age*, (London: Chatto & Windus, 1885), pp. 33-4.

²³ Fothergill, J. M., *The Heart and its Diseases: With Their Treatment*, (London: H. K. Lewis, 1872), p. 273.

Figure 3: Proportion of Male and Female Deaths from Circulatory Disease by Age Interpolated Between 1848 and 1947



Source: Computed from Logan, W. P. D., 'Mortality in England and Wales from 1848 to 1947', *Population Studies*, vol. 4, 2 (1950), pp. 156-65.

As well as taking into account the effects of the age distribution of the population, one also needs to be wary of the accuracy of the Registrar General's nineteenth century mortality statistics. As Logan and Harris have discussed, the death returns are often vague and use non-medical categories such as 'old age'; they usually refer to the terminal condition rather than the real cause of death; there is a lack of differentiation between diseases; changes to the classification of diseases occurred in 1881 and 1901 and thereafter at roughly ten-year intervals; and changing fashions in medical certification make analysing the incidence of disease deceptive²⁴. These limitations apply equally to analyses of the decline in infectious diseases and cannot be overcome. Selection biases associated with the GRO data cause both the

²⁴ Logan, W. P. D., 'Mortality in England and Wales from 1848 to 1947', *Population Studies*, vol. 4, 2 (1950), pp. 132-3; Harris, B., 'Gender, Health, and Welfare in England and Wales Since Industrialisation', *Research in Economic History*, vol. 26, (2008), pp. 179-80.

underreporting and over-reporting of chronic diseases, although the scale of this is impossible to quantify.

Further jeopardising the reliability of statistics for chronic disease mortality, the heart was widely acknowledged as the most vital bodily organ and therefore unidentifiable diseases were often attributed to it²⁵. Until at least the last quarter of the nineteenth century, emotional heartbreak was accepted as a genuine cause of cardiac failure. In 1851, James Wilkinson, a medical and philosophical writer stated: 'violent feelings not only agitate, but may kill the heart in a moment; in short, broken hearts are medical facts'²⁶.

Above all else, upward trends in the prevalence of chronic diseases are affected by the greatly improved knowledge and diagnostic skill of medical practitioners over the course of the nineteenth and early twentieth century. Dr. Hope highlights the level of diagnostic confusion surrounding chronic diseases in the early nineteenth century; in 1832 he bemoaned:

Great diversity of opinion has existed respecting the cause of angina pectoris. Different physicians have found it connected with different organic lesions or states, and each has supposed it to be occasioned by that, with which he has most frequently found it coexist. Dr. Parry, and after him Burns and Kreysig, ascribe it to ossification of the coronary arteries; Dr. Hooper to affections of the pericardium; Dr. Hosack, to plethora; Dr. Darwin, to asthmatic cramp of the diaphragm; Drs. Butler, Macqueen, and many others, have regarded it as a particular species of gout; Dr. Latham has found it connected with enlargements of the abdominal viscera while the thoracic viscera were sound; and Heberden...thinks that its cause has not been traced out, but that it does not seem to originate *necessarily* in any structural derangement of the organ affected...According to my own observation, it may originate in any cause, whether organic or functional, capable of *irritating* the heart, or of rendering it morbidly susceptible of irritation [emphasis in the original]²⁷

Amidst such dispute, chronic diseases were often confused for other ailments.

Morgan comments that, '...fatty degeneration became a popular diagnosis...a

²⁵ Blair, K., 'Proved on the Pulses: Heart Disease in Victorian Culture, 1830-1860', in Rousseau, G. S. (ed.), *Framing and Imagining Disease in Cultural History*, (Basingstoke: Palgrave Macmillan, 2003), p. 290.

²⁶ Wilkinson, J. J. G., *The Human Body and its Connexion with Man*, (London: Chapman and Hall, 1851), p. 219, as cited in Blair, K., 'Proved on the Pulses: Heart Disease in Victorian Culture, 1830-1860', in Rousseau, G. S. (ed.), *Framing and Imagining Disease in Cultural History*, (Basingstoke: Palgrave Macmillan, 2003), p. 285.

²⁷ Hope, J., *A Treatise on the Diseases of the Heart and Great Vessels, Comprising a New View of the Physiology of the Heart's Action According to which the Physical Signs are Explained*, (London: William Kidd, 1832), pp. 476-7.

substantial proportion were in fact cases of myocardial infarction [heart attack]²⁸.

Again, in 1832 Dr. Hope criticised the way in which:

...dyspepsia [indigestion] acquired the reputation of producing certain symptoms, particularly in the head, which are in reality foreign to it, being exclusively the results of co-existent disease of the heart... There prevails another error, the converse of the above – that of mistaking nervous, or really dyspeptic palpitations, for diseases of the heart²⁹

As well as indigestion, many cardiovascular disease fatalities were ignorantly attributed to fainting.

However, over the course of the nineteenth century many chronic diseases were demystified by autopsies and the invention of new medical equipment - the accurate diagnosis of chronic diseases improved. The stethoscope became widely used in Britain from the 1830s onwards; auscultation, the process of tapping on the chest and listening to reverberations underneath to identify heart and lung problems, was also in regular practice by the mid-nineteenth century; and the sphygmograph, which produced wave patterns of the pulse, was coming slowly into use from the 1860s. Contemporaries acknowledged their newfound ability to accurately diagnose chronic diseases. In 1868, Dr. Ormerod commented within his treatise on fatty degeneration of the heart:

Our knowledge of this disease does not run very far back. Frequent notices, indeed, occur in the older writers of sudden deaths which one can scarcely doubt were due to this change in the structure of the heart; and there are recorded observations of pale soft hearts which one feels sure the microscope would have found to be fatty. But there were no microscopes then available, or they did not stand, as now, at the anatomist's elbow...³⁰

Interpretation of the sounds and patterns from this new equipment remained a source of discussion and dispute³¹. Even the translator of Laennec's treatise introducing his new 1816 invention, the stethoscope, awkwardly acknowledged:

²⁸ Morgan, A. D., 'Some Forms of Undiagnosed Coronary Disease in Nineteenth Century England', *Medical History*, vol. 12, 4 (1968), p. 349.

²⁹ Hope, J., *A Treatise on the Diseases of the Heart and Great Vessels, Comprising a New View of the Physiology of the Heart's Action According to which the Physical Signs are Explained*, (London: William Kidd, 1832), pp. xxi-xxii.

³⁰ Ormerod, E. L., *On the Pathology of Fatty Degeneration*, (London: Spottiswoode & Co., 1868), p. 13.

³¹ Blair, K., 'Proved on the Pulses: Heart Disease in Victorian Culture, 1830-1860', in Rousseau, G. S. (ed.), *Framing and Imagining Disease in Cultural History*, (Basingstoke: Palgrave Macmillan, 2003), pp. 288-9.

It must be confessed that there is something even ludicrous in the picture of a grave physician formally listening through a long tube applied to the patient's thorax, as if the disease within were a living being that could communicate its condition to the sense without...I conclude, that the new method will only in a few cases be speedily adopted, and never generally³²

It was not until 1880 that German pathologist Carl Weigert wrote the first full account of myocardial infarction³³. And, despite pathological progress, it took until the early decades of the twentieth century for the clinical picture of coronary disease to be understood comprehensively³⁴. Nonetheless, the upward trends in mortality from chronic causes certainly reflected increased medical awareness of these diseases.

Thus it is impossible to fully disentangle the increasing prevalence of chronic diseases from more effective reporting. By inference, Figure 1 shows that either chronic diseases were always a severe, undetected cause of mortality, or they became increasingly pervasive over the course of the nineteenth century. In 1845, Dr. Furnivall favoured the former option:

It is generally supposed that diseases of the heart have been on the increase of late years and an opinion is commonly entertained of their great and sudden fatality, even while still only functional. But these opinions are somewhat fallacious; for with respect to the first, there is no reason why such diseases should not have prevailed as much formerly as now; but owing to imperfect diagnosis, their existence was not recognised, except in some cases. The latter opinion arises out of the fact, that such diseases were only discovered and treated in their last and rapidly fatal stages³⁵

Whilst in 1872, Dr. Fothergill preferred the later:

...Quain, Richardson, and others think, not unwisely, that the increased rate at which we live "in this madly striving age", exercises a decided influence in the production of heart disease, and that its increase in the death returns is not sadly due to better recognition of it, but to some extent to an actual increase in frequency³⁶

In either circumstance, analysing the impact of chronic diseases is important because as Morgan emphasises:

³² Laennec, R. T. H., *A Treatise on the Diseases of the Chest, in which they are Described According to their Anatomical Characters, and their Diagnosis, Established on a new Principle by Means of Acoustick Instruments*, trans. Forbes, J., (London: T. and G. Underwood, 1821), translator's preface, p. xix.

³³ Weigert, C., 'Ueber die Pathologischen Gerinnungsvorgänge', *Virchows Archiv A Pathological Anatomy and Histology*, vol. 79, 1 (1880), pp. 87-123, as cited in Morgan, A. D., 'Some Forms of Undiagnosed Coronary Disease in Nineteenth Century England', *Medical History*, vol. 12, 4 (1968), p. 355.

³⁴ Morgan, A. D., 'Some Forms of Undiagnosed Coronary Disease in Nineteenth Century England', *Medical History*, vol. 12, 4 (1968), p. 356.

³⁵ Furnivall, J. J., *The Diagnosis, Prevention and Treatment of Diseases of the Heart, and of Aneurism: With Observations on Rheumatism*, (London: John Churchill, 1845), p. 16.

³⁶ Fothergill, J. M., *The Heart and its Diseases: With Their Treatment*, (London: H. K. Lewis, 1872), pp. 206-7.

Although ischaemic heart disease may have masqueraded in the nineteenth century as angina pectoris, fatty degeneration, rupture of the heart, cardiac aneurysm, fibroid degeneration or chronic myocarditis, there would seem to have been – to quote one of our profession's favourite phrases – “quite a lot of it about”³⁷

As early as 1829, Dr. Wadd recognised:

...instead of finding the annual bills of mortality announcing in the deadly list, plague, pestilence, and famine – not forgetting small-pox – we read gout, apoplexy, palsy, and even obesity, and a host of minor evils connected with repletion³⁸

Anecdotal evidence such as this, combined with the results of Figure 1 indicates the importance of analysing the role of the chronic disease environment during Britain's nineteenth century 'epidemiological transition'.

2.3. Chronic Diseases and Obesity

As the above quotation from Wadd illustrates, contemporaries were quick to associate the rise in chronic diseases with lifestyle factors and in particular, obesity. By the early eighteenth century medical concern had already been raised about the effects of over-eating³⁹. In 1804, clergyman, writer, and poet, Richard Graves highlighted:

The luxury of man...revenges itself upon his rapacity, and brings forth fevers, gout, and rheumatisms, and all the contents of Pandora's box, which infest the *human species* in every part of the civilized world [emphasis in the original]⁴⁰

Graves steadfastly promoted the benefits of temperance and activity for maintaining health and increasing longevity, believing, '...a long and daily repletion must necessarily overload and clog the finer vessels'⁴¹. He wrote:

My wish is, “a long life and an healthy one”. If, however, my reader is a voluntary slave to his appetite, and postpones any regard to his health to a comfortable breakfast the moment he is out of bed, and has crept down to the parlour fire; and instead of a ride in the Park, or a walk in the Mall, lounges away the morning at the coffee-house, or sauntering in Bond-street, till [*sic.*] he sits down to a plentiful dinner, and cannot resist the importunity of the lady at the head of the table, who assures him that a third or fourth slice of venison will not hurt him. If this, or something similar, be

³⁷ Morgan, A. D., 'Some Forms of Undiagnosed Coronary Disease in Nineteenth Century England', *Medical History*, vol. 12, 4 (1968), p. 356.

³⁸ Wadd, W., *Comments on Corpulency, Lineament of Leanness, Mems on Diet and Dietetics*, (London: John Ebers & Co., 1829), p. 23.

³⁹ Stearns, P. N., *Fat History: Bodies and Beauty in the Modern West*, (New York & London: New York University Press, 2002), pp. 26-7, p. 7.

⁴⁰ Graves, R., *The Invalid: With the Obvious Means of Enjoying Health and Long Life*, (London: R. Phillips, 1804), pp. 55-6.

⁴¹ Graves, R., *The Invalid: With the Obvious Means of Enjoying Health and Long Life*, (London: R. Phillips, 1804), p. 28.

his plan of life, I anticipate his confinement in a few years with the gout or rheumatism, or some chronical [*sic.*] or perhaps acute disease of a more dangerous kind⁴²

As the first half of the nineteenth century progressed, medical tracts increasingly drew attention to the health implications of obesity. At the end of the first decade of the nineteenth century, Dr. Wadd acknowledged:

The accumulation of fat...though it may exist to a certain degree without being deemed worthy of attention, yet when excessive, is not only burthensome, but predisposes to disease...and is frequently the cause of sudden death⁴³

In 1829 he expanded upon this critique, arguing:

Fat is, of all the humours or substances forming part of the human body, the most diffused; a certain proportion of it is indicative of health, and denotes being in good condition – nay, is even conducive to beauty; but when in excess – amounting to what may be termed OBESITY – it is not only in itself a disease, but may be the cause of many fatal effects, particularly in acute disorders. Many medical writers of the last century attributed serious evils to the local as well as the general derangements that occasionally take place in fat [emphasis in the original]⁴⁴

Similarly, summarising his case notes in 1816, Dr. Black concluded, ‘the disease [angina pectoris] appears in general to be connected with a full habit, and an accumulation of fat’⁴⁵. And, in 1832, Dr. Hope’s treatise on diseases of the heart noted:

In individuals remarkable for obesity, and occasionally in others of only moderate *embonpoint*, the heart is sometimes greatly overloaded with fat...older authors imagined that this affection was the cause of more or less severe symptoms and even of sudden death...nor have I seen any thing that invalidates them [emphasis in the original]⁴⁶

Chronic diseases clearly drew medical attention in the first half of the nineteenth century and they were already being associated with corpulence. However, Morgan highlights that it was from the mid-nineteenth century onwards that medical interest in coronary disease grew exponentially. For example, although *The Lancet* was launched in 1823 to report the proceedings of medical societies, columns

⁴² Graves, R., *The Invalid: With the Obvious Means of Enjoying Health and Long Life*, (London: R. Phillips, 1804), pp. 26-7.

⁴³ Wadd, W., *Cursory Remarks on Corpulence*, (London: J. and W. Smith, 1810), pp. 15-16.

⁴⁴ Wadd, W., *Comments on Corpulency, Lineament of Leanness, Mems on Diet and Dietetics*, (London: John Ebers & Co., 1829), pp. 29-30.

⁴⁵ Black, S., ‘History of Two Cases of Angina Pectoris’, *Medico-Chirurgical Transactions*, vol. 7 (1816), p. 79.

⁴⁶ Hope, J., *A Treatise on the Diseases of the Heart and Great Vessels, Comprising a New View of the Physiology of the Heart’s Action According to which the Physical Signs are Explained*, (London: William Kidd, 1832), pp. 298-9.

on ischemic heart diseases were rare until the 1850s⁴⁷. Medical awareness of chronic diseases grew after the Pathological Society of London was created in October 1846. There were 106 members initially enrolled, representing various hospitals and medical schools – they discussed thirty-one heart cases in the Society’s first season. Furthermore, the *Transactions* published by the Pathological Society included a ‘Circulatory Section’ providing case histories and autopsy reports of heart cases⁴⁸. Building on these foundations, in 1857 the National Hospital for Diseases of the Heart was founded⁴⁹. It was no coincidence that as mortality from infectious diseases waned and the threat of chronic diseases grew, physicians dedicated more of their attention to the latter.

As clinical investigation intensified, by the second-half of the nineteenth century the medical association between chronic diseases and obesity was cemented. Although, as described above, the diagnosis of chronic diseases was sometimes confused, and similarly, most physicians wrongly believed that fat was hereditary as well as acquirable, Sørensen *et. al.* highlight that it is not always necessary to understand the intricacies of causal pathways in order to prevent disease. They refer to the way in which John Snow identified polluted water as a source of cholera or condoms were found to prevent the transmission of AIDS, before the respective viruses were fully understood⁵⁰. The relationship between chronic disease and obesity provides another example. Nineteenth century physicians identified the inter-relationship between obesity and chronic disease before either of them was fully understood independently.

⁴⁷ Morgan, A. D., ‘Some Forms of Undiagnosed Coronary Disease in Nineteenth Century England’, *Medical History*, vol. 12, 4 (1968), p. 345.

⁴⁸ Morgan, A. D., ‘Some Forms of Undiagnosed Coronary Disease in Nineteenth Century England’, *Medical History*, vol. 12, 4 (1968), p. 346.

⁴⁹ Lawrence, C., ‘Moderns and Ancients: the ‘New Cardiology’ in Britain 1880-1930’, in Bynum, W. F., Lawrence, C. and Nutton, V. (eds.), *The Emergence of Modern Cardiology*, (London: Wellcome, 1985), p. 5, as cited in Blair, K., ‘Proved on the Pulses: Heart Disease in Victorian Culture, 1830-1860’, in Rousseau, G. S. (ed.), *Framing and Imagining Disease in Cultural History*, (Basingstoke: Palgrave Macmillan, 2003), p. 288.

⁵⁰ Sørensen, T. I. A., Rokholm, B., and Ajslev, T. A., ‘The History of the Obesity Epidemic in Denmark’, in Offer, A., Pechey, R., and Ulijaszek, S. (eds.), *Insecurity, Inequality and Obesity in Affluent Societies*, (New York: The British Academy, Oxford University Press, 2012), pp. 162-3.

In 1889, Dr. Yorke-Davies illustrated this, straying from the current knowledge of the pathology of chronic diseases but nonetheless warning:

...excessive fat should always be regarded as a grave matter, in every way likely to shorten life, to say nothing of making it a burden by its encumbrance. Death by faintness from an overloaded heart or an overloaded stomach, by apoplexy [stroke] from congestion and weakness of the blood-vessels, by bronchitis or dropsy [accumulation of watery fluid] from poorness of the blood and the languid state of the circulation, often terminates life⁵¹

And, by the turn of the twentieth century, Dr. Sutherland could comprehensively state:

The chronic ailments of the corpulent – the colds, catarrhs, head aches, gout, bronchitis, rheumatism, asthma, etc., the invariable weak heart, palpitation and breathlessness – are to be regarded, not as so many different symptoms, each requiring its own specific treatment, but as *the direct outcome of one cause* – the presence of surplus fatty or adipose tissue – which requires removal, and without which permanent relief is impossible [emphasis in the original]⁵²

Recognition of some degree of causation between obesity and chronic diseases meant that upward trends in chronic disease mortality drew attention to the rising numbers of obese. Reflecting on the end of the nineteenth century, Dr. Dutton reasoned:

The subject of obesity has certainly, during the last few years, engaged the attention of the physician much more than formerly. He recognises that such a condition is not an evidence of a good state of health, but is, especially when redundant, a symptom of real disease requiring to be treated on sound principles depending on the causes leading to excessive corpulence, just as much as people of too spare a habit require treatment to bring their condition up to a normal standard of weight and vigour⁵³

Contemporaries were keen to identify who was particularly at risk of obesity and thereby chronic ailments. A propensity towards corpulence was associated with wealthy individuals who held indulgent habits, enjoying a copious diet and sedentary lifestyle. Assessing the longevity of the gentry in the mid-nineteenth century, Guy determined:

...the possession of ample means of self-indulgence is unfavourable to longevity. Luxurious habits, an absence of the chief motives which stir other men to exertion, and the inevitable effect of idleness – dissipation – combine to impair the health and shorten the lives of these favoured children of fortune⁵⁴

⁵¹ Yorke-Davies, N. E., *Foods for the Fat: A Treatise on Corpulency, with Dietary for its Cure*, (London: Chatto & Windus, 1889), p. 12; Yorke-Davies, N. E., *Aids to Long Life: A Medical Dietetic and General Guide in Middle and Old Age*, (London: Chatto & Windus, 1885), p. 193.

⁵² Sutherland, W. G., *Corpulence and Thinness and their Cure*, (London: Truslove, Hanson & Comba, 1901), p. 2.

⁵³ Dutton, T., *Obesity: Its Cause and Treatment*, (London: Kimpton, 1896), p. 1.

⁵⁴ Guy, W. A., 'On the Duration of Life Among the English Gentry, with Additional Observations on the Duration of Life Among the Aristocracy', *Journal of the Statistical Society of London*, vol. 9, 1 (1846), pp. 48-9.

This mode of lifestyle was deemed more likely to be achieved in later life:

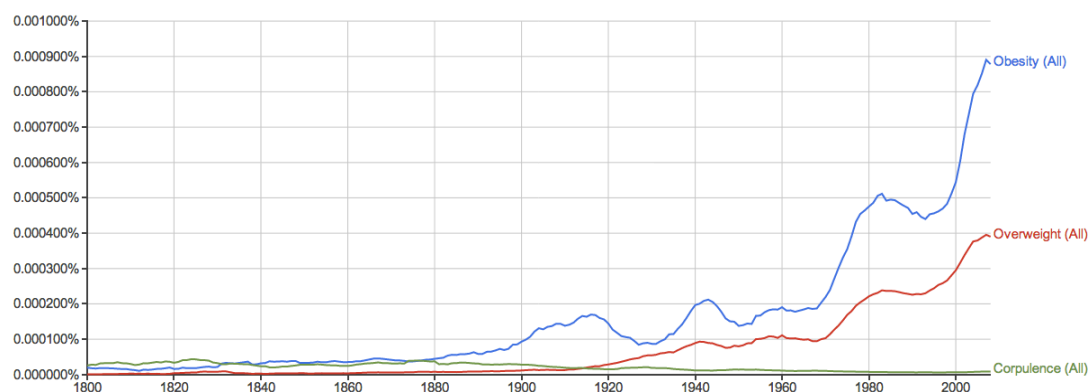
...a time when perchance less active exercise is taken, work has reaped some of its rewards, and the less healthy appetite can be and is more considered and pampered⁵⁵

Again, the propensity towards both corpulence and chronic diseases beyond middle-age did not escape notice:

Of all the evils to which humanity is subject as middle-age creeps on, there is not one more common than excess of fat, or one that causes greater discomfort, or indirectly tends more to shorten life. In men this begins to show itself between the ages of forty and fifty, in women a few years earlier, and though it may not be a disease in itself – unless it attains enormous proportions it often induces diseases...⁵⁶

Nor did the topic of obesity gain interest purely amongst a niche medical contingent. Figure 4 maps the use of the terms 'obesity', 'overweight' and 'corpulence' within English literature between 1800 and 2008 and shows that references to obesity were published increasingly frequently between 1880 and the outbreak of World War One. Whilst attention towards overweight and obesity has surged since the 1970s, upward trends in interest in excess nutritional status can be traced to the late nineteenth century.

Figure 4: Trends in the Frequency of the Usage of the Terms 'Obesity', 'Overweight' and 'Corpulence' Within English Books Between 1800 and 2008



Source: 'Obesity, Overweight, Corpulence', *Google books Ngram Viewer*, accessed 1 June 2014, <https://books.google.com/ngrams/>

⁵⁵ Dutton, T., *Obesity: Its Cause and Treatment*, (London: Kimpton, 1896), p. 34.

⁵⁶ Yorke-Davies, N. E., *Foods for the Fat: A Treatise on Corpulency, with Dietary for its Cure*, (London: Chatto & Windus, 1889), p. 9.

The experience of friends or one's own circumstances could reveal the link between over-indulgence and poor health. In 1804, supposedly 'on the verge of ninety years of age', Graves began his work:

Having lost, in the very meridian of their days, many of my most amiable friends and acquaintances; who, either being of a sociable disposition, with an heroic disregard to their health, indulged themselves too freely in convivial parties and the pleasures of the table; or, of a studious and too sedentary a turn, injured their health by indolence and want of due exercise; which I myself, by a different conduct, and by observing, in general, a more abstemious and a more active way of life, am arrived at a very advanced age, I thought it might possibly be of some use to those that survive, to collect in this manner those topics both of reason and ridicule, with which I combated the ideas of self-management and fancied enjoyment, which those young men had adopted. For I am convinced that many persons injure their health by a thoughtless indulgence of their appetites, without being aware that they do so...⁵⁷

In addition, later in the nineteenth century, specialist medical treatises entered popular culture via newspapers and journals. By the end of the nineteenth century, amongst higher circles, the experts in nervous diseases may well have been household names⁵⁸. The threat of chronic disease became a popular concern. John Ruskin illustrated this in a letter to his father written in 1861:

Miss Cooke thought I must be threatened with disease of the heart, and spoke almost with tears in her eyes to me about minding what I was about in time – she is herself a sufferer from heart disease...It's very tiresome the way people notice my face now. A lady...was dining here to-day, and I had no sooner gone out the room than she asked Miss Bell if I had heart disease⁵⁹

In many ways the confusion and mystery surrounding chronic diseases made them more worrying and a source of hypochondria. Substantial publicity meant that individuals were conscious of the threat of chronic diseases without really comprehending their risk factors or signs of disease.

Another reason that agitation surrounded chronic diseases and obesity was that they seemed to be exacerbated by economic progress. Graves refuted a hereditary excuse for chronic diseases for this reason, he recounted:

⁵⁷ Graves, R., *The Invalid: With the Obvious Means of Enjoying Health and Long Life*, (London: R. Phillips, 1804), pp. v-vi, reference to age p. 26.

⁵⁸ Blair, K., 'Proved on the Pulses: Heart Disease in Victorian Culture, 1830-1860', in Rousseau, G. S. (ed.), *Framing and Imagining Disease in Cultural History*, (Basingstoke: Palgrave Macmillan, 2003), p. 291.

⁵⁹ Ruskin, J., *The Works of John Ruskin*, ed. Cook, E. T. and Wedderburn, A., vol. 36, (London: George Allen, 1909), xxxvi, p. 360, as cited in Blair, K., 'Proved on the Pulses: Heart Disease in Victorian Culture, 1830-1860', in Rousseau, G. S. (ed.), *Framing and Imagining Disease in Cultural History*, (Basingstoke: Palgrave Macmillan, 2003), p. 291.

A jovial friend of mine...who was early in life tormented with gout...insists upon it that his complaint has nothing to do with digestion or indigestion, but is entirely hereditary; that his father, grandfather, and great grandfather had all been afflicted with the gout, who, though they *lived well*, are said to have been rather temperate and sober men.

Well, said I, but if you trace your pedigree a few generations higher, you will probably find amongst your ancestors some frugal, industrious pair, who lived free from gout, or any *hereditary* complaint, but whose descendants by *good living*...and by sensual indulgence laid the foundation of this hereditary gout of which you complain, and which, I fear, you my friend, yourself have contributed to confirm, and will probably transmit undiminished to your posterity [emphasis in the original]⁶⁰

And, in 1816, Dr. Wadd accepted:

If the increase of wealth and the refinement of modern times, have tended to banish plague and pestilence from our cities, they have probably introduced the whole train of nervous disorders, and increased the frequency of corpulence⁶¹

The problem with this was that the growth of national wealth, higher incomes and more luxurious standards of living were all desirable and unlikely to be sacrificed. In

1901, Dr. Sutherland conceded that, 'obesity [was] essentially characteristic of civilised life'⁶². It was, as Dr. Yorke-Davies expressed it, a...

...fundamental principle...that in the same countries, as long as the inhabitants lead a temperate life as herdsmen, they will attain to old age; but as soon as they become civilised, and by these means sink into luxury, dissipation, and corruption, their duration of life will be shortened⁶³

Industrial progress seemed to make obesity and chronic diseases inevitable⁶⁴.

Thus industrial capitalism and the consumerism it promulgated were genuinely believed to be contributing to the degeneration of society. In the age of imperialism, racial degeneration had much broader political ramifications because the British needed to be able to defend the Empire and demonstrate their superiority over imperial subjects⁶⁵.

Racial decay had long since been associated with the stunted urban poor. In 1885, Dr. Cantlie, a leading figure within the public health medical establishment and

⁶⁰ Graves, R., *The Invalid: With the Obvious Means of Enjoying Health and Long Life*, (London: R. Phillips, 1804), pp. 21-2.

⁶¹ Wadd, W., *Cursory Remarks on Corpulence*, (London: J. and W. Smith, 1810), p. 5.

⁶² Sutherland, W. G., *Corpulence and Thinness and their Cure*, (London: Truslove, Hanson & Comba, 1901), p. 24.

⁶³ Yorke-Davies, N. E., *Aids to Long Life: A Medical Dietetic and General Guide in Middle and Old Age*, (London: Chatto & Windus, 1885), p. 24.

⁶⁴ Szreter, S., *Fertility, Class and Gender in Britain 1860-1940*, (Cambridge: Cambridge University Press, 1996), p. 96.

⁶⁵ Zweiniger-Bargielowska, I., *Managing the Body: Beauty, Health and Fitness in Britain, 1880-1939*, (Oxford & New York: Oxford University Press, 2010), p. 6.

Honourary Secretary to the College of State Medicine, particularly drew attention to the *Degeneration Amongst Londoners*⁶⁶. Similarly, an article titled 'Are We Decaying?' within *The Scotsman* from the 24 September 1887 decried:

...our national physique is by no means all that could be desired...lives are tending towards degeneration and wholesale decay of the race⁶⁷

Reginald Brabazon, 12th Earl of Meath also took up the cause, remonstrating that to improve the state of the nation Britain required better housing, more parks, playgrounds, school meals and compulsory physical education in schools⁶⁸. High rejection rates of recruits during the Boer War due to physical inadequacies affirmed fears of racial degeneration and led to the publication of the governmental *Report of the Inter-Departmental Committee on Physical Deterioration* in 1904⁶⁹.

What was new to the second half of the nineteenth century was that awareness of chronic diseases highlighted that, '...the threat of degeneration was not just associated with poverty but also with rising material comforts and increased stress, exemplified by obesity...'⁷⁰. Following high World War One rejection rates amongst recruits, in 1921 the Ministry of Health raised concern that there was a, 'substantial degree of impairment of physique – sometimes over-feeding and sometimes under-nutrition – which results in incapacity and invalidity'. In 1926 the department highlighted that it was, 'excessive and unsuitable food combined with lack of fresh air which sow the seeds of degeneration'. By 1931 the chief medical officer worried that, 'some persons no doubt are under-fed, but many are over-fed – giving their bodies little rest, clogging them with yet more food, and disregarding the

⁶⁶ Cantlie, J., *Degeneration Amongst Londoners*, (London: The Leadenhall Press, 1885); Szreter, S., *Fertility, Class and Gender in Britain 1860-1940*, (Cambridge: Cambridge University Press, 1996), p. 102.

⁶⁷ 'Are We Decaying?', *The Scotsman*, 24 September 1887, in Meath, Earl of (ed.), *Prosperity or Pauperism? Physical, Industrial, and Technical Training*, (London: Longmans, Green & Co., 1888), p. 52.

⁶⁸ Meath, Earl of, 'Health and Physique of Our City Populations', in Meath, Earl of (ed.), *Prosperity or Pauperism? Physical, Industrial, and Technical Training*, (London: Longmans, Green & Co., 1888), pp. 1-12 and Meath, Earl of, 'Open Spaces and Physical Education', in Meath, Earl of (ed.), *Prosperity or Pauperism? Physical, Industrial, and Technical Training*, (London: Longmans, Green & Co., 1888), pp. 13-22.

⁶⁹ Fitzroy, A. W., *Report of the Inter-Departmental Committee on Physical Deterioration*, (London: Her Majesty's Stationary Office by Wyman & Sons, 1904).

⁷⁰ Zweiniger-Bargielowska, I., *Managing the Body: Beauty, Health and Fitness in Britain, 1880-1939*, (Oxford & New York: Oxford University Press, 2010), p. 61.

imperative necessary to health and appetite of a thoroughly cleansed alimentary tract'⁷¹. By the early twentieth century there was a dramatic governmental shift in focus from racial deterioration due to the effects of poverty alone, to including concerns with over-nutrition.

In future chapters tailors' records will be utilised, providing anthropometric data for waist and hip circumferences, to quantitatively test how valid contemporary fears were that the race was degenerating, becoming more obese and prone to chronic ailments. The primary, qualitative evidence above suggests that anthropometric data should identify that corpulence affected a significant proportion of individuals throughout the second half of the nineteenth century. Furthermore, the upward trends in chronic disease mortality and the associated medical attention generated suggest that anthropometric data will show that individuals were not just overweight but reached levels of obesity placing them at health jeopardy. Assessing the impact of industrialisation on body shape is particularly intriguing. Contemporaries may have associated obesity with the privileges of luxury and idleness but industrial capitalism brought higher wages and more sedentary lifestyles to an expanding middle class. The anthropometric data from tailors' records will elucidate exactly who was becoming obese in the second half of the nineteenth century.

2.4. Preventative Action

Those fearful of the degeneration of society pointed out that industrial capitalism did not necessarily make obesity and chronic disease inevitable:

...if we have resolution enough to alter our way of life...and by the advice of a skilful physician, adopt and persevere in a proper regimen, using constant and regular exercise, we have a prospect of enjoying an healthy old age⁷²

⁷¹ Ministry of Health, *On the State of Public Health: Annual Report of the Chief Medical Officer of the Ministry of Health for Year 1921*, (London: n.p., 1922), p. 86, Ministry of Health, *On the State of Public Health: Annual Report of the Chief Medical Officer of the Ministry of Health for Year 1926*, (London: n.p., n.d.), p. 266, Ministry of Health, *On the State of Public Health: Annual Report of the Chief Medical Officer of the Ministry of Health for Year 1930*, (London: n.p., 1931), p. 162, as cited in Zweiniger-Bargielowska, I., 'The Culture of the Abdomen: Obesity and Reducing in Britain, circa 1900-1939', *Journal of British Studies*, vol. 44, 2 (2005), p. 247.

⁷² Graves, R., *The Invalid: With the Obvious Means of Enjoying Health and Long Life*, (London: R. Phillips, 1804), p. 19.

Preventative action was focused on the individual and came in two forms – dieting and exercise. The next section of this chapter examines the popularisation of dieting systems during the nineteenth century, their implications and recommended health standards. The role of exercise and the burgeoning life reform movement at the end of the nineteenth century will follow.

2.4.1. Health and Weight Loss

Individuals had a personal responsibility to maintain a moderate diet. In 1829, Dr. Wadd reiterated this:

...many of our best physicians, and some of our ablest modern surgeons, have demonstrated, "that a healthy state of the body depends on the due regulation of diet"...Nay, the philosophy of some have carried them so far, as to conjecture that not only the health of the body corporate, but that the safety of the state is connected with this art⁷³

In 1816, Dr. Black suggested to the Royal Medical and Chirurgical Society that it was worth testing whether a more moderate lifestyle would reduce the propensity to chest pain:

When we call to our remembrance, that the disease [angina pectoris] appears in general to have some relation to obesity, or to a plethoric habit, - that the great majority of the subjects of it seem to have belonged to such a rank of society, that we must presume they sat down to a plentiful table, - that every thing which hurries the circulation, or urges the machinery by which that function is carried on beyond its capacity for performance, seems to create, or to favour the tendency to paroxysms; - and lastly, as the hope of a cure from medicine seems (in the present state of our knowledge) very slender, I ask, would it be irrational to propose the trial of a regimen as low and abstemious as is compatible with life?⁷⁴

In the early decades of the nineteenth century, Graves pressed for temperance, and Dr. Wadd suggested dietary restraint but his comments maintained a sense a balance and left room for indulgence:

Those are the most healthy, who have nature for their cook, - necessity for their caterer; who have no other doctor, than the sun, and fresh air, and no other physic, than temperance, and exercise. Temperance...consists in a regular and simple diet, limited by every man's experience, of his own easy digestion. It is moderation. We may be intemperately abstemious, as well as intemperately luxurious⁷⁵

⁷³ Wadd, W., *Comments on Corpulency, Lineament of Leanness, Mems on Diet and Dietetics*, (London: John Ebers & Co., 1829), p. 8.

⁷⁴ Black, S., 'History of Two Cases of Angina Pectoris', *Medico-Chirurgical Transactions*, vol. 7 (1816), p. 82.

⁷⁵ Wadd, W., *Comments on Corpulency, Lineament of Leanness, Mems on Diet and Dietetics*, (London: John Ebers & Co., 1829), p. 137.

In the first half of the nineteenth century it was temperance, rather than dieting per se, that was most widely advocated.

The first individual to popularise a weight loss diet was William Banting who published his *Letter on Corpulence* in 1863. Banting was a successful undertaker who had suffered from corpulence and associated ailments until adopting a diet that he found so successful that he determined to publish it and share his experience for the benefit of other corpulent individuals. By the publication of the fourth edition of his *Letter* in 1869, Banting acknowledged that it had been translated into many languages and circulated in France, Germany and the United States, selling 63,000 copies in Britain alone⁷⁶. By 1902 it was in its twelfth edition⁷⁷. His treatise became so popular that 'banting' entered the English language as a verb to diet.

Banting's *Letter* represented a turning point in the popularisation of dieting manuals; by the second half of the nineteenth century there was a popular desire to lose weight and a market for 'cures' (at least among the affluent). Alongside new editions of Banting's publication, many other competing dieting systems were produced. Banting suggested a low-carbohydrate, low-fat, meat-based diet; the Salisbury system involved ground lean beef, a little fish and hot water; Oertel's was a low-fat, minimal water diet; and Epstein was a proponent of a low-carbohydrate diet allowing for plenty of protein⁷⁸. On the whole, physicians recommend a combination of a sparing, balanced diet and exercise, although some also restricted how many meals were to be taken each day and prescribed morning draughts, fasting, or

⁷⁶ Banting, W., *Letter on Corpulence*, 4th edn., (Great Britain: Green Valley Press, 2003).

⁷⁷ Stearns, P. N., *Fat History: Bodies and Beauty in the Modern West*, (New York & London: New York University Press, 2002), p. 11.

⁷⁸ Zweiniger-Bargielowska, I., *Managing the Body: Beauty, Health and Fitness in Britain, 1880-1939*, (Oxford & New York: Oxford University Press, 2010), p. 59.

massage. Less commonly, fad diets were advocated such as fruit diets⁷⁹, beef and hot water diets, vegetarianism or fasting⁸⁰.

Trips to springs, hot baths and 'health resorts' were also popular solutions to overweight (deplored by Graves who lived in Bath and mocked the spring's patrons whom he thought wasted their money rather than persevere with temperance⁸¹). There were also anti-fat medicines available – quack products such as 'Amiral Soap' which could, '[reduce] excessive fat from the body wherever applied' by 'dissolving the fatty secretions contained therein'⁸².

The concept of making lifestyle changes to reduce body fat and avoid ailments represented a dramatic medical shift from curative to preventative medicine. Since the long eighteenth century, medical arithmeticians had produced mortality tables examining the incidence of disease and mortality inequality. By revealing that mortality was variable and depended on a range of factors, these arithmeticians hoped to be able to improve longevity⁸³. However, it was not until the mid-nineteenth century that William Farr and his successors at the Office of the Registrar-General emphatically presented the notion of preventable mortality⁸⁴. It was quite radical to suggest that, 'while it is ordained that eventually all must die...it is possible sometimes to avert for a time the tendency to death'⁸⁵. Individuals could do little to avoid contracting infectious diseases. Vaccinations were not available for most infectious diseases until the twentieth century, the one exception was smallpox against which

⁷⁹ Sandlands, J. P., *Corpulence, A Case and Cure, Or, Why Grow Fat?*, (London: Swan Sonnenschein & Co., 1903).

⁸⁰ Zweiniger-Bargielowska, I., *Managing the Body: Beauty, Health and Fitness in Britain, 1880-1939*, (Oxford & New York: Oxford University Press, 2010), p. 52.

⁸¹ Graves, R., 'An Invitation to Bath', *The Invalid: With the Obvious Means of Enjoying Health and Long Life*, (London: R. Phillips, 1804), pp. 84-5

⁸² Amiral Soap Syndicate, *The Treatment of Obesity by a New Method, Without Change of Diet or Regimen, and Without Medicine*, (London: n.p., 1898), p. 2.

⁸³ Rusnock, A. A., *Vital Accounts: Quantifying Health and Population in Eighteenth-Century England and France*, (Cambridge: Cambridge University Press, 2002), p. 171.

⁸⁴ Szreter, S., *Health and Wealth: Studies in History and Policy*, (Rochester, NY: University of Rochester Press, 2005), p. 9; Szreter, S., *Fertility, Class and Gender in Britain 1860-1940*, (Cambridge: Cambridge University Press, 1996), p. 86.

⁸⁵ Yorke-Davies, N. E., *Aids to Long Life: A Medical Dietetic and General Guide in Middle and Old Age*, (London: Chatto & Windus, 1885), p. 67.

inoculation was made compulsory in 1854 but not enforced until 1871⁸⁶. Dieting to avoid obesity and chronic diseases represented the first time preventative medicine had become feasible at an individual level⁸⁷.

This revolutionary attitude towards health was emphasised by Dr. Densmore in his dieting aid at the end of the nineteenth century:

...to be ill is a monstrosity. And when we learn that illness is always the result of disobedience to law; when we come to know that it needs never be, that it comes only with the violation of plainly written laws of health, we shall see an entirely different attitude towards illness, in whatever form it makes its appearance...efforts of cure should be directed toward the eradication of causes rather than of symptoms of disease⁸⁸

Many physicians interpreted obesity as a disease in itself; therefore the rhetoric of medical advice was often framed as 'curing obesity' rather than 'preventing chronic disease'. Furthermore, in the early decades of the nineteenth century, physicians may have been sceptical of preventing disease, believing that it would jeopardise their income. In 1829, Dr Wadd criticised that:

By far the greater part of the medical tribe are satisfied with attending only to actual disease, as being the only source of profit, while the preventative part, though far the most important, but as furnishing no emolument, is generally disregarded⁸⁹

However, by the turn of the twentieth century the value of preventative medicine was explicit. Physicians could profit from attending overweight patients, recommending diets, and helping them to avoid chronic diseases. Dr. Sandlands argued in his treatise on corpulence: 'the right way is in stopping the cause. The wrong way is to remove the effects'⁹⁰.

More than ever before, health was becoming a personal responsibility.

Dieting was made feasible by the relatively new ability to be accurately weighed and

⁸⁶ McKeown, T. and Record, R. G., 'Reasons for the Decline in Mortality in England and Wales during the Nineteenth Century', *Population Studies*, vol. 16, 2 (1962), p. 118.

⁸⁷ Zweiniger-Bargielowska, I., *Managing the Body: Beauty, Health and Fitness in Britain, 1880-1939*, (Oxford & New York: Oxford University Press, 2010), p. 2.

⁸⁸ Densmore, H., *How to Reduce Fat*, (New York: n.p., 1896), pp. 12-13, p. 14.

⁸⁹ Wadd, W., *Comments on Corpulency, Lineament of Leanness, Mems on Diet and Dietetics*, (London: John Ebers & Co., 1829), p. 41.

⁹⁰ Sandlands, J. P., *Corpulence, A Case and Cure, Or, Why Grow Fat?*, (London: Swan Sonnenschein & Co., 1903), p. 6.

the establishment of 'healthy norms' to compare oneself to⁹¹. Many dietetic systems emphasised that, 'upon beginning treatment, it is important to ascertain exact weight; and to be weighed each week thereafter...'⁹².

In 1852, Dr. John Hutchinson, Fellow of the Royal Statistical Society and inventor of the spirometer for measuring vital capacity, published in his most famous work, a table of the average relative height and weight of, '...2,650 healthy males of thirteen classes in society, at the middle period of life', for the benefit of life insurance companies, because '...weight is an expression of the whole man...and excess of weight is frequently the forerunner of apoplexy'⁹³. Hutchinson also tabulated the same relative weights increased by a proportion of seven percent because he argued that, 'excess of weight, when it has extended to 7 per cent. above the mean weight, tends to diminish the power of the lungs'⁹⁴. Thus he offered an upper-limit for healthy weight relative to height.

Many dieticians and physicians including Banting, Sutherland, Yorke-Davies, Dutton, and Chambers recommended Hutchinson's observations as an ideal standard, although they did not always credit Hutchinson⁹⁵. Dr. Sutherland and Dr. Dutton also provided equivalent height and weight ideals for women in their publications; these were tabulated alongside Hutchinson's statistics, although the source of the female standards are unknown⁹⁶. The only recommended relative height and weight data published in a dieting manual, which deviates from

⁹¹ Zweiniger-Bargielowska, I., *Managing the Body: Beauty, Health and Fitness in Britain, 1880-1939*, (Oxford & New York: Oxford University Press, 2010), p. 1.

⁹² Densmore, H., *How to Reduce Fat*, (New York: n.p., 1896), p. 7.

⁹³ Hutchinson, J., *The Spirometer, The Stethoscope, & Scale-Balance; Their Use in Discriminating Diseases of the Chest and their Value in Life Offices; with Remarks on the Selection of Lives for Life Insurance Companies*, (London: John Churchill, 1852), pp. 55-6.

⁹⁴ Hutchinson, J., *The Spirometer, The Stethoscope, & Scale-Balance; Their Use in Discriminating Diseases of the Chest and their Value in Life Offices; with Remarks on the Selection of Lives for Life Insurance Companies*, (London: John Churchill, 1852), p. 58.

⁹⁵ Sutherland, W. G., *Corpulence and Thinness and their Cure*, (London: Truslove, Hanson & Comba, 1901), p. 40; Banting, W., *Letter on Corpulence*, 4th edn (Great Britain: Green Valley Press, 2003); Yorke-Davies, N. E., *Foods for the Fat: A Treatise on Corpulency, with Dietary for its Cure*, (London: Chatto & Windus, 1889), p. 20; Dutton, T., *Obesity: Its Cause and Treatment*, (London: Kimpton, 1896), p. 41; Chambers, T. K., *Corpulence; Or, Excess of Fat in the Human Body*, (London: Longman, Brown, Green and Longmans, 1850), p. 73.

⁹⁶ Sutherland, W. G., *Corpulence and Thinness and their Cure*, (London: Truslove, Hanson & Comba, 1901), p. 40; and Dutton, T., *Obesity: Its Cause and Treatment*, (London: Kimpton, 1896), p. 41.

Hutchinson's standards, has been found in Dr. Densmore's tract. Densmore suggested a separate minimum, average and maximum weight standard, relative to height⁹⁷.

As Figure 5 shows, standards were provided for men ranging in height between 1.52 metres (five foot) and 1.91 metres (six foot, three inches) and for women between 1.57 metres (four foot, ten inches) and 1.80 metres (five foot, eleven inches). The *Health Survey for England 2010* indicates that the current average height of men is 1.75 metres and women 1.62 metres⁹⁸. Thus, on average, men are currently six centimetres taller than the median height in Hutchinson's range, used as a guide by many nineteenth century dieticians. Women are currently two centimetres shorter than the median of the height range contemporaries proffered. As this does not conform to well-established findings that net nutritional status has improved over time and increased heights, it is assumed that the height range for women offered in these dieting manuals was positively skewed.

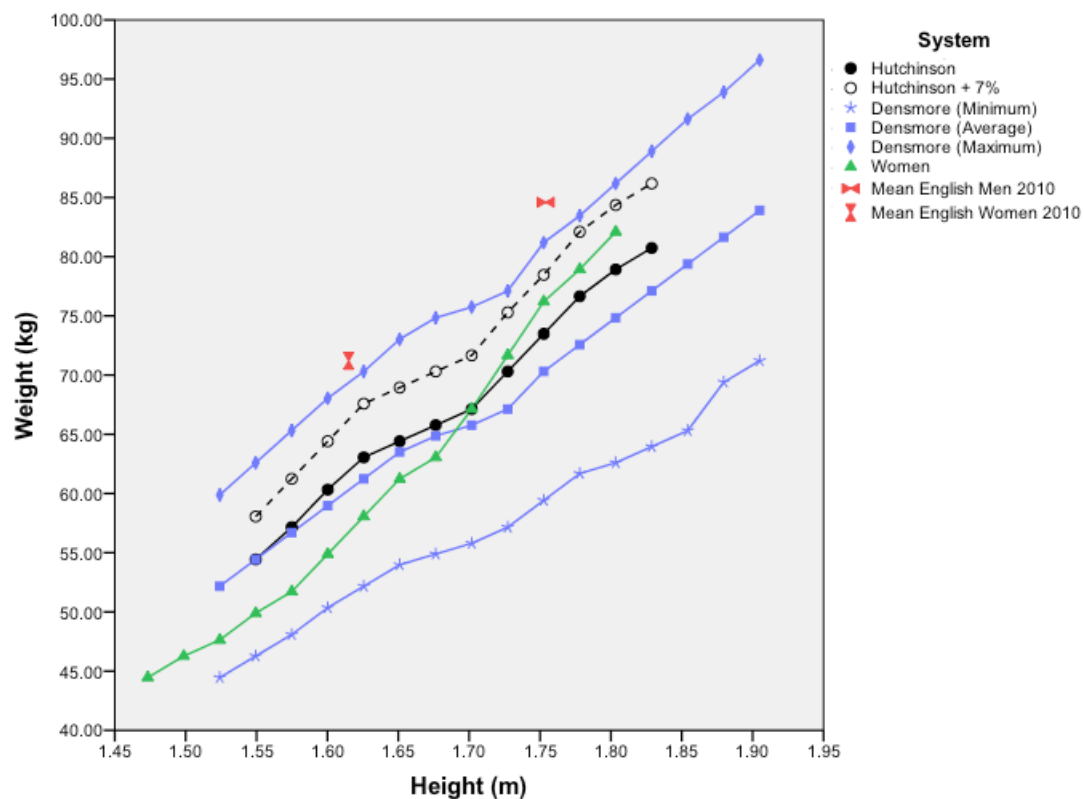
Figure 5 shows that taller individuals were expected to carry relatively more weight than shorter ones. The steeper gradient of the trend line for women indicates that women's weights were expected to increase with height at a greater rate than amongst males. The current mean weight of men and women is 84.6 and 71.2 kilograms respectively⁹⁹. Thus, on average, for their height, men currently weigh 11.1 kilograms more than nineteenth century dieticians would have suggested using Hutchinson's data. Relative to their height, women currently weigh over 13.1 kilograms more than Dr. Dutton and Dr. Sutherland recommended in 1896 and 1901 respectively.

⁹⁷ Densmore, H., *How to Reduce Fat*, (New York: n.p., 1896), p. 16

⁹⁸ The National Health Service (NHS) Health and Social Care Information Centre, 'Trend Tables: Adult Trend Tables', *Health Survey for England 2010*, (Leeds: The Health and Social Care Information Centre, 2011), accessed 2 February 2014, www.hscic.gov.uk/pubs/hse10trends

⁹⁹ The National Health Service (NHS) Health and Social Care Information Centre, 'Trend Tables: Adult Trend Tables', *Health Survey for England 2010*, (Leeds: The Health and Social Care Information Centre, 2011), accessed 2 February 2014, www.hscic.gov.uk/pubs/hse10trends

Figure 5: Recommended Relative Height and Weight Standards



Sources: Hutchinson, J., *The Spirometer, The Stethoscope, & Scale-Balance; Their Use in Discriminating Diseases of the Chest and their Value in Life Offices; with Remarks on the Selection of Lives for Life Insurance Companies*, (London: John Churchill, 1852), p. 56; Sutherland, W. G., *Corpulence and Thinness and their Cure*, (London: Truslove, Hanson & Comba, 1901), p. 40; Banting, W., *Letter on Corpulence*, 4th edn (Great Britain: Green Valley Press, 2003); Yorke-Davies, N. E., *Foods for the Fat: A Treatise on Corpulency, with Dietary for its Cure*, (London: Chatto & Windus, 1889), p. 20; Dutton, T., *Obesity: Its Cause and Treatment*, (London: Kimpton, 1896), p. 41; Densmore, H., *How to Reduce Fat*, (New York: n.p., 1896), p. 16; Chambers, T. K., *Corpulence; Or, Excess of Fat in the Human Body*, (London: Longman, Brown, Green and Longmans, 1850), p. 73; The National Health Service (NHS) Health and Social Care Information Centre, 'Trend Tables: Adult Trend Tables', *Health Survey for England 2010*, (Leeds: The Health and Social Care Information Centre, 2011).

The relative height and weight data advocated in these dietary manuals has been used to calculate and compare their recommended BMI. This is not anachronistic because Quetelet introduced his index providing a single comparable value representing relative height and weight in the second quarter of the nineteenth century¹⁰⁰. Although none of the dietaries referred to this index explicitly, their

¹⁰⁰ Eknoyan, G., 'Adolphe Quetelet (1796-1874) – The Average Man and Indices of Obesity', *Nephrology Dialysis Transplantation*, vol. 23, 1 (2008), p. 47.

provision of relative height and weight tables was founded on Quetelet's notion that there was an ideal weight relative to height.

In 1984 Waaler identified that an individuals' BMI correlates with their health status and relative mortality risk. Using data collected from over 1.7 million Norwegians between 1963 and 1975, Waaler showed that there was an inverse relationship between relative mortality risk and stature over most of the height distribution. Moreover, Waaler found a U-shaped relationship between BMI and mortality risk – mortality risk was flat and relatively low between BMI values of 22-28, but rose sharply either side of this range¹⁰¹. Fogel argued that the secular decline in mortality during the nineteenth century was caused by increasing energy availability enabling under-nutritioned individuals to move positively along the weight axis and reach a new equilibrium at a lower mortality risk level on Waaler's curve¹⁰³. Despite concerns raised by Riley¹⁰⁴, it is now generally accepted that height and BMI are capable of predicting historical morbidity and mortality¹⁰⁵. Reference lines have been added to Figure 6 indicating modern health standards for overweight and obesity, based on BMI.

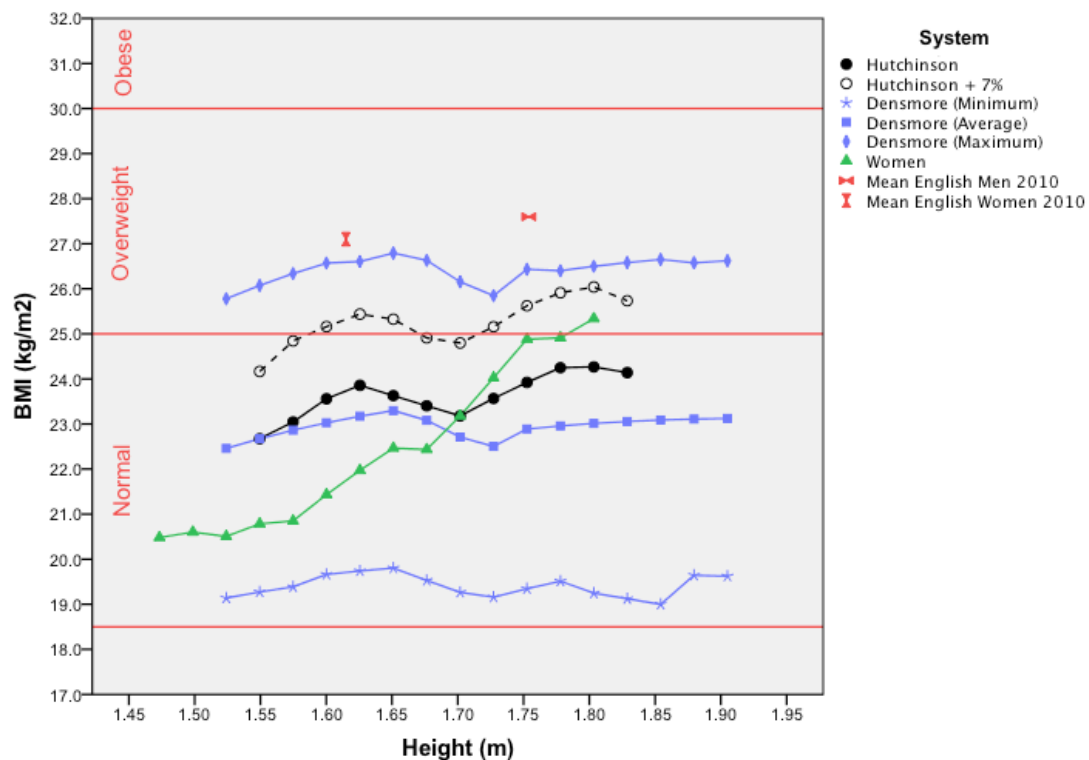
¹⁰¹ Waaler, H. T., *Height, Weight and Mortality: The Norwegian Experience*, (Oslo: Gruppe for Hestetjenesteforskning, 1984), as cited in Cuff, T., 'The Body Mass Index Values of Mid-Nineteenth Century West Point Cadets: A Theoretical Application of Waaler's Curves to a Historical Population', *Historical Methods*, vol. 26, 4 (1993), p. 172.

¹⁰³ Fogel, R. W., *The Escape From Hunger and Premature Death, 1700-2100*, (Cambridge: Cambridge University Press, 2004), pp. 20-42.

¹⁰⁴ Riley, J. C., 'Height, Nutrition, and Mortality Risk Reconsidered', *Journal of Interdisciplinary History*, vol. 24, 3 (1994), pp. 465-92.

¹⁰⁵ For an overview of this literature see: Floud, R., Fogel, R. W., Harris, B., and Hong, S. C., *The Changing Body: Health Nutrition, and Human Development in the Western World Since 1700*, (Cambridge: Cambridge University Press, 2011), Chapter 1.

Figure 6: Contemporary Recommended BMIs Based on Relative Height and Weight Tables, Compared with Modern Health Standards



Sources: Hutchinson, J., *The Spirometer, The Stethoscope, & Scale-Balance; Their Use in Discriminating Diseases of the Chest and their Value in Life Offices; with Remarks on the Selection of Lives for Life Insurance Companies*, (London: John Churchill, 1852), p. 56; Sutherland, W. G., *Corpulence and Thinness and their Cure*, (London: Truslove, Hanson & Comba, 1901), p. 40; Banting, W., *Letter on Corpulence*, 4th edn (Great Britain: Green Valley Press, 2003); Yorke-Davies, N. E., *Foods for the Fat: A Treatise on Corpulency, with Dietary for its Cure*, (London: Chatto & Windus, 1889), p. 20; Dutton, T., *Obesity: Its Cause and Treatment*, (London: Kimpton, 1896), p. 41; Densmore, H., *How to Reduce Fat*, (New York: n.p., 1896), p. 16; Chambers, T. K., *Corpulence; Or, Excess of Fat in the Human Body*, (London: Longman, Brown, Green and Longmans, 1850), p. 73; The National Health Service (NHS) Health and Social Care Information Centre, 'Trend Tables: Adult Trend Tables', *Health Survey for England 2010*, (Leeds: The Health and Social Care Information Centre, 2011).

Figure 6 reveals that the average weights found by Hutchinson and suggested as an ideal by most dietaries result in a BMI within the currently recommended 'normal' range. Dr. Densmore's 'average' standard, results in lower and more consistent recommended BMI levels than Hutchinson's, lying more comfortably within the 'normal' bracket. It is unsurprising that Hutchinson found that a seven percent increase in weight compared to the average impeded health because these weights correspond to a BMI bordering and often exceeding the modern standard for

overweight. Similarly, Densmore's maximum weight standard corresponded to an unhealthy, 'overweight' BMI (according to modern standards), whilst the minimum weight advocated was within the low 'normal' range. Women over 1.7 metres (five foot, seven inches) tall were recommended to have higher BMI values than men of the same height. The weight values recommended for women 1.75 metres (five foot, nine inches) or taller would have made them overweight by modern standards.

The inconsistent and ultimately very large weight and height ratio recommended for women highlights that female health standards were a lot more ambiguous than male. It is likely that limited samples of women were available with which to determine average standards. Specifically, few women took out life insurance policies and these formed the basis of Hutchinson's original data for males. Similarly, smaller samples of tall individuals in the nineteenth century explain the less consistent trends amongst men as height increased. Overall however, Figure 6 illustrates that in the second half of the nineteenth century there was a thorough understanding of ideal male weights relative to height to sustain good health. Furthermore, the boundaries of overweight and the point at which health began to be jeopardised were akin to modern health standards.

The abundance of dieting manuals published by both lay and medical individuals during the second-half of the nineteenth century highlights that there was a sizeable market for obesity cures. This was not because contemporaries misconceived obesity or exaggerated the point at which body size threatened morbidity. Nineteenth century dieticians set goals in line with modern health standards as they pursued preventative medicine.

2.4.2. Exercise

The value of exercise had long been associated with tackling the racial degeneration of the stunted urban poor. Both the Earl of Meath and Dr. Cantlie argued that '...fresh air and exercise, are necessary to the healthy development of the

human frame¹⁰⁶. Among other things they called for more open spaces and gardens, compulsory physical education in schools and school trips to the countryside in order to encourage exercise. By the late nineteenth century however, exercise was also being prescribed for the degeneration caused by over-indulgence.

In Britain, classical beauty provided the aesthetic ideal. It had been favoured since the eighteenth century Enlightenment but its popularity became pervasive during the nineteenth century when photography made visual imagery more accessible¹⁰⁷. The aesthetic of Greek sculpture was popularised because their athletic images represented power and virility combined with self-control¹⁰⁸. The Ancients represented the antithesis of the racial degeneracy feared in nineteenth century Britain –

Greek and Roman alike knew, in a high degree, the value of bodily exercise, and in their competitive games, as well as in their training for war, adopted a system of physical education which produced wonderful results¹⁰⁹

This ancient training model contributed to mid-nineteenth century ‘muscular Christianity’ ideals in which strength and physical fitness were promoted as the means to achieve a righteous life, and competitive sports in British schools were particularly advocated.

The classical aesthetic ideal was also pertinent to women, although slight overweight was more acceptable than amongst men. Contemporaries acknowledged:

...in the female form the embonpoint is, to a certain degree, universally agreeable: witness the Medicean Venus¹¹⁰

Women’s weight was thought to be much less under their control than men’s because it was evident that women’s weights leaped at puberty, pregnancy and menopause¹¹¹.

¹⁰⁶ Meath, Earl of, ‘Health and Physique of Our City Populations’, in Meath, Earl of (ed.), *Prosperity or Pauperism? Physical, Industrial, and Technical Training*, (London: Longmans, Green & Co., 1888), p. 5; Cantlie, J., *Degeneration Amongst Londoners*, (London: The Leadenhall Press, 1885).

¹⁰⁷ Zweiniger-Bargielowska, I., ‘The Culture of the Abdomen: Obesity and Reducing in Britain, circa 1900-1939’, *Journal of British Studies*, vol. 44, 2 (2005), p. 19.

¹⁰⁸ Mosse, G. L., *The Image of Man: The Creation of Modern masculinity*, (New York & Oxford: Oxford University Press, 1996), pp. 34-5.

¹⁰⁹ Adam, G. M. (ed.), *Sandow’s System of Physical Training*, (London: Gale & Polden, 1894), p. 2.

¹¹⁰ Wadd, W., *Cursory Remarks on Corpulence, Or Obesity Considered as a Disease*, 3rd edn. (London: J. and W. Smith, 1816), p. 45.

Nonetheless, women also had an obligation to stay fit because of their responsibility as mothers and the impact of their health on their infants¹¹². Over-indulgence was no more aesthetically pleasing than amongst men. Graves decried:

Nothing, indeed can be more indelicate than to see one of those angelic beings...eagerly devouring high-seasoned food, and at every interval pouring down repeated glasses of Madeira, port, or sherry; nay, sometimes perhaps a bumper or two of strong beer, at which a fox-hunter would be staggered. Ladies of this masculine description...will excuse me if I am not in rapture with their charms, or profess myself their lover¹¹³

In the last decades of the nineteenth century Eugen Sandow, world famous bodybuilder and music hall performer, became, ‘...an example of what muscular training [could] do in developing to perfection the human form and achieving the classical ideal of physical beauty’¹¹⁴. Unlike those encouraging muscular Christianity, Sandow advocated exercise for its own sake and for the sake of health, rather than for any moral goal or religious undertone. Famed for his semi-naked poses in postures inspired by classical statues, Sandow also provided personal fitness training from his Institute of Physical Culture in central London, and produced books, *Sandow’s Magazine of Physical Culture*, best-selling fitness equipment, and mail-order fitness courses¹¹⁵. Sandow became, ‘the literal embodiment of masculine perfection’, promoting himself as the ‘structurally perfect type of man’¹¹⁶.

However, Breward highlights that it should not be taken for granted that Sandow provided the late nineteenth century image of the perfect male. Sandow performed in musical halls and on variety line-ups alongside male impersonators, acrobats, giants and dwarfs. His muscular male beauty was juxtaposed against many contrasting versions of masculinity. Breward argues that it is difficult to determine the

¹¹¹ Schwartz, H., *Never Satisfied: A Cultural History of Diets, Fantasies and Fat*, (New York and London: Free Press, 1986), pp. 17-18.

¹¹² Zweiniger-Bargielowska, I., *Managing the Body: Beauty, Health and Fitness in Britain, 1880-1939*, (Oxford & New York: Oxford University Press, 2010), p. 6.

¹¹³ Graves, R., *The Invalid: With the Obvious Means of Enjoying Health and Long Life*, (London: R. Phillips, 1804), pp. 59-60.

¹¹⁴ Adam, G. M. (ed.), *Sandow’s System of Physical Training*, (London: Gale & Polden, 1894), p. 12.

¹¹⁵ Waller, D., *The Perfect Man: The Muscular Life and Times of Eugen Sandow, Victorian Strongman*, (Brighton: Victorian Secrets, 2011), pp. 7-11.

¹¹⁶ Waller, D., *The Perfect Man: The Muscular Life and Times of Eugen Sandow, Victorian Strongman*, (Brighton: Victorian Secrets, 2011), p. 8; Adam, G. M. (ed.), *Sandow’s System of Physical Training*, (London: Gale & Polden, 1894), p. 130.

extent to which Sandow's figure was being celebrated, distinct from the alternative bizarre and infamous individuals within popular culture¹¹⁷. His skimpy outfits and training regime were mocked in satirical publications¹¹⁸.

Although this was true, the simultaneous emergence of a multifaceted life reform campaign at the end of the nineteenth century undermines arguments that Sandow was a celebrity but not an icon. Sandow's was the famous face at the bow of new physical culture movement. By the turn of the twentieth and into its early decades, there were numerous other popular physical culturalists besides Sandow, including: George Hackenschmidt - a weightlifter and wrestler; Eustace Miles – a vegetarian athlete; Jørgen Peter Müller – an athlete and gymnast; and other music hall performers such as weight-lifter Thomas Inch, strongman Edward Aston, and muscle developers Monte Saldo and Max Sick¹¹⁹.

Sandow's 'combined developer' exercise machine cost twelve shillings and six pence but despite this relatively high price, it was a best seller and remained advertised until the interwar years. Similarly, instruction at Sandow's Institute cost ten guineas for two weekly lessons over three months, which again was expensive, but it remained popular until its closure in the first decade of the twentieth century¹²⁰. Sandow persuaded individuals to subscribe to his regimes and facilities by explicitly stating:

For the reduction of fat, as well as for producing that perfect equilibrium of the functions most favourable to health, there is no better specific than systematic physical training. With persistence in training...the problem of obesity can be solved...¹²¹

Health and Strength and *Vim*, launched in 1898 and 1902 respectively, were two physical culture magazines that followed the example of *Sandow's Magazine*, although with less of a gentlemanly tone, aimed more at the lower-middle and working

¹¹⁷ Breward, C., *The Hidden Consumer: Masculinities, Fashion and City Life 1860-1914*, (Manchester & New York: Manchester University Press, 1999), pp. 242-4.

¹¹⁸ Waller, D., *The Perfect Man: The Muscular Life and Times of Eugen Sandow, Victorian Strongman*, (Brighton: Victorian Secrets, 2011), pp. 44-5.

¹¹⁹ Zweiniger-Bargielowska, I., *Managing the Body: Beauty, Health and Fitness in Britain, 1880-1939*, (Oxford & New York: Oxford University Press, 2010), pp. 42-50.

¹²⁰ Zweiniger-Bargielowska, I., *Managing the Body: Beauty, Health and Fitness in Britain, 1880-1939*, (Oxford & New York: Oxford University Press, 2010), p. 39.

¹²¹ Adam, G. M. (ed.), *Sandow's System of Physical Training*, (London: Gale & Polden, 1894), p. 176.

classes. *Health and Strength* was the more popular of the two, achieving a circulation of 74,250 by 1909 and opening its own School of Physical Culture in London in 1902. The School was cheaper than Sandow's Institute and catered for a less gentlemanly clientele of office workers and businessmen. According to the National Physical Recreation Society there were 115 gymnasiums in Britain by the 1890s. Major London gymnasiums included the Regent Polytechnic opened in 1865, the Northampton Institute Gymnastic Club founded in 1898 and the YMCA Tottenham Court Road, also opened at the end of the nineteenth century. By the first decade of the twentieth century physical culture clubs had also opened to cater for the working-classes, with a typical entrance fee of one shilling or a weekly subscription for six shillings¹²².

Aside from this burgeoning physical culture infrastructure, Shannon also highlights that nineteenth century advertisers used images associated with strength and vigour, such as athletes, adventurers and soldiers to appeal to male consumers. These were the forms of masculinity that men sought to achieve and therefore that aspirational brands targeted¹²³. The slim and muscular aesthetic extended throughout late nineteenth century culture. Even when visiting their tailor, 'many men would assume unnaturally 'manly' poses, puffing out their chest, or breathing in to reduce the size of their waist'¹²⁴.

By the end of the nineteenth century a well-established physical culture infrastructure existed providing facilities for those that wanted to lose weight. Although these were initially targeted at the more affluent, upper-middle classes, increasingly a market for physical development emerged at the lower (although not lowest) end of the social scale. Thus the rise in chronic diseases associated with

¹²² Zweiniger-Bargielowska, I., *Managing the Body: Beauty, Health and Fitness in Britain, 1880-1939*, (Oxford & New York: Oxford University Press, 2010), pp. 40-2.

¹²³ Shannon, B., *The Cut of His Coat: Men, Dress, and Consumer Culture in Britain, 1860-1914*, (Athens: Ohio University Press, 2006), pp. 57-61.

¹²⁴ The Major, *To-day, Clothes and the Man: Hints on the Wearing and Caring of Clothes*, (London: Grant Richards, 1900), pp. 29-31, as cited in Ugolini, L., *Men and Menswear: Sartorial Consumption in Britain 1880-1939*, (Aldershot: Ashgate, 2007), p. 243.

obesity motivated a corresponding dietary and exercise culture, both of which espoused new healthy body shape ideals that gained traction within popular culture.

2.5. Social Status and Obesity

Within this atmosphere, notions of health and beauty were intertwined - big was no longer beautiful. Hau observed:

...obesity (which earlier had signified social status and health) became increasingly stigmatized, because it signified the lack of virility, self-control, energy and will in men. The obese were considered outside the sphere of heroic male activity and volition. Obese and weak puny men were both represented as negative counter images to a new ideal of muscular masculinity¹²⁵

By the first half of the nineteenth century, overweight was already described as a source of embarrassment. In 1829, Dr. Wadd remarked that, 'in enumerating the little miseries of the corpulent, their exposure to ridicule should not be forgotten'¹²⁶. By the mid-nineteenth century, Banting lamented:

Any one so afflicted is often subject to public remark, and though in conscience he may care little about it, I am confident no man labouring under obesity can be quite insensible to the sneers and remarks of the cruel and injudicious in public assemblies, public vehicles, or the ordinary street traffic...and therefore he naturally keeps away as much as possible from places where he is likely to be made the object of the taunts and remarks of others¹²⁷

The public derision towards the corpulent was exacerbated by the fact that obesity became an indictment on individuals' character and even morality.

Contemporaries acknowledged:

...in these days of philosophical fancies, we read a man's history and character at a single glance...our personal beauty depends upon eating and drinking¹²⁸

Corpulence was interpreted as evidence of greed and self-indulgence, as well as a lack of will power or determination to maintain a slim form. Throughout the nineteenth century obesity was correlated with ineptitude. In 1816, Dr. Wadd expressed this emphatically:

¹²⁵ Hau, M., 'The Normal, the Ideal and the Beautiful', in Sappol, M. and Rice, S. P. (eds.), *A Cultural History of the Human Body: In The Age of Empire*, (Oxford: Berg, 2010), p. 158.

¹²⁶ Wadd, W., *Comments on Corpulency, Lineament of Leanness, Mems on Diet and Dietetics*, (London: John Ebers & Co., 1829), p. 27.

¹²⁷ Banting, W., *Letter on Corpulence*, 4th edn (Great Britain: Green Valley Press, 2003)

¹²⁸ Wadd, W., *Comments on Corpulency, Lineament of Leanness, Mems on Diet and Dietetics*, (London: John Ebers & Co., 1829), p. 7.

...if the Goddess of Wisdom were to grow fat, even she would become stupid; and the celebrated Burke, in his remarks on the French revolution, considers fat, stupidity, irreligion and avarice, as rising from one common source. Fat and stupidity, says the accomplished Lord Chesterfield, are looked upon as such inseparable companions, that they are used as synonymous terms¹²⁹

The opinion was maintained in 1889 that, '...the stupid, heavy, non-intellectual person, or the idiot, is generally flabby and fat'¹³⁰.

Furthermore, obesity showed an irresponsible attitude towards civil duty when racial health and strength was being emphasised as critical to national well-being. In 1894, Sandow, predicting the recruitment problems of the Second Boer War and First World War, cynically lamented:

Our supineness...will go on until either some commanding voice arises to prick effectually the stifled consciences of a heedless...people, or a time of national peril will again come, when the physical vigour of the nation's muscle-defence will be tried in the balance and found wanting¹³¹

The 'supine' obese, unable to protect Britain or its empire, were even said to maintain a body shape associated with a primitive 'other' better represented by 'uncivilised' natives than imperial masters¹³². In 1816, Dr. Wadd presented it as bizarre deviation from British normative values that, 'the Tunisines have a curious custom of fattening up their ladies for marriage'¹³³. Akin to this, in 1889 Dr. Yorke-Davies also proffered the intriguing counter-example of, 'a set of Brahmins who pride themselves on their extreme corpulency...They look upon corpulency as a sign of opulence'¹³⁴.

This provides strong evidence, in agreement with Zweiniger-Bargielowska, that hegemonic or normative masculinity was encoded on the male body and the obese

¹²⁹ Wadd, W., *Cursory Remarks on Corpulence, Or Obesity Considered as a Disease*, 3rd edn. (London: J. and W. Smith, 1816), pp. 54-5.

¹³⁰ Yorke-Davies, N. E., *Foods for the Fat: A Treatise on Corpulency, with Dietary for its Cure*, (London: Chatto & Windus, 1889), p. 10 and Yorke-Davies, N. E., *Aids to Long Life: A Medical Dietetic and General Guide in Middle and Old Age*, (London: Chatto & Windus, 1885), p. 192.

¹³¹ Adam, G. M. (ed.), *Sandow's System of Physical Training*, (London: Gale & Polden, 1894), p. 173.

¹³² Zweiniger-Bargielowska, I., 'The Culture of the Abdomen: Obesity and Reducing in Britain, circa 1900-1939', *Journal of British Studies*, vol. 44, 2 (2005), p. 272.

¹³³ Wadd, W., *Cursory Remarks on Corpulence, Or Obesity Considered as a Disease*, 3rd edn. (London: J. and W. Smith, 1816), p. 45.

¹³⁴ Yorke-Davies, N. E., *Foods for the Fat: A Treatise on Corpulency, with Dietary for its Cure*, (London: Chatto & Windus, 1889), notes p. 21.

man represented a deviance or 'countertype'¹³⁵. The denigration of obesity can be traced to the mid-nineteenth century, if not earlier. Thus, throughout the second half of the nineteenth century: the threat of obesity related chronic diseases was publicised, a healthy body size was outlined, methods to stay slim were provided, and overweight was neither beautiful nor attached to social status – so why did rates of chronic diseases keep rising?

2.6. The Myopia of Society

The ability to make personal lifestyle decisions to avoid obesity and chronic diseases was both a blessing and a curse. Affluent individuals had a new authority over their own health outcomes and could strive to prevent rather than simply cure disease, but once health became a personal responsibility it also required an arduous level of commitment.

The problem was that such resolution, to either a diet or an exercise regime, had neither been recommended nor required previously. For the lowly majority, facing undernutrition and infectious diseases, this preventative action remained irrelevant. However, there was a growing proportion of individuals benefitting materially from the industrialisation process who, as the evidence above implies, provided a market for weight-loss solutions. To avoid obesity these individuals needed to be proactive in ways never before necessary. As Cantlie bemoaned:

In the earliest time of the human race, when man's only duty was to till the ground or follow the chase, it was unnecessary to prompt people to take exercise farther than what was required in the execution of their labours. Now-a-days, however, the multiplication of industries is such, that but few obtain exercise *at* their employment; and consequently, if they are to have exercise at all, it must be something *added on to* and independent of their daily employment [emphasis in the original]¹³⁶

Furthermore, access to a more sedentary lifestyle and higher income was not limited to a broadening professional class; as Dr. Fothergill warned, heart disease

¹³⁵ Zweiniger-Bargielowska, I., 'The Culture of the Abdomen: Obesity and Reducing in Britain, circa 1900-1939', *Journal of British Studies*, vol. 44, 2 (2005), p. 245.

¹³⁶ Cantlie, J., *Degeneration Amongst Londoners*, (London: The Leadenhall Press, 1885), pp. 26-7.

could, '...be found in persons of every position in life, from the millionaire to the bricklayer's labourer'¹³⁷. Cantlie complained:

The farm labouring class is the only large class of all the community which has preserved to it man's natural calling. For has not the shop-keeper, the shoe-maker, the weaver, and the butcher as close engagement in even a country village as in a large town? Thus have all classes, except the farm-labourer, undertaken work which is without a sufficiency of exercise; and unless care is taken to provide for such, there will, in time, be developed a puny race unfit to maintain themselves¹³⁸

Industrial capitalism did not make obesity inevitable but it did make it far more challenging to avoid. Individuals were susceptible to myopia, desiring a slim and muscular, healthy and beautiful, body in the long-term but succumbing to a plentiful dining table and the avoidance of exertion in the short-term. Dr. Black recognised this problem from the outset, acknowledging that his proposal of an abstemious regimen for individuals prone to chest pain, '...would require a degree of firmness and vigour of mind with which the generality of men are not gifted'¹³⁹. In 1810, Dr. Wadd bemoaned:

...many would willingly submit to any violent remedy, so that an immediate benefit could be produced; but unless the disease speedily gives way, they despair of success; consider it as unalterably connected with their constitution, and of course, return to their former habits. This feeling is too often encouraged by the ill-judged advice of friends, who thereby perhaps, become unthinking accomplices in the destruction of those whom they esteem and regard¹⁴⁰

The same complaints were being made at the end of the nineteenth century:

There is really no difficulty in reducing corpulence. The difficulty is to get the sufferer – generally easy-going and indolent – to carry out the necessary system, which is more or less irksome by the restraint it puts upon appetite, especially in those who perhaps may almost be said to “live to eat” instead of “eating to live”¹⁴¹

The difficulties inherent in losing weight explain why dietary systems advocated by lay individuals were popularised. Accounts of personal experiences, such as Banting's, acted as a reassurance to those sceptical of their ability to lose weight. Banting wrote:

¹³⁷ Fothergill, J. M., *The Heart and its Diseases: With Their Treatment*, (London: H. K. Lewis, 1872), p. 163.

¹³⁸ Cantlie, J., *Degeneration Amongst Londoners*, (London: The Leadenhall Press, 1885), pp. 27-8.

¹³⁹ Black, S., 'History of Two Cases of Angina Pectoris', *Medico-Chirurgical Transactions*, vol. 7 (1816), p. 82.

¹⁴⁰ Wadd, W., *Cursory Remarks on Corpulence*, (London: J. and W. Smith, 1810), pp. 30-1.

¹⁴¹ Yorke-Davies, N. E., *Foods for the Fat: A Treatise on Corpulency, with Dietary for its Cure*, (London: Chatto & Windus, 1889), p. 19 and Yorke-Davies, N. E., *Aids to Long Life: A Medical Dietetic and General Guide in Middle and Old Age*, (London: Chatto & Windus, 1885), p. 195.

Of all the parasites that affect humanity, I do not know of, nor can I imagine, any more distressing than that of Obesity, and, having emerged from a very long probation in this affliction, I am desirous of circulating my humble knowledge and experience for the benefit of other sufferers, with an earnest hope that it may lead to the same comfort and happiness I now feel under the extraordinary change¹⁴²

Like Banting, Sandow's success stemmed from offering a personal example of the impact discipline could have, combined, of course, with great showmanship and personal promotion. It was emphasised that:

...Sandow...was no youthful prodigy – physical or mental – and inherited from his parents little beyond a well-made but normal frame, and a healthy but by no means vigorous infantile constitution. What he [became], therefore, [was] the result of his own earnest, persistent and assiduous training...¹⁴³

The 'ordinariness' of reformers such as Banting and Sandow was a strong part of their appeal - individuals could relate to them and their achievements seemed accessible.

Sandow proved that commitment to stemming the degeneracy of the race was feasible. His ambition was:

...to show how effective can be even simple methods of muscular training, when scientifically imparted, in raising the human body to a high plane of physical perfection, and in making it better fitted for the all-round, every-day work of both the manual and the intellectual toiler¹⁴⁴

This legitimised the provision of medical advice by lay individuals. Although non-qualified doctors, druggists and quacks had all performed for centuries, unlike those individuals, most nineteenth dieticians made no claim to medical expertise. In 1804, Graves admitted:

...although I may talk like an apothecary, I am no physician...No have I any other interest in this affair, than from the pleasure which I promise myself in being serviceable to mankind...¹⁴⁵

Similarly Banting explicitly declared:

I have never assumed the slightest medical knowledge, but, on the contrary, I have assured every correspondent that I was utterly ignorant of the physiological or chemical reasons for the wonderful results produced by the prescribed dietary¹⁴⁶

Non-professionals were capable of offering medical advice because,

'corpulence and thinness differ from the majority of diseased conditions inasmuch as

¹⁴² Banting, W., *Letter on Corpulence*, 4th edn (Great Britain: Green Valley Press, 2003).

¹⁴³ Adam, G. M. (ed.), *Sandow's System of Physical Training*, (London: Gale & Polden, 1894), p. 130.

¹⁴⁴ Adam, G. M. (ed.), *Sandow's System of Physical Training*, (London: Gale & Polden, 1894), p. 7.

¹⁴⁵ Graves, R., *The Invalid: With the Obvious Means of Enjoying Health and Long Life*, (London: R. Phillips, 1804), p. viii

¹⁴⁶ Banting, W., *Letter on Corpulence*, 4th edn (Great Britain: Green Valley Press, 2003)

their diagnosis or detection is easy'¹⁴⁷. Treatises published by lay individuals hoped to engage with the public more successfully than medical tracts because they avoided the drudgery of the medical dispute surrounding the causes of obesity. Personal accounts could refer to the day-to-day distress caused by obesity rather than expecting individuals to be far-sighted and respond to future chronic disease implications. Banting suggested that if his letter, '...had been written by a medical man, it would scarcely have been noticed by the general public at all'¹⁴⁸.

Similarly, quack, quick fix dieting products were popular because they supposedly avoided the nuisance of committing to a long-term regimen. They could claim:

...the result is obtained without subjecting the organism to any abrupt or prolonged strain, and without the distressing interference with the patient's ordinary mode of life which the more violent methods involve¹⁴⁹

Quack products like Amiral Soap tried to impart their integrity by advertising that they were, 'endorsed...by numerous conclusive testimonials by medical men who have given the treatment a fair trial'¹⁵⁰.

The production of lay tracts and quack products to overcome the natural myopia of society threatened the medical profession's monopoly over health. Undermined by their inability to agree on the pathology of chronic diseases, physicians were now also redundant in terms of prescribing cure. This threat to the medical profession may explain why most doctors were scathing of lay dietaries - Banting found that he was, '...sadly and unjustly attacked by certain prominent members of the British Association'¹⁵¹. Dr. Dutton retaliated against lay dietaries by stating explicitly:

¹⁴⁷ Sutherland, W. G., *Corpulence and Thinness and their Cure*, (London: Truslove, Hanson & Comba, 1901), pp. ix-x.

¹⁴⁸ Wadd, W., *Cursory Remarks on Corpulence*, (London: J. and W. Smith, 1810), p. 41.

¹⁴⁹ Amiral Soap Syndicate, *The Treatment of Obesity by a New Method, Without Change of Diet or Regimen, and Without Medicine*, (London: n.p., 1898), p. 10.

¹⁵⁰ Amiral Soap Syndicate, *The Treatment of Local Obesity by a New Process*, (London: n.p., 1898), p. 8.

¹⁵¹ Banting, W., *Letter on Corpulence*, 4th edn (Great Britain: Green Valley Press, 2003).

Some special knowledge is required for the proper treatment of the disease, viz.: a sound technical and practical acquaintance with the chemistry of digestion, as well as a thorough understanding of foods in general¹⁵²

Similarly physicians warned:

...obesity has been made the happy hunting-ground of the quack and “patent” medicine man, who fleece their victims both in health and pocket¹⁵³

Medical endorsements were dismissed as:

...bogus testimonials and “press notices” (paid for at advertising rates in second-rate journals, and afterwards quoted as editorial utterances by the quack) [that] deceive the unwary, but cannot stand close scrutiny¹⁵⁴

However, whilst dismissing the validity of lay dietaries and quack products, physicians utilised the same marketing ploys, garnering public interest by referring to their case histories of real patients and their own personal experiences. Dr. Wadd claimed: ‘in private life, I know several persons who are living testimonies of the good effects of an entire and systematic change in the mode of living’¹⁵⁵. Dr. Densmore extolled: ‘results in my practice were often little less than magical’¹⁵⁶.

Amidst this respective criticism and backlash within physicians’ tracts, dietary systems and quack commercial products, no one disputed that weight control was required. By the second-half of the nineteenth century there were no retaliatory arguments against dietary constraint or dismissing overweight as harmless. It was universally acknowledged, although for varying reasons including health, comfort, beauty, and the state of the nation, that purging corpulence was imperative. Lay individuals, quacks and medics competed to identify their own approach as the most effective means to achieve self-control and weight-loss.

Overall, the preceding analyses agree with Zweiniger-Bargielowska:

The vilification of obesity and the desire to reduce were stimulated by the emergence of new bodily norms and ideals in anthropometric surveys that were endorsed by the

¹⁵² Dutton, T., *Obesity: Its Cause and Treatment*, (London: Kimpton, 1896), p. 11.

¹⁵³ Sutherland, W. G., *Corpulence and Thinness and their Cure*, (London: Truslove, Hanson & Comba, 1901), p. 8.

¹⁵⁴ Sutherland, W. G., *Corpulence and Thinness and their Cure*, (London: Truslove, Hanson & Comba, 1901), p. xiv.

¹⁵⁵ Wadd, W., *Cursory Remarks on Corpulence, Or Obesity Considered as a Disease*, 3rd edn. (London: J. and W. Smith, 1816), p. 49.

¹⁵⁶ Densmore, H., *How to Reduce Fat*, (New York: n.p., 1996), p. 2.

medical profession and promoted in popular culture. Reducing was part of a wider physical culture...in response to the rise of modern, urban industrial society¹⁵⁷

However, two key questions remain: when did obesity emerge as a response to the 'rise of modern, urban industrial society'? And, who was affected?

2.7. The Timing of Rising Obesity

The growth of a modern industrial society, an increased rate of chronic diseases, the association of chronic diseases with obesity, and the call for preventative diet and exercise regimes, are all trends that cannot be assessed separately – each fed into the next. Consequently, the timing of these trends are also roughly successive – the industrial revolution began broadly in the mid-eighteenth century, the threat of chronic diseases appears to have been anecdotally recognised from the early nineteenth century but highlighted statistically by the GRO from the mid-nineteenth century; as a result, the correlation between chronic diseases and obesity was earnestly explored by the early decades of the second-half of the nineteenth century; dieting manuals became popular by the mid-1860s; and the physical culture movement burgeoned in the last decades of the nineteenth century. It is therefore imperative to identify at what stage of the long industrialising process obesity became a major health threat, triggering these knock-on effects.

Historically obesity affected only a very small proportion of the population, restricted to the wealthy upper-echelons of society who had the means to self-indulge and the opportunity to be idle. Limited to this minority it is traditionally believed that obesity did not become a major health problem until the late-twentieth century. The numerous treatises referenced in this chapter, reacting to the increase in chronic ailments, associating them with corpulence, and promoting dieting measures, raise suspicion that obesity and its associated diseases had already begun spreading dangerously within the nineteenth century.

¹⁵⁷ Zweiniger-Bargielowska, I., 'The Culture of the Abdomen: Obesity and Reducing in Britain, circa 1900-1939', *Journal of British Studies*, vol. 44, 2 (2005), p. 243.

That is not to say that the working class masses were becoming obese. As has been reiterated throughout, the health of the majority that toiled in poverty and hardship was more threatened by being underweight rather than overweight. Contemporaries fully acknowledged that, 'a very poor corpulent man is not so frequently met with, inasmuch as the poor cannot afford to procure the means for creating fat...' ¹⁵⁸. Whereas, 'the great majority of the subjects of [angina pectoris]...belonged to such a rank of society, that we must presume they sat down to a plentiful table' ¹⁵⁹. Obesity was understood to be:

...a disease, with which the lower orders of society, the poor and laborious, are seldom encumbered; it is among those who have the means of obtaining the comforts of life without labour, that excessive corpulency is met with ¹⁶⁰

However, a diverse and varied portion of society was capable of, 'obtaining the comforts of life without labour'. Wadd's case histories published in 1816 included merchants, tradesmen, labourers, barristers, clergy, professors, farmers, schoolmasters, bakers, and doctors ¹⁶¹. Banting himself had been a successful undertaker. The 'affluent' at threat of over-indulgence were very broadly defined, encompassing a wide range of occupations and social backgrounds.

This was because industrialisation brought higher wages to an expanding middle class. In 1885 Cantlie remarked:

Every one knows of families who, owing to a sudden accession of wealth, and possessed only of democratic methods of enjoying it, have proved themselves unable mentally and physically to bear the strain, and who drift into unwise extremes of eating and drinking... ¹⁶²

By implication, by the end of the nineteenth century obesity was no longer negligible or inconsequential; it had become a common state of being. As early as 1810 Dr. Wadd remarked that:

¹⁵⁸ Banting, W., *Letter on Corpulence*, 4th edn (Great Britain: Green Valley Press, 2003).

¹⁵⁹ Black, S., 'History of Two Cases of Angina Pectoris', *Medico-Chirurgical Transactions*, vol. 7 (1816), p. 82.

¹⁶⁰ Wadd, W., *Cursory Remarks on Corpulence*, (London: J. and W. Smith, 1810), p. 17.

¹⁶¹ Wadd, W., *Cursory Remarks on Corpulence*, (London: J. and W. Smith, 1810), p. 33, p. 41; Wadd, W., *Cursory Remarks on Corpulence, Or Obesity Considered as a Disease*, 3rd edn. (London: J. and W. Smith, 1816), p. 82, p. 84, p. 100, p. 102, p. 106.

¹⁶² Cantlie, J., *Degeneration Amongst Londoners*, (London: The Leadenhall Press, 1885), pp. 35-6.

...the accumulation of fat, or what is commonly called corpulency...is a state of body very generally met with in the inhabitants of this country¹⁶³

But by 1889 Dr. Yorke-Davies lamented:

What the Englishman is may be judged by the satire of the age, and the jolly John Bull sort of man depicted in the pages of *Punch* may be supposed to represent the national tendency¹⁶⁴

Remarkably, very few historians have analysed the timing of the dissemination of obesity. Making the first quantitative strides in this field, Komlos and Brabec have tried to clarify the timing of worrying upward body mass trends in America, moving them earlier, to post-World War One. Their conclusion is that:

...the transition to post-industrial BMI values certainly did not, appear suddenly in the 1980s as the official view would have it. Rather, it most likely started in earnest among those born after World War I, and the BMI values continued to increase persistently punctuated by upsurges...¹⁶⁵

They argue that even the BMIs of advantaged West Point and Citadel military cadets were low and remained low throughout the second half of the nineteenth century¹⁶⁶.

Although Komlos and Brabec find that the BMI values of birth cohorts were already increasing by the end of the nineteenth century, they suggest that this mainly brought an improvement to those who were underweight and that upper-bound BMI levels did not reach dangerous levels until the twentieth century¹⁶⁷.

Zweiniger-Bargielowska qualitatively argues that in Britain, 'the rise of obesity was caused by increasing living standards, abundant food, and sedentary lifestyles that emerged in the late nineteenth century'¹⁶⁸. She highlights that, 'in the second half of the nineteenth century...medical practitioners...noted a rise in obesity amongst

¹⁶³ Wadd, W., *Cursory Remarks on Corpulence*, (London: J. and W. Smith, 1810), p. 15.

¹⁶⁴ Yorke-Davies, N. E., *Foods for the Fat: A Treatise on Corpulency, with Dietary for its Cure*, (London: Chatto & Windus, 1889), p. 10 and Yorke-Davies, N. E., *Aids to Long Life: A Medical Dietetic and General Guide in Middle and Old Age*, (London: Chatto & Windus, 1885), p. 191.

¹⁶⁵ Komlos, J. and Brabec, M., 'The Trend of BMI Values of US Adults by Deciles, Birth Cohorts 1882-1986 Stratified by Gender and Ethnicity', *Economics and Human Biology*, vol. 9, 3 (2011), p. 249.

¹⁶⁶ Komlos, J. and Brabec, M., 'The Trend of BMI Values of US Adults by Deciles, Birth Cohorts 1882-1986 Stratified by Gender and Ethnicity', *Economics and Human Biology*, vol. 9, 3 (2011), p. 236.

¹⁶⁷ Komlos, J. and Brabec, M., 'The Trend of BMI Values of US Adults by Deciles, Birth Cohorts 1882-1986 Stratified by Gender and Ethnicity', *Economics and Human Biology*, vol. 9, 3 (2011), p. 247.

¹⁶⁸ Zweiniger-Bargielowska, I., 'The Culture of the Abdomen: Obesity and Reducing in Britain, circa 1900-1939', *Journal of British Studies*, vol. 44, 2 (2005), p. 272.

their middle-class patients'¹⁶⁹. Yet, somewhat in contradiction to these statements, she still determines that, 'obesity...became a leading public health problem in Britain...in the final decades of the twentieth century'¹⁷⁰.

The confusion rests on the definition of a 'leading public health problem'. If one accepts that obesity becomes a major threat to public health once it becomes widespread, then the first stage of this is the dissemination of obesity beyond the elites, to the middle classes. Thus Zweiniger-Bargielowska's expansive primary evidence provides the basis to pinpoint obesity as a major public health problem in the second-half of the nineteenth century, rather than at the end of the twentieth. This re-alignment would be useful to encourage more historians to examine the origins of obesity.

Certainly the material from doctors' tracts and dietaries cited within this chapter testifies to a middle class obesity problem by the second-half of the nineteenth century. Contemporaries were already concerned about the prevalence of chronic disease and obesity and Dr. Yorke-Davies specifically referred to a 'middle-class victim of obesity'. Their plight was construed as worse than that of the elites because the latter had greater means to invest in self-control:

The rich may go and have their flues swept out at such places as Carlsbad, Marienbad, Kissengen, and Ems, where the meagre diet and quantity of water drunk...will soon reduce their superabundance of unhealthy tissue to limits compatible with health and enjoyment. But the middle-class victim of obesity and gout must be content, if he would enjoy life and live to an advanced age, to take the advice of Socrates, where he says, "Beware of those foods that tempt you to eat when you are not hungry, and of those liquors that tempt you to drink when you are not thirsty", and make dietetics his study to the extent of learning what foods he should indulge in, and what quantity he can take without ultimate discomfort¹⁷¹

The timing of the dissemination of obesity towards the middle-classes is important. Obesity has since become a global epidemic¹⁷². Overweight pervades

¹⁶⁹ Zweiniger-Bargielowska, I., 'The Culture of the Abdomen: Obesity and Reducing in Britain, circa 1900-1939', *Journal of British Studies*, vol. 44, 2 (2005), p. 242.

¹⁷⁰ Zweiniger-Bargielowska, I., 'The Culture of the Abdomen: Obesity and Reducing in Britain, circa 1900-1939', *Journal of British Studies*, vol. 44, 2 (2005), pp. 243-4.

¹⁷¹ Yorke-Davies, N. E., *Foods for the Fat: A Treatise on Corpulency, with Dietary for its Cure*, (London: Chatto & Windus, 1889), p. 23 and Yorke-Davies, N. E., *Aids to Long Life: A Medical Dietetic and General Guide in Middle and Old Age*, (London: Chatto & Windus, 1885), p. 198.

¹⁷² World Health Organization (WHO), *Obesity: Preventing and Managing the*

countries that are economically developed, transitional, and lower-income¹⁷³.

Developing countries face a 'double jeopardy', simultaneously susceptible to 'old regime' infectious diseases and 'new regime' diseases of over-nutrition¹⁷⁴.

International policy makers are dependent on epidemiologists and social scientists if they are to determine the sources of obesity and stem the global phenomenon. The transmission of obesity in Britain beyond the elites is a pivotal point in global medical history – this was the first moment obesity became a serious health concern. Better understanding this juncture is key to halting the spread of modern obesity and containing an overweight status amongst the minority elites in currently developing nations. In 1885 Cantlie made a very wise forecast when he said - 'depend upon it we are at a turning-point in our national health'¹⁷⁵.

2.8. Conclusion

This contextual analysis of the state of chronic disease and obesity during the nineteenth century highlights the utility and importance of assembling anthropometric data to quantitatively test the prevalence and trends in overweight during this period. In future chapters, waist circumference and hip circumference measurements taken from contemporary tailors' records will statistically verify the impact of nineteenth century wealth on health. Analyses combining this anthropometric data with modern epidemiological health standards will determine whether the physicians and dieticians cited above were justified in raising concern about nineteenth century levels of obesity and suggesting that dietary measures were required to avoid the threat of chronic diseases. Quantitative examination is necessary to ascertain whether obesity was already becoming a major health problem in Britain by the second-half of the

Global Epidemic, Report of a WHO Consultation, Geneva 3-5 June 1997, (Geneva: World Health Organization, 2000).

¹⁷³ Popkin, B. M. and Doak, C. M., 'The Obesity Epidemic is a Worldwide Phenomenon', *Nutritional Reviews*, vol. 56, 4 (1998), p. 106.

¹⁷⁴ Osmani, S. and Sen, A., 'The Hidden Penalties of Gender Inequality: Fetal Origins of Ill-Health', *Economics and Human Biology*, vol. 1, 1 (2003), pp. 105-21.

¹⁷⁵ Cantlie, J., *Degeneration Amongst Londoners*, (London: The Leadenhall Press, 1885), p. 31

nineteenth century and to realign current perceptions of the origins of our current global epidemic.

Ultimately what is sought is a more nuanced conception of the 'epidemiological transition' – the realignment of mortality from infectious diseases towards chronic ailments. In order for this to be achieved, the upward trend in chronic disease mortality needs to receive as much attention as the declining trend in infectious diseases. Only once this is accomplished can the timing and implications of the epidemiological transition be fully realised.

This is important because it enables us to agree with Szreter, albeit for different reasons, that although throughout the twentieth century poorer countries have been encouraged to follow an industrialising path akin to that of currently developed nations, '...history would counsel a more circumspect and cautious approach'¹⁷⁶. It should not be assumed that economic growth automatically stimulates improved population health. Although wealth is a required precondition for good health, it needs to be managed carefully for improved health to be achieved¹⁷⁷. In particular, nineteenth century Britain illustrates that the negative health implications of overnutrition can be closely tied to affluence in industrial capitalist development.

Offer refers to obesity as a puzzle to standard decision theories that assume, what people want is what they choose, and what they choose is good for them¹⁷⁸. The nineteenth century represents the juncture at which this puzzle emerges. In the early modern period, when a portly figure was a sign of status and the consequences of obesity little understood, overweight was not an irrational economic decision. However, by the nineteenth century obesity was not an objective. The contemporaries cited above unanimously scorned obesity and feared its

¹⁷⁶ Szreter, S., *Health and Wealth: Studies in History and Policy*, (Rochester, NY: University of Rochester Press, 2005), p. 19.

¹⁷⁷ Szreter, S., *Health and Wealth: Studies in History and Policy*, (Rochester, NY: University of Rochester Press, 2005), pp. 29-30.

¹⁷⁸ Offer, A., 'Introduction', in Offer, A., Pechey, R., and Ulijaszek, S. (eds.), *Insecurity, Inequality and Obesity in Affluent Societies*, (New York: The British Academy, Oxford University Press, 2012), p. 2.

consequences. Many individuals who gained weight made choices that they knew were not good for them.

This is the point at which the search for an economic model to explain the growth of obesity needs to be targeted. Although it has previously been acknowledged that, '...there is ample evidence that the roots of the obesity pandemic do reach much further back in time than is commonly asserted'¹⁷⁹ and that, '...the search for causes needs to venture into the past'¹⁸⁰, as yet the search for causes has not extended as far enough back as it needs to.

Contemporaries explained rising rates of obesity based on what would now be termed a rational choice model combining elements of behavioural economics. They argued that higher incomes and more sedentary lifestyles made it easier to gain weight, whilst myopia jeopardised personal resolve. This explanation implies that economic development engenders obesity and industrial capitalism makes obesity fairly inevitable.

Part II of this thesis indirectly examines how much control individuals had over their acquisition of central adiposity, or whether it was predestined by early life deprivation combined with later life affluence. In Part III the 'irrationality' of weight gain is brought under question by the association between later life obesity, health and longevity. Ultimately this thesis does not proffer an alternative economic model for obesity; however, its message is that if the origins of the current obesity epidemic can be traced to the nineteenth century, then the origins of its causes need to be sought there as well.

¹⁷⁹ Komlos, J. and Brabec, M., 'The Trend of BMI Values of US Adults by Deciles, Birth Cohorts 1882-1986 Stratified by Gender and Ethnicity', *Economics and Human Biology*, vol. 9, 3 (2011), p. 235.

¹⁸⁰ Offer, A., Pechey, R., and Ulijaszek, S., 'Obesity Under Affluence Varies by Welfare Regimes', in Offer, A., Pechey, R., and Ulijaszek, S. (eds.), *Insecurity, Inequality and Obesity in Affluent Societies*, (New York: The British Academy, Oxford University Press, 2012), p. 219.

Part I: The Tailor's Tale

Chapter 1 highlighted the modern motivation for studying the threat of chronic diseases and obesity in the second half of the nineteenth century; Chapter 2 revealed that a historical motivation also existed. In both contexts, identifying the origins and causes of overweight status is a priority. In the past, anthropometric historians have been unable to contribute to this debate due to a lack of data for the middle- and upper classes of older ages. This thesis offers a solution in the form of tailors' records.

Part I presents two chapters introducing tailors' records as a new and innovative historical source. In Chapter 3 the full advantages of tailors' records are outlined. This includes their assets as a source with which to analyse historical overweight and obesity and their benefits to the field of anthropometric history in general. Of particular note is the broad portion of the population that they sample, their contribution of data for the whole body, and the provision of longitudinal data from regular customers. Chapter 3 moves on to introduce the two tailors' records at the heart of this thesis from Morris & Son and Henry Poole & Co. The sample selection method that has been used and biases that need to be considered are discussed. Each of the tailors' customers has been nominally linked to an array of other sources and the way that this process has been conducted and the socioeconomic variables provided is then outlined. In Chapter 4 the tailors' customers are defined. Initially a local history is provided of the two tailors' areas of business. The samples within this thesis are then defined by their geographical origins, age and birth cohort, social status, and social mobility.

Chapter 3. Introducing Tailors' Records

In the past historians have used clothing to reveal two things: fashion trends over time and consumers' identities. Despite unanimously emphasising the societal importance of clothing based on its universality and role in public display, historians have ignored one of the most noticeable features of clothing - its *size*.

By utilising tailors' measurement books the shape of both clothing and customers is exposed for the first time. Measurement data detailing the size of customers enables clothing to comment on the health of individuals. These transactions reflect the mundane real life experiences of a sample of actual individuals. They are not the satirised, journalistic or fictional representations of clothing consumers that Ugolini accuses many cultural historians of relying on¹. Nor are they the particularly notable clothing purchases individuals can recall and recount within autobiographies, which Ugolini herself samples².

In this chapter the advantage of tailors' records as a new anthropometric source is highlighted. The sample selection method used for this thesis and selection biases that need to be considered are then discussed. Finally, the extensive nominal linkage process that has been conducted is detailed.

3.1. The Case for Tailors' Records as an Anthropometric Source

Anthropometric history uses physical body measurements as a means of investigating historical living standards. They provide an alternative or supplement to

¹ Ugolini, L., *Men and Menswear: Sartorial Consumption in Britain 1880-1939*, (Aldershot: Ashgate, 2007), pp. 7-8.

² Ugolini, L., *Men and Menswear: Sartorial Consumption in Britain 1880-1939*, (Aldershot: Ashgate, 2007), pp. 12-3.

'traditional' econometric measures where they are unavailable or of unsatisfactory validity. Anthropometric measures quantify net nutritional status, meaning energy intake and the quality of food consumed, minus energy expenses such as basal metabolism, work output, and energy required to overcome disease. If energy supply does not meet energy demands, growth is jeopardised because the body prioritises survival. Alternatively, if nutritional status is in excess, energy is stored as fat. In terms of growth, it is now well established that anthropometric differences between individuals are based on genetics, however across a population they represent variance in net nutritional status.

Although research within anthropometric history has proliferated in recent decades³, there are still opportunities to identify new sources of evidence, creating new possibilities for the field. In this thesis tailors' records are presented as an original anthropometric data source. There are three key advantages of tailors' records: firstly, they sample a broad range of the population – men and women, from the lower classes to the elites, throughout adolescence and adulthood; secondly, they provide lengths and girths for the whole body; thirdly, the repeat orders of regular customers provides longitudinal data.

3.1.1. Broad Population Sample

The key advantage of tailors' records as an anthropometric source is their ability to sample a much broader range of the population than has previously been achieved. As outlined in Chapter 1 in more detail, anthropometric data for the middle- and upper classes is rare. The majority of the existing literature has relied upon military and prison records that sample the working classes. In addition, pre-twentieth century anthropometric data for older adults and women has been mainly restricted to prison records.

³ For an overview see: Steckel, R. H., 'Heights and Human Welfare: Recent Developments and New Directions', *Explorations in Economic History*, vol. 46, 1 (2009), pp. 1-23.

The only socioeconomic group missing from within tailors' records are the poor. The poorest members of society could not afford bespoke garments and relied on second-hand clothes sold by hawkers at street markets and rag fairs as well as making and mending their own items⁴. Individuals could 'moult their mouldys' and part exchange their tattered clothing for something marginally better from the 'clobber' man who recycled scrap items⁵. Alternatively pawn brokers and 'misfit dealers' sold goods to the poor that were perhaps illegally come by, seconds, or customer rejects⁶.

From the 1820s onwards ready-made clothing also began to become readily available, providing cheap, increasingly well-made items, and competing with bespoke firms for the custom of the middle classes⁷. Ready-made outfitters were able to supply an enormous range of goods in a variety of styles and colours and to advertise and promote their wares⁸.

Prejudice against the quality and universality of ready-made items ensured that amongst the upper classes elegant, bespoke garments were still preferred⁹. Clothing was used to judge a man's worth and therefore even after the rise of ready-made fashion, the middle classes continued to supplement ready-made clothing with made-to-measure items in order to conform to professional expectations of respectable dress or to 'dress-up' for special occasions¹⁰. Morris & Son's record book

⁴ Breward, C., *The Hidden Consumer: Masculinities, Fashion and City Life, 1860 – 1914*, (Manchester & New York: Manchester University Press, 1999), p. 122; Worth, R., *Fashion for the People: A History of Clothing at Marks & Spencer*, (Oxford: Berg, 2007), p. 18; Sayer, K., 'A Sufficiency of Clothing': Dress and Domesticity in Victorian Britain', *Textile History*, vol. 33, 1 (2002), p. 117; King, S., 'Reclothing the English Poor, 1750-1840', *Textile History*, vol. 33, 1 (2002), pp. 37-47.

⁵ Greenwood, J., *Behind a Bus: Curious Tales of Insides and Outs*, (London: Diprose & Bateman, 1895), as cited in Breward, C., *The Hidden Consumer: Masculinities, Fashion and City Life, 1860 – 1914*, (Manchester & New York: Manchester University Press, 1999), p. 124.

⁶ Breward, C., *The Hidden Consumer: Masculinities, Fashion and City Life, 1860 – 1914*, (Manchester & New York: Manchester University Press, 1999), pp. 124-7.

⁷ Chenoune, F., *A History of Men's Fashion*, (Paris: Flammarion, 1993), pp. 67-70; Wilson, E. and Taylor, L., *Through the Looking Glass: A History of Dress from 1860 to the Present Day*, (London: BBC Books, 1989), p. 33.

⁸ Breward, C., *The Hidden Consumer: Masculinities, Fashion and City Life, 1860 – 1914*, (Manchester & New York: Manchester University Press, 1999), pp. 109-121.

⁹ Breward, C., *The Hidden Consumer: Masculinities, Fashion and City Life, 1860 – 1914*, (Manchester & New York: Manchester University Press, 1999), p. 49; McDowell, C., *The Man of Fashion: Peacock Males and Perfect Gentlemen*, (London: Thames and Hudson, 1997), p. 94.

¹⁰ Ugolini, L., *Men and Menswear: Sartorial Consumption in Britain, 1880-1939*, (Aldershot: Ashgate, 2007), p. 54, p. 69; Sayer, K., 'A Sufficiency of Clothing': Dress and Domesticity in Victorian Britain', *Textile History*, vol. 33, 1 (2002), p. 112.

also features employees ordering garments for their staff, which provides measurements for members of the lower classes who otherwise used ready-mades.

Thus tailors' record books are capable of sampling individuals stemming from the lower classes all the way up to the highest echelons of society. The socioeconomic background of the customers sampled depends on the location and prestige of the tailoring firm.

Tailors' records are also advantageous because they sample individuals from a broad age range. Children are rare within tailoring ledgers because their continued growth made bespoke clothes an extravagant, short-lived purchase, however they do feature occasionally, perhaps when items were bought as a treat for a special occasion or as part of a school uniform. On the whole, tailors' records sample individuals throughout adulthood. This is an improvement on sources of anthropometric data from military or school records, which only represent children and young adult males amongst whom the growth process was not complete and later life nutritional status remains enigmatic. Alternative sources of data sampling a broad age range are available, such as prison records, but it is the combination of sampling a wide range of socioeconomic backgrounds and a wide range of ages that makes tailors' records a unique asset.

Finally, dressmakers' records enable clothing to provide anthropometric data for women as well as men. Again, women's data has proved elusive amongst existing historical anthropometric sources, mainly restricted to prison and school records. However, anthropometric data for women is useful because their spheres of historical activity are relatively unrepresented by traditional econometric measures such as wages, which rely on market engagement. Uncovering the net nutritional status of women enables historians to examine the household distribution of resources¹¹.

¹¹ Horrell, S., Meredith, D., and Oxley, D., 'Measuring Misery: Body Mass, Ageing and Gender Inequality in Victorian London', *Economics and Human Biology*, vol. 46, 1 (2009), pp. 93-119.

Although orders for women occasionally feature within tailors' records, on the whole women preferred to frequent specific dressmakers for their garments, partly for a specialist service but also to be measured by other women and preserve their modesty. Breward labels the ritual of fitting up as, 'intensely personal, almost erotic...'¹². When Henry Poole decided to seek female custom in the 1870s, he installed six satin cubicles and appointed twelve female employees specifically to cater for women's needs¹³.

For this thesis, dressmaker measurements for 1890-1892 were collected from the records of Mrs. F. W. Stephens, ladies tailor, dress and mantle maker and input within MS Excel¹⁴. This proves that sources of dressmaker measurements are available, however, ultimately this data was not used, for a number of reasons. The first is that the record books of Mrs. Stephens only contain roughly a hundred orders so they could not provide a statistically significant sample size once the customers were disaggregated by socioeconomic variables. For future researchers to use anthropometric data from dressmakers more extensive records need to be sought. Another problem was that the research questions targeted at anthropometric data for women are distinct from those generated by data for males. The space of this thesis made it difficult to achieve both – dressmakers' records are deserving of their own independent analyses, rather than being tagged on to those of tailors.

Despite these practical considerations, the key problem in using dressmakers' records is determining the impact of tight-lacing corsetry on female body size. Corsets were fashionable amongst British women until the early twentieth century¹⁵. To utilise women's historical dressmaking measurements anthropometrically, the degree of permanent distortion to the body caused by corsetry would need to be

¹² Breward, C., 'Manliness, Modernity and the Shaping of Male Clothing', in Entwistle, I. and Wilson, E. (eds.), *Body Dressing*, (Oxford & New York: Berg, 2001), p. 169.

¹³ Walker, R. *The Savile Row Story: An Illustrated History*, (London: Prion, 1988), p. 52.

¹⁴ Pembrokeshire Record Office, GB 0213, DB/11/1 and DB/11/2, (Account and measurement books for Mrs. F. W. Stephens, Milford Haven, ladies tailor, 1885-1949).

¹⁵ Summers, L., *Bound to Please: A History of the Victorian Corset*, (Oxford & New York: Berg, 2001), p. 88; Steele, V., *The Corset: A Cultural History*, (New Haven & London: Yale University Press, 2001), pp. 84-5.

estimated. In effect, it acts as a form of truncation. Despite the abundance of contemporary Rational Dress Society literature and modern research assessing the impact of Victorian corsetry¹⁶, only one reference to the specific restriction caused by corsetry could be found. In 1882, Treves, a contemporary doctor and member of the Rational Dress Society stated:

The circumference of the waist in a perfectly developed and normal woman is about 26 to 28 inches. This should be considered as the proper and healthy measurement of the part. The size of the artificial waist of course varies. During a time when narrow waists were particularly fashionable, a Frenchman observed that a perfect female waist should measure no more than 16 inches...The view that dressmakers and the fashionable public take of the female figure may be gathered from the fact that it would be difficult to find in London a costumier's model or lay figure that has a normal or healthy waist. In a greater number of these stands or models, the waist measures only 20 or 21 inches. They are supposed to represent perfect female figures, and to show the outline that of all others is most favourable for the display of the dress of the period...Some of the dressmakers models have a waist of 23 or 24 inches; but the largest waist that I have met with in ordinary use had a measurement of 25 inches¹⁷

As a strong supporter of rational dress, Treves may have been inclined to exaggerate the impact of corsetry as he sought to emphasise the negative health implications of tight-lacing. On the basis of this single source it was not determined that a reliable estimate of the body distortion caused by corsetry could be calculated. This jeopardised the use of dressmaker's data within this thesis. If methods of approximating the impact of tight-lacing could be deduced in the future, then dressmakers records could provide a valuable anthropometric source of nineteenth century women's body shape data.

3.1.2. Whole Body Data

A second asset of tailors' records is that they provide anthropometric measurements for the whole body between the neck and the ankle. Height data has been the most commonly used anthropometric marker. It summarises net nutritional status during the growing years, from fetal growth until full development. This means

¹⁶ See for example: King, E. M., *Rational Dress; or The Dress of Women and Savages*, (London: Kegan Paul, Trench & Co., 1882); Summers, L., *Bound to Please: A History of the Victorian Corset*, (Oxford & New York: Berg, 2001); Steele, V., *The Corset: A Cultural History*, (New Haven & London: Yale University Press, 2001).

¹⁷ Treves, F., *The Dress of the Period In Its Relations To Health: A Lecture Delivered on Behalf of the National Health Society*, (London: Allman & Son, 1882), p. 15.

that it is determined by an enormous number of socioeconomic variables acting at various times during the growth process, leaving the determinants of variance in height hard to distinguish. BMI has proved a popular alternative anthropometric measurement because it fluctuates during an individual's lifetime and is useful as a marker of *current* net nutritional status. There remains a varied range of determinants of current net nutritional status but the time-frame over which these need to be understood is reduced from the entire growing period to a few months or years.

Tailors' records provide a new set of body measurements – waist circumference, hip circumference, inside leg, outside leg, length of back, thigh circumference *et cetera* - which have rarely featured in anthropometric history previously¹⁸. This is useful because no single anthropometric variable is synonymous with nutritional status – each describes another (and usually different) aspect of a person's well-being¹⁹. Therefore the introduction of new anthropometric variables to the field can help to verify existing hypotheses as well as provide refreshing insights into historical standards of living. In addition, an advantage of these body measurements over those of military recruits is that there are no minimum height or health restrictions on customers attending a tailor and as such the male data does not raise any truncation problems.

The construction of a three-piece suit requires around twenty-one different body measurements and these are all provided within a tailor's record book. Although many of these length and girths could prove useful to anthropometric historians²⁰, in

¹⁸ Some waist and hip circumference data has previously been collected by Costa for Union Army soldiers, see: Costa, D. L., 'The Measure of Man and Older Age Mortality: Evidence from the Gould Sample', *Journal of Economic History*, vol. 64, 1 (2004), pp. 1-23 and Costa, D. L. and Steckel, R. H., 'Long-Term Trends in Health, Welfare, and Economic Growth in the United States', in Steckel, R. H. and Floud, R. (eds.), *Health and Welfare During Industrialisation*, (Chicago & London: University of Chicago Press, 1997), pp. 47-89.

¹⁹ Floud, R., Wachter, K., and Gregory, A., *Height, Health and History: Nutritional Status in the United Kingdom, 1750-1980*, (Cambridge: Cambridge University Press, 1990), p. 256; Horrell, S., Meredith, D., and Oxley, D., 'Measuring Misery: Body Mass, Ageing and Gender Inequality in Victorian England', *Explorations in Economic History*, vol. 46, 1 (2009), p. 116.

²⁰ For example to determine muscularity, see: Lee, R. C., Wang, Z., Heo, M., Ross, R., Janssen, I., and Heymsfield S. B., 'Total-Body Skeletal Muscle Mass: Development and Cross-Validation of Anthropometric Prediction Models', *The American Journal of Clinical Nutrition*, vol. 72, 3 (2000), pp. 796-803.

this thesis attention has been focused on waist circumference, hip circumference and their ratio (waist circumference divided by hip circumference) as measures of current net nutritional status and central adiposity. Although tailors' records do not provide height data, inside and outside leg measurements are used within the following analyses as a proxy for nutritional status during the growing years²¹.

3.1.3. Longitudinal Data

Longitudinal data is particularly rare to find amongst current anthropometric sources²². This is because most historical anthropometric records were kept for the purposes of identification and it was unusual to need to identify someone more than once.

Tailors' records provide the opportunity to track the body measurements of repeat customers for the duration of their patronage to that tailor. Henry Poole & Co. crossed-out and amended each customers' measurements whenever they placed a new order, whereas Morris & Son made a new entry in their record book for each transaction. The former method makes longitudinal measurements easier to identify but they can still be found in Morris & Son's record book by tracing customers throughout the ledger. Customers did not necessarily order a full suit on each occasion, they might return and just order a vest, or some new breeches.

Amongst Morris & Son's customers the maximum number of visits sampled by any customer was eight and the maximum number of waist circumference measurements that was taken was four, but the mean number of visits was just 2.50 and the mean number of waist circumference measurements just 1.12. Henry Poole & Co.'s measurement notation style resulted in a greater number of longitudinal

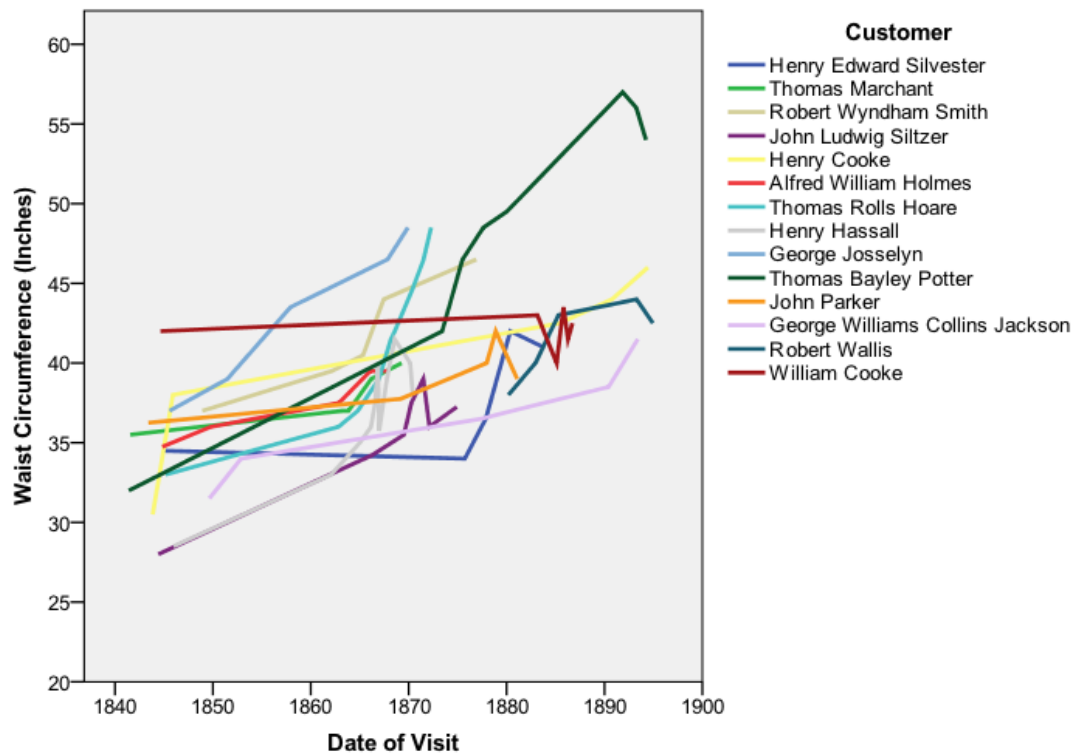
²¹ For the justification for this, see Bogin, B. and Varela-Silva, M. I., 'Leg Length, Body Proportion, and Health: A Review with a Note on Beauty', *International Journal of Environmental Research and Public Health*, vol. 7, 3 (2010), pp. 1047-75.

²² For a few exceptional examples, see: Komlos, J., 'The Height Increments and BMI Values of Elite Central European Children and Youth in the Second Half of the 19th Century', *Annals of Human Biology*, vol. 33, 3 (2006), pp. 309-18 and Komlos, J., Tanner, J. M., Davies, P. S. W., and Cole, T., 'The Growth of Boys in the Stuttgart Carlschule, 1771-93', *Annals of Human Biology*, vol. 19, 2 (1992), pp. 139-52; Costa, D. L., 'The Measure of Man and Older Age Mortality: Evidence from the Gould Sample', *Journal of Economic History*, vol. 64, 1 (2004), pp. 1-23; Linares, C. and Su, D., 'Body Mass Index and Health Among Union Army Veterans: 1891-1905', *Economics and Human Biology*, vol. 3, 3 (2005), pp. 367-87.

measurements being sampled – one customer made nineteen visits to the tailor and his waist circumference was measured eleven separate times, however the mean number of waist circumference measurements taken for each Henry Poole & Co. customer was still only 2.93.

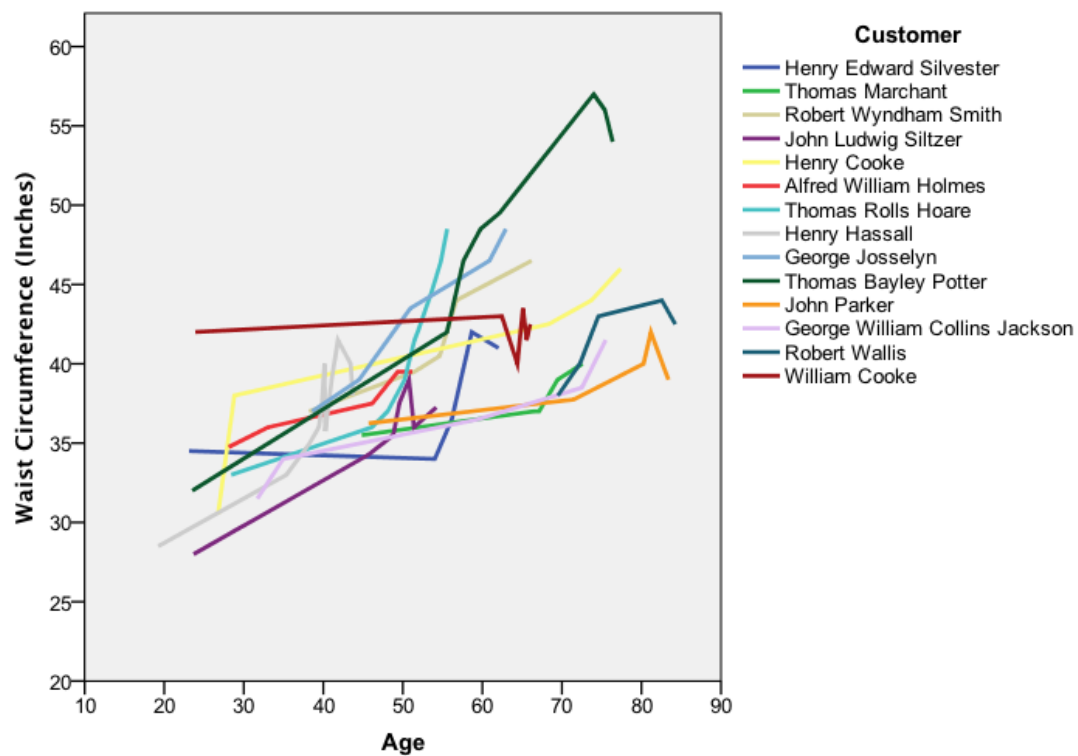
In Figure 7 and Figure 8 the longitudinal waist circumference measurements of all customers whose waist was measured five or more times is displayed. The ability of tailors' records to outline longitudinal trends in body shape is evident. The trend lines of both graphs show that there was almost constant positive longitudinal growth in waist circumference. Only one customer, William Cooke, had a final waist circumference smaller than his initial one. Thomas Bayley Potter's waist circumference grew by twenty-four inches between his twenties and his seventies and on average waist circumferences grew by 10-15 inches. Any decline in waist circumference represented a short-term fluctuation amidst a general trend of increase.

Figure 7: Longitudinal Trends in Waist Circumference by Date of Measurement



Source: Henry Poole & Co., 'Measure Book A'.

Figure 8: Longitudinal Trends in Waist Circumference by Age



Sources: Henry Poole & Co., 'Measure Book A'; and England and Wales Census Records.

By nominally linking the tailors' customers to census records, birth marriage and death indices, and other biographical sources, the longitudinal measurements of customers can also be traced alongside their life events. This is useful because it provides greater insight into potential determinants of net nutritional status. For the majority of non-famous customers it is difficult to accumulate a sufficient wealth of biographical data beyond that provided by the census or General Register Office. However, Thomas Bayley Potter, M.P. can be used as an example of the opportunity provided by linking biographies of famous persons with their tailoring body shape measurements:

Thomas Bayley Potter, was born 29 November 1817 in Manchester. He was the second son of Sir Thomas Potter (1774-1845) who was the first mayor of Manchester and set up a textile business which grew to become Manchester's largest mercantile business by the 1840s. Thomas Bayley Potter was educated at Mr John's school, George Street, Manchester, before joining Dr. Lant Carpenter's school at Bristol (1827–31). He went on to attend Rugby School (1831–2) and University College, London (1833)²³. Aged twenty-seven, Thomas married Mary Ashton in February 1846 and they had five children together between 1848 and 1855²⁴.

On the death of his elder brother in 1858, Thomas Potter became the principal partner of his family's textile firm although he left its day-to-day running to a manager, Francis Taylor (1818-1872). On the death of Taylor, and amidst unfavourable business conditions, Potter gave up his part in the firm to focus on politics. This was when Potter left Manchester, selling the family home at Buile Hill, Pendleton and his

²³ Howe, A. C., 'Potter, Thomas Bayley (1817-1898)', *Oxford Dictionary of National Biography*, (Oxford: Oxford University Press, 2004), accessed 18 March 2014, <http://ezproxy.ouls.ox.ac.uk:2117/view/article/22621>

²⁴ 'Person Page 19221: Thomas Bayley Potter', *The Peerage*, accessed 18 March 2014, www.thepeerage.com/p19221.htm

Scottish hunting-lodge at Pitnacree to buy a property in London and a rural retreat in Midhurst, West Sussex²⁵.

Following in his father's footsteps, Thomas Bayley had been actively engaged in Manchester's radical politics from a young age. In 1863 he founded the Union and Emancipation Society and gave support to the Northern Cause in the American Civil War. It was as president of the Union and Emancipation Society that Potter cemented his friendship with political radicals Richard Cobden and John Bright and gained national prominence. In 1865, Potter succeeded Cobden as Member of Parliament for Rochdale, a seat he held until 1895. Although neither an orator nor a debater he was an active and valued member of the Liberal Party, an advocate of religious equality and land law reform²⁶.

Potter was a vocal supporter of free trade and in 1866 he established the Cobden Club as a political gentlemen's club in support of this cause, named in honour of his friend who had died the previous year. The club's most obvious public profile came from its regular political dinners. However, these also provided the opportunity to poke fun at Potter, who was derided as a, 'florid-faced gourmand hoping to win the world to free trade through its stomach'²⁷. In the autumn of 1879, Potter and his wife visited America and Potter was an honoured guest at a political dinner of the New York Free Trade Club²⁸. Potter remained the linchpin of the Cobden Club until his

²⁵ Howe, A. C., 'Potter, Thomas Bayley (1817-1898)', *Oxford Dictionary of National Biography*, (Oxford: Oxford University Press, 2004), accessed 18 March 2014, <http://ezproxy.ouls.ox.ac.uk:2117/view/article/22621>

²⁶ Howe, A. C., 'Potter, Thomas Bayley (1817-1898)', *Oxford Dictionary of National Biography*, (Oxford: Oxford University Press, 2004), accessed 18 March 2014, <http://ezproxy.ouls.ox.ac.uk:2117/view/article/22621>

²⁷ Howe, A. C., 'Potter, Thomas Bayley (1817-1898)', *Oxford Dictionary of National Biography*, (Oxford: Oxford University Press, 2004), accessed 18 March 2014, <http://ezproxy.ouls.ox.ac.uk:2117/view/article/22621>

²⁸ 'Honors to a Free-Trader: Dinner to Thomas Bayley Potter, M. P. – the Toasts and Responses', *New York Times*, (13 November 1879), accessed 18 March 2014, <http://query.nytimes.com/mem/archive-free/pdf?res=9506E3D61F3FE63BBC4B52DFB7678382669FDE>

death, but the club's later years were marred by growing intellectual and policy rifts and by the late 1880s the club political dinners had become much less frequent²⁹.

Potter's wife Mary died at Cannes in 1885 and on 10 March 1887 he married Helena Hick of Bodmin, Cornwall. Thomas Bayley Potter died in his Midhurst home on the 6 November 1898, aged 80, of a paralytic stroke suffered the previous June³⁰. On his death, Potter's estate in probate was worth £66,550 10s. 3d³¹.

The longitudinal measurements of Potter's waist circumference and waist-hip ratio, displayed in Figure 9, can be assessed in the knowledge of this brief biography. It is apparent that throughout his adult life, Potter's family textile firm and political career were sufficiently successful to enable his net nutritional status to remain in constant excess. Until the early 1870s the growth in Potter's waist outpaced that of his hips, explaining the substantial increase in his waist-hip ratio. Although measurements between the early 1840s and mid-1870s are lacking, it does not appear as though getting married or having children placed a sufficient burden on Potter's household resources to jeopardise his waistline, certainly not in the long-term. The greatest rate of increase in Potter's waist circumference, between the mid-1870s and mid-1880s occurred at the height of his political career, when his Cobden Club dinners were the most frequent! This was when Potter was in his mid-50s to early 60s, when the redistribution of fat associated with middle age may have also played its role in exacerbating his waistline³². The decline in Potter's waist circumference in the early 1890s is likely to reflect a degree of wasting with age, as well as the dwindling of the Cobden Club and Potter's political career.

²⁹ Howe, A. C., 'Potter, Thomas Bayley (1817-1898)', *Oxford Dictionary of National Biography*, (Oxford: Oxford University Press, 2004), accessed 18 March 2014, <http://ezproxy.ouls.ox.ac.uk:2117/view/article/22621>

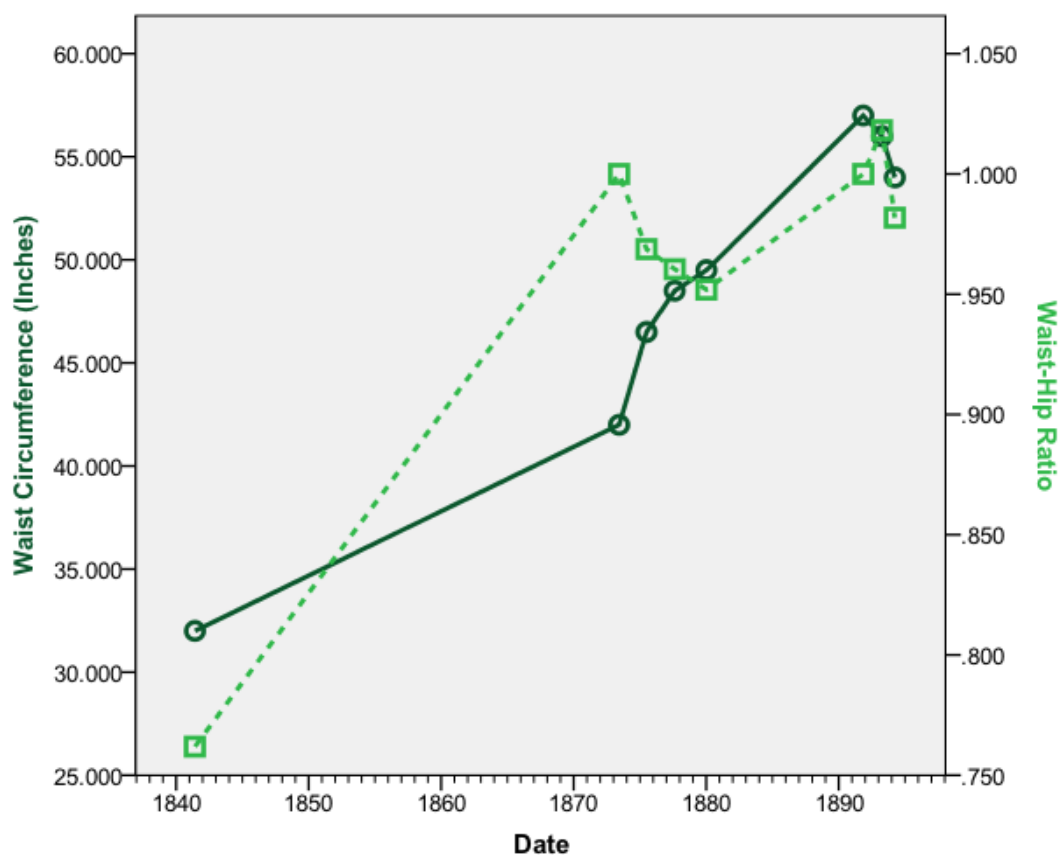
³⁰ Howe, A. C., 'Potter, Thomas Bayley (1817-1898)', *Oxford Dictionary of National Biography*, (Oxford: Oxford University Press, 2004), accessed 18 March 2014, <http://ezproxy.ouls.ox.ac.uk:2117/view/article/22621>

³¹ National Probate Calendar (Index of Wills and Administrations) 1858-1966, Death: 6 Nov 1898 Middlesex, Probate: 16 Jan 1899 London, accessed 18 March 2014, <http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=ukprobatecal&h=19085141>

³² Stevens, J., Katz, E. G., and Huxley, R. R., 'Reviews: Associations Between Gender, Age and Waist Circumference', *European Journal of Clinical Nutrition*, vol. 64, 1 (2009), pp. 6-15.

Based on modern World Health Organisation cut-off markers, both Potter's waist circumference and his waist-hip ratio would have labelled him as obese and placed him at 'substantially increased' risk of obesity related chronic diseases from 1874 onwards³³. It is notable that despite living to an old age, Potter eventually died of a stroke, something he faced more than a three-fold risk of compared to a 'normal' weighted person³⁴.

Figure 9: Longitudinal Change in Waist Circumference and Waist-Hip Ratio of Thomas Bayley Potter



Source: Henry Poole & Co., 'Measure Book A'.

³³ World Health Organization (WHO), *Obesity: Preventing and Managing the Global Epidemic*, Report of a WHO Consultation, Geneva 3-5 June 1997, (Geneva: World Health Organization, 2000), pp. 10-11; World Health Organization (WHO), *Waist Circumference and Waist-Hip Ratio*, Report of a WHO Expert Consultation, Geneva 8-11 December 2008, (Geneva: World Health Organization, 2011), p. 27.

³⁴ World Health Organisation, *Obesity: Preventing and Managing the Global Epidemic: Report of a WHO Consultation*, (Geneva: World Health Organisation, 2000), p. 43

3.2. The Ledgers of Morris & Son and Henry Poole & Co.

This thesis focuses on contrasting the nutritional status of different socioeconomic strata of society, using measures of central adiposity to assess the historical prevalence of overweight and obesity. It aims to reveal the historical impact of wealth on health; both moderate degrees of wealth accumulated during the process of economic development and sizeable wealth which removed economic constraints on consumption.

After pilot investigations at six different archives, consulting seven different tailors' record books, it was determined that the record book of Morris & Son, covering the period March 1890 to December 1891, archived in the National Library of Wales, and that of Henry Poole & Co., covering the period June 1840 to March 1904, archived in the basement of their Savile Row premises, were the most valuable³⁵. The two records selected have been labelled as 'Measure Book 1' and 'Measure Book A' respectively. The nature of the two sets of customers sampled will be outlined in more detail in the following chapter, however, broadly speaking, Morris & Son's customers stemmed from Barmouth in North-West Wales – a rural, coastal town adapting from a small port to a seaside resort at the time that the data comes from. Henry Poole & Co. of Savile Row in central London was, and remains, one of the finest bespoke tailors in the world. Consequently, Morris & Son's mainly middle-class customers experiencing a period of economic transition provide an interesting comparison to Henry Poole & Co.'s elite clientele.

³⁵ Pilot studies conducted using: Carmarthenshire Archive Service, DB/73/4, (Tailor's measure book of Edwin Jones, March 1903 – July 1907); Centre for Kentish Studies, Q/CI/346, (Measure book of William Owden and bundle of William Owden documents); Centre for Kentish Studies, Q/CI/115/1, (Account and measure books of John Tunbridge from Maidstone); City of Westminster Archive, 1850/4, (Measurement book of Roberts, tailor of Bury Street, St. James, 1913-1930); Merionnydd Record Office, Z/M/824/6, (Morris & Son tailor, draper and dressmaker, measure book 1903 – 1908); National Library of Wales, GB 0210 MORUTH, Tailoring/Dressmaking Books, 53, March 1890 – August 1896, (Part of the business records of Morris & Son, tailor draper and dressmaker of Barmouth, Merionethshire 1847-1930); Henry Poole & Co. Ltd., Private archive, NRA 22524 Poole, (1846-1960: accounts, clients ledgers, ledgers measurement book and papers). Alternative sources were discounted due to illegibility and/or a lack of customer identifiers with which to conduct nominal linkage.

Henry Poole & Co. kept separate ledgers with the style of clothes ordered and their price. The private archive of Henry Poole & Co. is extremely extensive with thousands of leather-bound volumes, boxes, trunks and cases, a snapshot of which is pictured in Figure 12. The full scope of the archive has never been documented and would entail a separate research task. To date it has only been exploited by three other historians – Anderson, Howarth and Sherwood – they have referred to its sales ledgers, order books, company publications, trade journals, legal documents, cutting patterns, bank statements, and private correspondences³⁶. The measurement books of Henry Poole & Co. remain unexplored.

Figure 12: Rows of Ledgers in the Private Archive of Henry Poole & Co.



³⁶ Anderson, F., 'Fashioning the Gentleman: A Study of Henry Poole & Co., Savile Row Tailors 1861-1900', *Fashion Theory*, vol. 4, 4 (2000), pp. 405-426; Howarth, S., *Henry Poole: Founders of Savile Row, The Making of a Legend*, (Honiton: Bene Factum, 2003); Sherwood, J., *Savile Row: The Master Tailors of British Bespoke*, (London: Thames & Hudson, 2010), pp. 52-61; Sherwood, J., *The London Cut: Savile Row Bespoke Tailoring*, (Milan & New York: Marsilio, 2007).

'Measure Book 1' from Morris & Son includes 819 orders taken between 24 March 1890 and 10 June 1891, from 513 different customers, of whom 35 were female. Henry Poole & Co.'s 'Measure Book A' includes 776 orders placed between 16 June 1840 and 23 March 1904, from 185 different customers, of whom 9 were female. The data for all of these customers and all of their measurements was collected in MS Excel. In neither record book is the sample of female customers large enough to be statistically significant, so they have been removed from the analysis.

Henry Poole & Co.'s record book includes more longitudinal measurements because of the different ways in which Morris & Son and Henry Poole & Co. maintained their ledgers. In 'Measure Book 1', Morris & Son made a complete new entry for each new order, noting them chronologically. They took all the measurements required for the garments that were ordered on every occasion. If a customer returned to Morris & Son, their new measurements appeared later in the record book, dependent on the number of customers in the intervening period. In contrast, as Figure 11 shows, Henry Poole & Co. kept one set of measurements for each customer, which they then crossed out and edited on the return and re-measurement of that customer for a new item.

As a consequence of this notation technique, 'Measure Book 1' appears to represent the entirety of Morris & Son's business during the period covered. New orders in the measure book appear at least every few days, often with two or three orders per day. In contrast, 'Measure Book A' samples a very small portion of Henry Poole & Co.'s complete business during the second half of the nineteenth century. Sherwood suggests that in the third quarter of the nineteenth century Henry Poole & Co. averaged twelve thousand bespoke orders per annum³⁷. Anderson highlights that by 1900 the most frequent customers of Henry Poole & Co. made between 48 and

³⁷ Sherwood, J., *Savile Row: The Master Tailors of British Bespoke*, (London: Thames & Hudson, 2010), p. 52.

137 transactions per year³⁸. Given that 'Measure Book A' reflects a small proportion of Henry Poole & Co.'s total business it is important to determine who featured in 'Measure Book A' and why? Unfortunately this is not a simple process.

The haphazard, voluminous nature of Henry Poole & Co.'s private archive prevents the full extent of Henry Poole & Co.'s measure books from being determined. The customers in 'Measure Book A' appear to be loosely arranged chronologically by the date of their first order – 84.5% of individuals in 'Measure Book A' were measured for the first time before 1846, when the first orders of the next measurement book begin. The reasons for starting the next measurement book are unknown – only the first forty-five pages of 'Measure Book A' are filled despite it being a hefty, leather-bound volume of many hundreds of pages. Previous historians have been similarly flummoxed by Henry Poole & Co.'s book-keeping system. Howarth argued that a new book was started simply when the old one became 'unwieldy'³⁹. This argument is unconvincing because the volumes remain the same size and weight regardless of how complete they are. Furthermore, the following measurement books are just as 'unwieldy' as 'Measure Book A'. Instead it seems more likely that Henry Poole & Co. initiated new measurement books because rows of tomes were desirable for display, to exude gravitas.

As Henry Poole & Co. noted customers' measurements longitudinally the dates of the measurement books overlap each other to a substantial degree. However, 'Measure Book A' does not even seem to include all the orders taken between 1840 and 1846 when the next measurement book begins. There are a few explanations for this. If a customer of Henry Poole & Co. placed a new order but had not changed size then it seems as though this was not noted in the measurement book. Thus the regularity of measurements in 'Measure Book A' cannot be used to

³⁸ Anderson, F., 'Fashioning the Gentleman: A Study of Henry Poole & Co., Savile Row Tailors 1861-1900', *Fashion Theory*, vol. 4, 4 (2000), p. 419.

³⁹ Howarth, S., *Henry Poole: Founders of Savile Row, The Making of the Legend*, (Honiton: Bene Factum, 2003), p. 87.

represent the total number of orders taken from those clients during that period.

Furthermore, it is known that Henry Poole & Co. received orders by four means: from customers who visited the shop, from personal visits to clients in their homes, by mail-order, and by sending representative to foreign hotels. 'Measure Book A' contains no foreign customers and no members of the aristocracy, despite Henry Poole & Co. being famed for its international, celebrity clientele. By inference, those that received a personal visit from a representative of Henry Poole & Co. are likely to have been of the utmost status to secure a private service at their own convenience – perhaps mainly the aristocratic clientele. Those who requested their garments by mail-order or attended one of Henry Poole & Co.'s travelling representatives are likely to have lived far-afield and in the latter case, almost certainly abroad – the foreign clientele. This rationale suggests that perhaps 'Measure Book A' contains only the measurements of those customers that visited the shop in person. These were likely to be individuals who lived or worked in and around London as well as visitors to the capital and those who attended for 'the Season'.

In both 'Measure Book 1' and 'Measure Book A' not all of the customers' orders equate to a full set of measurements for a three-piece suit. Customers sometimes ordered individual items and then they were only measured for the items that they ordered. Although waist circumference measurements were taken separately for coats, vests and trousers, in the following anthropometric analyses all measurements have been taken from the trouser construction. This is to ensure consistency and comparability and because trousers fit closely to the body. Morris & Son's 'Measure Book 1' contains 407 waist circumference measurements, 406 hip circumference measurements, 367 inside leg measurements, and 364 outside leg measurements, all for trousers. Henry Poole & Co.'s 'Measure Book A' contains 312 waist circumference measurements, 306 hip circumference measurements, 275 inside leg measurements and 307 outside leg measurements, again, all for trousers. These

measurements have been used to create a cross-sectional dataset in SPSS Statistics 20.0 for all male customers of 'Measure Book 1' and 'Measure Book A'.

The most challenging aspect of using tailors' records as a new anthropometric source is deciphering which body length or girth each value in the record book equates to. Morris & Son's measurements appear as an unlabelled list. Henry Poole & Co.'s measurements are kept in three rows, the first unlabelled for the coat, the second labelled 'W' for waistcoat and the third 'T' for trousers. Again, this can be seen in Figure 11.

Fortunately these nineteenth century records coincide with a period of enthusiasm for a scientific interpretation of the tailoring process based on 'systems' of cutting. These systems aimed to reduce the number of measurements a tailor needed to take by constructing proportional relationships between body lengths. Each tailoring system varied to a small degree, with each respective author claiming to have identified an approach that was more accurate and time-saving than the last. Morris & Son and Henry Poole & Co. did not adopt one of these systems, instead measuring each length and girth directly; nonetheless, the instructions for measuring and the 'average measurement' tables provided within contemporary cutting manuals could be used to determine Morris & Son's and Henry Poole & Co.'s measurement pattern. Over twenty different contemporary cutting manuals outlining the process of measuring trousers were identified and cross-referenced to decipher the measurement systems of Morris & Son and Henry Poole & Co. with confidence⁴⁰.

Tailoring cutting systems also identify that tailors measured customers over their clothes. Measurements were not taken to reflect body size but clothing size. This explains why the measurements used in this thesis have been selected from trouser construction. For the same customer, waist circumference measurements for

⁴⁰ For a full list see the bibliography - particularly useful systems for this process included: Compaign, C. and Devere, L., *The Tailor's Guide; A Complete System of Cutting Every Kind of Garment to Measure &c.*, (London: Simpkin, Marshall & Co.: 1856); Compaign, C., and Devere, L., *The Complete Manual of Trowsers Cutting*, by C. Compaign and L. Devere: *Pocket Ed.*, (London: Simpkin Marshall & Co., 1881); and Walker, G., *The Art of Cutting Breeches, Trowsers, Pantaloons &c. & of Every Description with Instructions for Making-Up the Same*, (London: Messrs. Sherwood & Co., 1835).

coats were often roughly an inch larger than those for trousers to allow for the additional space required for an outer-garment. However, trousers fit tightly to the body and contemporaries such as Compaign and Devere instructed that their waistline measurement should be, 'taken very tight under the waistcoat'⁴¹. Trouser measurements appear to be a close representation of true body size.

In addition, tailors' measurements were accurate and precise because they required a good fit and their customers' satisfaction. The measurements of Morris & Son and Henry Poole & Co. were typically rounded to the nearest inch or half-inch although occasionally at the quarter-inch level. This is on a par with the accuracy of most existing sources of anthropometric evidence.

A concern raised by the use of tailoring measurements as an anthropometric source is whether customers whose body shape changed a lot feature more frequently within the records because they had more need for new clothes. It is not believed that this is a substantial source of bias within tailoring samples, partly because individuals who lose weight should be almost (allowing for the effects of a belt) as desirous of new clothes as someone who gains weight, but moreover because changes in body size were not the key motivation for new clothing purchases in the nineteenth century.

Small changes in body size could be compensated for with alterations. On the whole, the decision to frequent a tailor was not based on body size changes. Cultural historians such as Breward, Ugolini, and Shannon consistently emphasise the importance of clothing for the construction of masculine identities in the second half of the nineteenth century⁴². There was an expectation, particularly amongst the upper classes such as Henry Poole & Co.'s clientele, that many different outfits were to be

⁴¹ Compaign, C. and Devere, L., *The Tailor's Guide; A Complete System of Cutting Every Kind of Garment to Measure*, (London: Simpkin, Marshall & Co.: 1856), p. 62.

⁴² Breward, C., *The Hidden Consumer: Masculinities, Fashion and City Life 1860-1914*, (Manchester & New York: Manchester University Press, 1999); Breward, C., *Fashioning London: Clothing and the Modern Metropolis*, (Oxford & New York: Berg, 2004); Ugolini, L., *Men and Menswear: Sartorial Consumption in Britain 1880-1939*, (Aldershot: Ashgate, 2007); Shannon, B., *The Cut of His Coat: Men Dress and Consumer Culture in Britain, 1860-1914*, (Athens: Ohio University Press, 2006).

worn during the course of the day for different occasions. In 1890 the periodical *The Tailor and Cutter* remarked:

Why dressing is quite a serious business in the life of a fashionable man. Thrice does he array himself in clothes each day. A tweed suit is his morning wear. In the afternoon he dons a Frock coat, a smarter waistcoat and a bigger tie. Then in the evening he has to dress for dinner. Perhaps his dinner clothes will be exchanged for a smoking suit later...⁴³

An extensive wardrobe generated an enormous demand for the services of a tailor.

Furthermore, fashions changed rapidly and conformity was important. Clothing was used to judge a man's worth and consequently contemporaries warned:

...one must remember that in England if you *wear* the wrong thing, you will probably *do* the wrong thing, and generally *be* the wrong thing⁴⁴

Even amongst the middle classes, Ugolini emphasises that it was important to have separate outfits for work and leisure as well as special outfits such as a 'Sunday suit'.

Amongst the middle classes new garments might be purchased at important stages of the life-course, such as upon entering work for the first time⁴⁵. Clothing purchases met a social demand rather than a physical one.

3.3. Nominal Linkage Process

In order to define the sample of Morris & Son's customers in 'Measure Book 1' and Henry Poole & Co.'s customers in 'Measure Book A' more narrowly, and to identify correlations between social and economic variables, body size and health, thorough nominal linkage has been conducted. Using the scant identifying details within the measure books – mainly name, city of address and occasionally occupation – nominal linkage was achieved for 268 of Morris & Son's customers within 'Measure Book 1' (52.3%) and 102 of Henry Poole & Co.'s customers within 'Measure Book A' (57.6%). A total of 2,296 different records were used to create the most

⁴³ *The Tailor and Cutter*, 6 November 1890, p. 367, as cited in Breward, C., *The Hidden Consumer: Masculinities, Fashion and City Life 1860-1914*, (Manchester & New York: Manchester University Press, 1999), p. 61.

⁴⁴ Wanamaker, J., *The Etiquette of an Englishman's Dress*, (New York: John Wanamaker, 1910), p. 1, as cited in Shannon, B., *The Cut of His Coat: Men Dress and Consumer Culture in Britain, 1860-1914*, (Athens: Ohio University Press, 2006), p. 148.

⁴⁵ Ugolini, L., *Men and Menswear: Sartorial Consumption in Britain 1880-1939*, (Aldershot: Ashgate, 2007), pp. 30-45.

comprehensive biographical picture of each customer as possible; this disaggregated to 1,558 different records for the Morris & Son customers, averaging nearly six records per individual identified, and 738 different records for the Henry Poole & Co. customers, averaging over seven records per customer identified⁴⁶.

3.3.1. Sources

The majority of records were uncovered using the genealogy website, *Ancestry.co.uk*⁴⁷. Each customer was sought in every decadal census between 1841 and 1911 inclusive, during their lifetime. A total of 1,041 census returns were linked to Morris & Son customers and 353 census returns collated with Henry Poole & Co customers. Customers with common names, such as 'John Jones' (the name shared by thirteen different customers all living within and around Barmouth within Morris & Son's 'Measure Book 1') were particularly difficult to uniquely identify. No records were associated with a customer unless a sufficient combination of identifying facets meant that their nominal linkage was beyond doubt. Each census return provided details of: age, place of birth, occupation, full address, marital status and other household members. In addition, the 1911 census also denoted the number of years married.

Using this census information, each customer was then sought in the Birth, Marriage and Death Indices, also available online via *Ancestry.co.uk*. These records are available from 1837 onwards and thus no registration of births and few registrations of marriage were found for Henry Poole & Co.'s customers because these life events tended to have occurred before this date. For Morris & Son's customers, 108 registrations of birth, 111 registrations of marriage and 138 registrations of death were identified. Henry Poole & Co.'s customers were linked with 24 marriage registrations and 92 death registrations. These indices provide the

⁴⁶ See bibliography for full list of sources.

⁴⁷ *Ancestry.co.uk*, accessed 19 January 2014, www.ancestry.co.uk

quarter year date of registration (for example 'Jan-Feb-Mar 1845'), registration district and inferred county.

Knowledge of the quarter period of death registration enabled the sampled tailors' customers to be traced within the National Probate Calendar of 1858-1966, again archived online on *Ancestry.co.uk*. The Probate Calendar provides: an exact date of death; place of death; probate date; probate registry location; last known address; value of probate; and the name, occasionally address, occupation and relationship to the deceased, of the executor(s) of the Grant of Probate. Probate records were identified for 118 Morris & Son customers and 94 Henry Poole & Co. customers.

With less frequency a range of other records were also accessed through *Ancestry.co.uk*, including but not limited to: London Births and Baptisms, 1813-1906; London Death and Burials, 1813-1980; Cambridge University Alumni, 1261-1900; West Yorkshire Non-Conformist Records, 1646-1985; and London Freedom of the City Admission Papers, 1681-1925.

Beyond *Ancestry.co.uk*, the biographical picture was completed as far as possible by consulting: *The London Gazette*⁴⁸; *Oxford Dictionary of National Biography*⁴⁹; *The Peerage*⁵⁰; as well as journals, online genealogical community boards, local histories and family trees.

3.3.2. Limitations

The structure, contents and limitations of census records have been outlined in detail by Higgs⁵¹. For the purposes of this research the key issues of note are the

⁴⁸ *The London Gazette*, accessed 20 Jan 2014, at www.london-gazette.co.uk

⁴⁹ *Oxford Dictionary of National Biography*, accessed 20 Jan 2014, at www.oxforddnb.com

⁵⁰ *The Peerage*, accessed 20 Jan 2014, at www.thepeerage.com

⁵¹ Higgs, E., *Making Sense of the Census: The Manuscript Returns for England and Wales, 1801-1901*, (London: Her Majesty's Stationary Office, 1989); Higgs, E., *A Clearer Sense of the Census: The Victorian Censuses and Historical Research*, (London: Her Majesty's Stationary Office, 1996); and Higgs, E., *Making Sense of the Census Revisited: Census Records for England and Wales: A Handbook for Historical Researchers*, (London: Institute of Historical Research, 2005).

inconsistency of individuals' ages given across census years and the delineation of census households as 'co-residing groups' rather than families.

Many ages provided within the census were only rough approximations; mostly this was due to a lack of record-keeping and an ignorance of true age, although there may also have been some deliberate falsification of ages for the purpose of securing work if under age, maintaining work if nearing retirement age, or exaggerating longevity and old age⁵². Separate analyses by Anderson, Tillot, the Cambridge Group for the History of Population and Social Structure and Higgs have all previously found that although only half to two-thirds of individuals reported their ages consistently at ten-year intervals, only four to twelve percent were inconsistent by more than two years⁵³. Amongst the Morris & Son and Henry Poole & Co. customers identified within the censuses, 44.9% stated their age consistently and 15.4% were inconsistent by more than two years. The greater variance in the ages recorded by the tailors' customers compared to the analyses described above is likely to be a product of the wider range of censuses that they have been found in. Nonetheless, the mean range in age provided by the customers nominally linked was only 1.26 years. Contrary to Higgs' suggestion, there does not appear to be more consistency in age recording amongst the wealthier classes because analysing the Henry Poole & Co. customers alone, an almost identical 44.0% stated their age consistently⁵⁴.

Figure 13 indicates that the tailors' customers were heaped towards ages ending in zero or five, a standard indication of a degree of rounding and approximation in age declaration. The degree of age heaping on terminal digits of

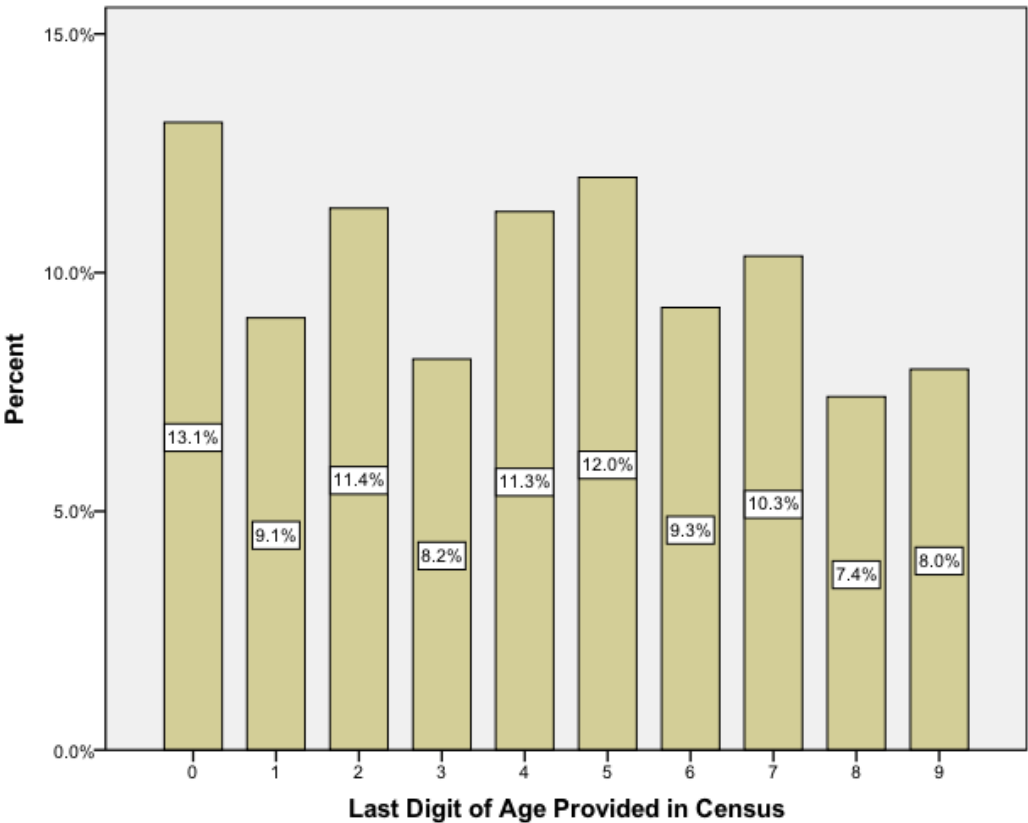
⁵² Higgs, E., *A Clearer Sense of the Census: The Victorian Censuses and Historical Research*, (London: Her Majesty's Stationary Office, 1996), pp. 78-82.

⁵³ Anderson, M., 'The Study of Family Structure', in E. A. Wrigley (ed.), *Nineteenth-Century Society: Essays in the Use of Quantitative Methods for the Study of Social Data*, (Cambridge: Cambridge University Press, 1972), p. 75, Tillot, P. M., 'Sources of inaccuracy in the 1851 and 1861 census' in E. A. Wrigley (ed.), *Nineteenth-Century Society*, (Cambridge: Cambridge University Press, 1972), p. 108, and 'Footnote 15' in Higgs, E., *A Clearer Sense of the Census: The Victorian Censuses and Historical Research*, (London: Her Majesty's Stationary Office, 1996), p. 79, as cited in Higgs, E., *A Clearer Sense of the Census: The Victorian Censuses and Historical Research*, (London: Her Majesty's Stationary Office, 1996), pp. 79-80.

⁵⁴ Higgs, E., *A Clearer Sense of the Census: The Victorian Censuses and Historical Research*, (London: Her Majesty's Stationary Office, 1996), p. 81.

zero or five can be quantified using Whipple’s Index. The index score is obtained by summing the number of persons aged between twenty-three and sixty-two inclusive who report ages ending in zero or five, dividing the sum by the total population aged between twenty-three and sixty-two inclusive, multiplying the result by five, and turning it into a percentage. The result is an index score ranging between one hundred and five hundred, where one hundred represents no preference for ages ending in zero or five and five hundred represents all people choosing ages ending in zero or five. The Whipple Index for the sample of Morris & Son and Henry Poole & Co. customers is 135.1%. Based on this Whipple Index result the ages of the customers given within the censuses can only be described as ‘rough’, deviating from perfect indifference to ages ending in zero or five by 35.1%.

Figure 13: Age Heaping Amongst Sample of Morris & Son and Henry Poole & Co. Customers



Sources: Morris & Son, ‘Measure Book 1’; Henry Poole & Co., ‘Measure Book A’; and Census Returns for England and Wales.

n = 1,392

The second important limitation of the census records is their demarcation of a 'household'. A household within the census represents the group of individuals living with the 'head' of household on the night of the census. Those absent from the household for any reason were not included in the census return – census households were therefore 'co-residing groups' rather than families. Thus the censuses cannot be used to calculate the number of children an individual had during their lifetime. Children who were born and died between censuses would not be recorded, and children at boarding school, apprenticed, or absent for any other reason may also be missed.

Annal and Collins have discussed the compilation process, merits and limitations of the Birth, Marriage and Death Indices⁵⁵. Their key limitation from the perspective of this research is that they are quarterly returns and do not provide exact dates. Parents had forty-two days to register a child's birth, with the consequence that some births occurred in the quarter previous to the one in which they were registered⁵⁶. For exact dates, birth, marriage and death certificates need to be consulted but these are not available online; they must be ordered individually for £9.25 each, ensuring that their access is prohibitively expensive for an academic researcher. This also prevents the cause of death of customers from being known, as this too is only available on the death certificate, not within the index.

The use of the National Probate Calendar in a comparative context is hindered by the fact that the worth of an individual's estate is provided in terms of its value at their date of death. Thus the value of estate in probate of two individuals who die in different years is not comparable without taking into consideration the impact of inflation or deflation.

⁵⁵ Annal, D. and Collins, A., *Birth, Marriage and Death Records: A Guide for Family Historians*, (Barnsley: Pen & Sword Family History, 2012), pp. 67-74.

⁵⁶ Births and Deaths Registration Act 1874 (37 & 38 Vict. 88), p. 1 and pp. 4-5, accessed 20 Jan 2014, www.legislation.gov.uk/ukpga/1874/88/pdfs/ukpga_18740088_en.pdf

Determining individual wealth using the Probate Calendar also has its problems, as Rubinstein, who analyses the ultra-wealthy, has extensively discussed⁵⁷. He highlights that probate records: do not capture peak lifetime wealth, only wealth at death; until 1881 they give an inexact value of the estate in the style 'effects under £30,000'; they are not all encompassing (in particular probate records understate landowning); the types of wealth included within the record changed in 1898 and 1926; and they may be lower estimates of actual wealth due to action taken to avoid estate duty. Overall, Rubinstein argues that probate records are better than alternative indicators of wealth because they provide data at the individual level and exist for all individuals who left an estate in probate, whether they kept a will or died intestate⁵⁸.

Individual level data is critical for this research tracing specific customers. Fortunately the limitations of probate records have less impact on the tailors' customers than Rubinstein's sample. Firstly, the tailors' customers have smaller estates than Rubinstein's millionaires and half-millionaires - the largest estate sampled amongst the Morris & Son or Henry Poole & Co. customers is £930,782 and the mean under £23,100. Therefore it is unfeasible for the vague notation prior to 1881 to over-value estates by as much as £50,000 to £100,000 as Rubinstein suggests because the exaggeration of estate value will be relative. Furthermore, 82.1% of the probate records collected for the tailors' customers were registered post-1881 when the estate was given exactly. The smaller estates of the tailors' customers also likely to reduce the amount of estate duty tax avoidance, especially as by 1907 the tax was only eleven percent even for millionaires⁵⁹.

The main problem with the Calendar that cannot be overcome is the change in the types of wealth that were included within the record. Until 1898 the Probate

⁵⁷ Rubinstein, W. D., *Men of Property: The Very Wealthy in Britain Since the Industrial Revolution*, 2nd edn., (London: Social Affairs Unit, 2006), pp. 18-23.

⁵⁸ Rubinstein, W. D., *Men of Property: The Very Wealthy in Britain Since the Industrial Revolution*, 2nd edn., (London: Social Affairs Unit, 2006), pp. 24-7.

⁵⁹ Rubinstein, W. D., *Men of Property: The Very Wealthy in Britain Since the Industrial Revolution*, 2nd edn., (London: Social Affairs Unit, 2006), p. 23.

Calendar noted only unsettled personalty, however after 1898 unsettled realty was also valued and from January 1926 settled land was a new addition to the valuation⁶⁰. Only six of Henry Poole & Co.'s customers sampled died after 1898 and therefore the changing definition of estate value is mostly a problem for analysing the Morris & Son customers. This is fortunate because the lower levels of wealth and property ownership amongst Morris & Son's customers means that changes to the calendar would have had less impact. The valuation figure for settled land given after 1926 also tended to be entered separately from the deceased's other wealth and does not appear for any of the customers sampled.

Ideally the value of estate in probate would have also been identified for customers' fathers in order to provide a direct comparison when analysing customers' social mobility. However, as Rubinstein emphasises:

...information on both the wealth and the occupation of the father is...virtually impossible without the most laborious of searches to trace the date of death of the father, the *sine qua non* of ascertaining his valuation⁶¹

As such the social status of the tailors' customers' fathers was based on their occupation alone.

3.3.3. Methodology

The limitations of the sources used within the nominal linkage process have shaped the method adopted for amalgamating variables for each customer:

The date of birth for each customer was determined in a four-step hierarchical method. Firstly, if a source external to *Ancestry.co.uk* identified the customer's date of birth exactly then this was used. Secondly, if no exact date of birth was known but a date of baptism was identified then the date of birth was assumed to be one month prior to the date of baptism. Thirdly, if no exact date of birth was known, nor a date of baptism, then the date of birth was assumed to be the first day of the first month within

⁶⁰ Rubinstein, W. D., *Men of Property: The Very Wealthy in Britain Since the Industrial Revolution*, 2nd edn., (London: Social Affairs Unit, 2006), p. 22.

⁶¹ Rubinstein, W. D., *Men of Property: The Very Wealthy in Britain Since the Industrial Revolution*, 2nd edn., (London: Social Affairs Unit, 2006), p. 147.

the quarter registered (not the mid-point of the quarter to allow for the possibility of births forty-two days prior to the quarter of registration). Finally, if no date of birth was known apart from that which could be inferred from ages given in censuses then an estimated date of birth was calculated based on each age given and the modal date of birth used.

To calculate an estimated date of birth based on the ages given in the census, the age and an additional six months were subtracted from the 3 April of the census year. The censuses between 1851 and 1911 inclusive were all taken between 30 March and 7 April⁶². The 3rd April was chosen arbitrarily as a mid-point between the census dates to give consistency to the estimated date of birth. Each individual's birthday could be any time in the twelve months prior to the census; on average it would be six months previous, hence an additional six months were subtracted from the numeric age.

A hypothetical example helps to explain the rather complicated process: In the 1851 census John Smith states that he is 35 years old, in the 1861 census he states that he is 46 and in the 1871 census he states that he is 55. By subtracting his age and an additional six months from the 3 April of each census year this provides estimates of his date of birth of 3 October 1815, 3 October 1816, and 3 October 1815 respectively. The modal date of birth is chosen as the final estimate: 3 October 1815.

The address of each customer was labelled as the address provided in the census closest to the date of clothing order. If no census record was identified within ten years of the transaction in the tailor's measuring book then the data was allocated as unknown. The address was not noted if the customer was labelled as a 'visitor' within the census as this suggested only short-term residence.

Although many of Henry Poole & Co.'s customers are likely to have held both a 'city' and a 'country' house, their address within the census was used consistently.

⁶² Higgs, E., *Making Sense of the Census: The Manuscript Returns for England and Wales, 1801-1901*, (London: Her Majesty's Stationary Office, 1989), 'Appendix 1: Census acts and census days, England and Wales, 1841-1911', p. 171.

A variable accounting for multi-addresses could not be created because there was no means of consistently determining whether a customer held additional property.

During 'the Season' between April and August many of the elites with multiple addresses would have taken up residence in their London abode. As the census was taken in the first week of April, at the beginning of 'the Season', it is likely that there may be some bias towards the London addresses of those with multiple properties.

The modern sub-national boundary divisions used by government define the delineation of a 'region' in these analyses: London, South East, South West, East, West Midlands, East Midlands, North West, Yorkshire and Humber, North East, Wales and Scotland. The region 'London' includes both the City of London and its suburbs. Quantifying the number of customers living in the City of London specifically is difficult because during the nineteenth century the City was expanding at an enormous rate. The population of London grew from less than 1 million in 1801, to 2.36 million in 1851, and 4.52 million by 1901; in the process London's suburbs were increasingly engulfed⁶³. However, the rapid extension of the suburban railway and tram system, throughout the second half of the nineteenth century, made central London increasingly accessible from its suburbs. Customers classified as living within the London region are likely to have regularly engaged with London society, many on a daily basis.

An address was labelled as urban if it featured in Robson's 'list of towns' for circa 1911⁶⁴. Robson's list of towns is based on Law's definition of a town using three criteria: minimum size of population, minimum density and degree of spatial clustering⁶⁵. This approach was deemed to be more accurate than a county level label by accounting for urban town addresses within an otherwise rural county and visa versa. However, as all of the measurements sampled were taken before 1911

⁶³ Thorold, P., *The London Rich: The Creation of a Great City from 1666 to the Present*, (London: Viking, 1999), p. 276.

⁶⁴ Robson, B. T., *Urban Growth: An Approach*, (London: Methuen, 1973), pp. 234-40.

⁶⁵ Law, C. M., 'The Growth of Urban Population in England and Wales, 1801-1911', *Transactions of the Institute of British Geographers*, 41 (1967), p. 129.

addresses are over-estimated as urban. Furthermore, Robson's list of towns does not distinguish between towns of different size. Humphries and Leunig have used parish level data to try to overcome this but it remains calculated guesswork to determine how many parishes should be included within the boundary of one town⁶⁶. The justification for the process chosen was that if an address was within a town by 1911 then the process and effects of urbanisation would have begun to be felt before that.

The occupation of the tailors' customers and their fathers was also taken from the census. If a customer's occupation changed or they had more than one occupation then the dominant occupation was chosen. For customers who gained an income as landholders as well as via an occupation or industry, the occupation was noted as this was presumed to be the original source of their wealth; thus landholding is under-represented within the sample.

The occupation of customers and their fathers was originally noted in a direct form from the census – these 224 different occupational titles were then stratified into two sets of more meaningful groups according to social status and industrial classification. Social status was determined using the Registrar-General's *Classification of Occupations, 1950* revised by Armstrong⁶⁷. This scheme places all occupations into a five-tiered hierarchical system ranging from 'Class I: Professional occupations' to 'Class V: Unskilled occupations' via 'intermediate', 'skilled' and 'partly skilled'. Armstrong's amendments to the scheme attempt to make it more applicable to nineteenth century occupational data. Problems remain because occupations did not necessarily afford the same social status throughout the period, however the scheme is broadly effective and widely utilised.

⁶⁶ Humphries, J. and Leunig, T., 'Cities, Market Integration, and Going to Sea: Stunting and the Standard of Living in Early Nineteenth-Century England and Wales', *Economic History Review*, vol. 62, 2 (2009), p. 463, and personal communication with the authors.

⁶⁷ *Classification of Occupations, 1950*, (London: Her Majesty's Stationary Office, 1951), as cited and revised in Armstrong, W. A., 'The Use of Information about Occupation', in E. A. Wrigley (ed.), *Nineteenth-Century Society: Essays in the Use of Quantitative Methods for the Study of Social Data*, (Cambridge: Cambridge University Press, 1972), pp. 198-225.

The industrial stratification of occupations within the sample was made on the basis of Booth's industrial classification system, set out in his paper 'Occupations of the People of the United Kingdom, 1801-81' and discussed by Armstrong⁶⁸. It was decided to combine 'agriculture' and 'fishing' as one category, reducing Booth's eleven industrial categories to ten: 'agriculture and fishing'; 'mining'; 'building'; 'manufacture'; 'transport'; 'dealing'; 'industrial service'; 'public service and professional'; 'domestic service'; and 'others (property owning and independents)'.

When allocating the date of marriages and deaths amongst the customers sampled from Morris & Son and Henry Poole & Co., the mid-point of the quarter that it was registered was used, unless an exact date was known. This was because marriages and deaths (unlike births) were registered almost immediately after they occurred and therefore, on average, fell at the mid-point of the registration period.

Although the Death Index provides an estimate of age at death, longevity was instead calculated as the range between the date of birth and date of death. The variance between this calculated value of life span and the age at death provided in the Death Index was very small – less than one year for 83.2% of the customers sampled.

Finally, to make the value of customers' estate in probate comparable, all estates were calculated relative to their value in 1880 using the 'Historic Standard of Living' value from *MeasuringWorth.com*⁶⁹.

Thus a dataset of 1,584 tailors' orders, made by 689 customers, each identifiable by up to seventeen social and economic variables, was created in SPSS Statistics 20.0. The economic and social variables available, albeit for varying proportions of the tailors' customers, are: date of birth; place of birth; region of birth;

⁶⁸ Booth, C., 'Occupations of the People of the United Kingdom, 1801-81', *Journal of the Statistical Society of London*, vol. 49, 2 (1886), pp. 314-444, as used from Armstrong, W. A., 'The Use of Information about Occupation', in E. A. Wrigley (ed.), *Nineteenth-Century Society: Essays in the Use of Quantitative Methods for the Study of Social Data*, (Cambridge: Cambridge University Press, 1972), pp. 226-310.

⁶⁹ 'Five Ways to Compute the Relative Value of a UK Pound Amount, 1270 to Present', *MeasuringWorth.com*, accessed 21 January 2014, www.measuringworth.com/ukcompare/

urban status of place of birth; occupation; occupation classified by skill level; occupation classified by industry; father's occupation; father's occupation classified by skill level; father's occupation classified by industry; address; region of address; urban status of address; marital status; date of death; longevity; and relative value of estate in probate.

3.4. Conclusion

It is evident that tailors' records provide an exciting new asset for anthropometric historians. They represent portions of the historical demographic rarely captured within existing anthropometric sources and they achieve this whilst sampling a broad range of socioeconomic backgrounds, ages and both sexes. Tailors' records introduce a relatively new set of body markers into the anthropometric historian's domain, which can be used to both verify existing hypotheses and generate new research questions. In particular, evidence of historical central adiposity enables the analysis of the origins of obesity. Rare longitudinal data provides the means to examine trends in body shape over time and to evaluate the determinants of net nutritional status from a more informed perspective.

In this thesis the tailoring records of Morris & Son and Henry Poole & Co. have been colonised. A dataset of male trouser measurements from these two tailors has been collated after they were deciphered using contemporary cutting manuals. Although there is evidence that tailors measured over customers' clothing, the trouser measurements are perceived to be a close representation of actual body size measured at a precise and accurate level. The demand for tailors' services was generated more by societal dictates of appearance than changes in body shape.

The address and occupation of tailors' customers enables their body shape measurements to be nominally linked to a range of other sources of socioeconomic variables. Census records; birth, marriage and death indices; and probate records

are particularly useful for determining customers' age, address, occupation, marital status and longevity.

Chapter 4. The Tailors' Customers

One of the key reasons for advocating tailors' records as a valuable new source for anthropometric historians is the broad demographic expected to be encompassed within them. As outlined in Chapter 3, the selection of measuring books from two contrasting tailors – Morris & Son and Henry Poole & Co. – is intended to ensure that a wide range of clientele are sampled.

Contextual analyses of the economic transition occurring in Barmouth, away from agriculture, mining and shipping industries towards the tertiary tourist sector, suggests that the sample of customers within Morris & Son's measuring book are likely to be lower- and middle class individuals. In contrast, the history of Henry Poole & Co. and the culture of sartorial consumption associated with Savile Row points to an affluent customer base from the higher middle- and upper-classes, forging an identity amongst the 'elite'.

Thus the contextual backdrop offers strong reason to believe that Morris & Son and Henry Poole & Co. supplied a contrasting demographic group, but their customers need to be pinpointed more precisely. Even amongst Henry Poole & Co.'s customers a simple interpretation of the elite is inappropriate because as Rubinstein emphasises, '...the very wealthy were not a homogenous and unified whole, but demonstrated quite striking dissimilarities'¹.

This chapter will expose the individuals within the two samples utilised within this research. After providing a brief contextual history of Barmouth and Savile Row, the tailors' customers will be defined by their: geographical origins; social status as determined by their occupational composition and wealth in probate; social mobility

¹ Rubinstein, W. D., *Men of Property: The Very Wealthy in Britain Since the Industrial Revolution*, 2nd edn., (London: Social Affairs Unit, 2006), p. 127.

evidenced using their fathers' occupations; and life stage according to their birth cohort and age. Variance will be highlighted both between and within the samples.

The overall purpose is to determine which sectors of the wider population are represented by the samples of customers from Morris & Son and Henry Poole & Co. This will enable inferences about the wider British population to be made when, in future chapters, the body size, obesity, morbidity and mortality of these samples is assessed.

4.1. A History of Barmouth

Morris & Son were a tailoring firm located in Barmouth, Merionethshire in North West Wales. The vast majority, 81.6%, of Morris & Son's customers lived within fifteen kilometres of Barmouth and thus a history of the town provides a useful insight into the nature of their customers. The socioeconomic background of Morris & Sons' customer base is particularly intriguing because the second half of the nineteenth century was a period of economic transition for Barmouth. Unlike elsewhere in the country where new urban-industrial complexes were being established, Barmouth evolved in a way that promoted the middle classes: as a small, picturesque, tourist destination.

During the eighteenth century Barmouth established itself as an important port, exporting 'webs' (long lengths of coarse white cloth) produced in the cottage industry. From 1770 to 1790 the Mawddach estuary, with its mouth at Barmouth, engaged in shipbuilding, profiting from ample local resources of oak. However, following the outbreak of the American War of Independence in 1775 the Merioneth woollen industry floundered and local ships were engaged elsewhere. In addition the cottage industry (especially in neighbouring Dolgellau) struggled to maintain its key market as the Shrewsbury Drapers' Company responded to competition from larger steam

powered wool mills in Northern England. The Meirioneth woollen industry had collapsed by the end of the eighteenth century².

While textiles and maritime pursuits were experiencing a series of stresses, early signs of tourism were beginning to emerge. Sea bathing at Barmouth began in the 1760's and had become popular by the turn of the century. In response, the Cors-Y-Gedol Arms was built in 1795 to accommodate the increasing number of visitors and in 1798 bathing machines were introduced onto Barmouth beach to allow women to bathe modestly³. Morris & Son's ledger includes measurements for the proprietor of Cors-Y-Gedol Hotel in 1891, Mr. Benjamin John Allsop, as well as its head porter, two waiters, a page, a groom, and a boots. Around 1798 a road to Barmouth along the estuary was constructed to ease access for visitors. In the 1830's the Lion Hotel was built; its proprietor in 1891, William Jones, also features in Morris & Son's measure book along with his wife, son, two daughters and another boots.

During the first half of the nineteenth century Barmouth's harbour became busy again. The shipping industry was engaged exporting stone and slate from the Blaenau Ffestiniog mines⁴. This industry is reflected in Morris & Son's measuring book, with fifteen different customers engaged as stonemasons, stonecutters, miners or quarrymen.

The crucial event of Barmouth's economic history occurred in October 1867 when the Barmouth viaduct was constructed to give the Aberystwyth and Welsh Coast Railway access to Barmouth across the estuary. Eighteen of Morris & Son's customers worked on the railway, which highlights its importance to Barmouth's economy. However, the arrival of the railway caused the shipping industry to suffer yet again because the railway provided a much cheaper, faster means of

² Wyn-Jones, O. and Jones, J., *Discover Barmouth: Today and Yesterday*, (Barmouth: Select All, 2002), pp. 7-8.

³ Wyn-Jones, O. and Jones, J., *Discover Barmouth: Today and Yesterday*, (Barmouth: Select All, 2002), p. 9.

⁴ Wyn-Jones, O. and Jones, J., *Discover Barmouth: Today and Yesterday*, (Barmouth: Select All, 2002), p. 10.

transportation⁵. In addition, the viaduct caused silt to build up in the harbour – by the second half of the nineteenth century the quay could only be accessed by small boats⁶. Nonetheless, Barmouth's commercial fishing industry continued to thrive into the twentieth century⁷. Fisherman, mariners and boat builders represent twenty-eight customers of Morris & Son in 'Measure Book 1'.

More importantly, the railway made Barmouth more accessible to visitors. Tourist guides to Barmouth began appearing from at least 1884 and there were many available by the early twentieth century⁸. The chief attraction of Barmouth was its wide, safe beach. The coastal location also appealed to those with an interest in boating, yachting and fishing. The beauty of Barmouth and its surrounding area was emphasised with particular reference to the varied landscape provided by the river, hills, woodland and moors. Excursions could be taken to surrounding villages and attractions such as Panteinion Fall, Arthog Falls, Harlech Castle, and Cymmer Abbey. Barmouth's healthy environ was also advertised, in particular 'the salubrity of the climate', the 'purity of the sea', its sheltered location, and perfect drainage and pure water supply⁹.

By the 1870s an influx of tourists to Barmouth motivated the construction of Marine Parade and Porkington Terrace, both lined with hotels and guesthouses. Seven of Morris & Son's customers in 'Measure Book A' lived on Marine Terrace and

⁵ Wyn-Jones, O. and Jones, J., *Discover Barmouth: Today and Yesterday*, (Barmouth: Select All, 2002), p. 12.

⁶ Hughes, J., *Hughes' New Guide to Barmouth*, 2nd edn., (Barmouth: John Hughes, 1902), p. 1.

⁷ Redfern, R., *Mawddach: The Story of Barmouth and its District*, (Chesterfield: The Cottage Press, 2004), p. 16.

⁸ Longley, F. E., *On The Cambrian: A Holiday Trip on the Welsh Coast, With Brief Descriptions of Aberystwyth, Devil's Bridge, Borth, Aberdovey, Towyn, Barmouth, Dolgelly, Harlech, Portmadoch, Criccieth, Pwllheli, and other Places of Interest*, (London: F. E. Longley, 1884); Heywood, J., *John Heywood's Illustrated Guide to Barmouth and Dolgelly, With Short Excursions in their Vicinity*, (Manchester & London: John Heywood, 1889); British Holiday Association, *Co-operative and Educational Holidays: Barmouth, N. Wales*, (Bolton: British Holiday Association, 1901); Hughes, J., *Hughes' New Guide to Barmouth*, 2nd edn., (Barmouth: John Hughes, 1902); Hughes, J., *Photographic Views of Barmouth*, (Barmouth: John Hughes, 1902); Barmouth and District Improvement Association, *Barmouth: Its Beauties and Attractions*, (Barmouth: n.p., 1911); Anon., *Aberystwyth, Barmouth, and Cardigan bay*, (Llangollen: Darlington Handbooks, 1897); Anon., *Guide to Barmouth, Harlech, Dolgelly and North Wales (Southern Section)*, 10th edn., (London: Ward, Lock & Co., n.d.); Anon., *Photographic Views of Barmouth*, (Barmouth: n.p., 1902); Roberts, J. A. and Woodall, E., *Gossiping Guide to Barmouth, Harlech and Dolgelly*, (Oswestry & Wrexham: Woodall, Minshell, Thomas & Co., 1891).

⁹ Heywood, J., *John Heywood's Illustrated Guide to Barmouth and Dolgelly, With Short Excursions in their Vicinity*, (Manchester & London: John Heywood, 1889), p. 7; and Hughes, J., *Hughes' New Guide to Barmouth*, 2nd edn., (Barmouth: John Hughes, 1902), pp. 4-5.

one was resident as a guest. A further six of Morris & Son's customers lived on Porkington Terrace along with another visitor. At a similar time, Talydon Hotel and Richmond House were constructed on the High Street – the proprietors of both of these guesthouses feature within the dataset from Morris & Son. By 1902 lodging houses provided room for over 5,000 visitors in Barmouth¹⁰ - 'Barmouth and its surroundings, attracted an ever-increasing number of the "genteel folk" of the United Kingdom'¹¹.

The census of 1891 suggests that Barmouth had a population of 2,045¹². By 1897, contemporaries estimated that it had grown to 2,600¹³. Whilst the residential population of Barmouth clearly remained small into the twentieth century, tourists were a dramatic influx, potentially tripling Barmouth's population. The opportunities provided by Barmouth's transition towards tourism impacted the local economy - undeveloped land that was valued at £250 in the mid-nineteenth century was worth £1,000 by 1891¹⁴.

This history of Barmouth suggests that Morris & Son's customers combined individuals engaged in the town's 'traditional' primary industries of farming, mining and fishing, alongside those that benefitted from the growth of the tertiary tourist sector. This clientele ranged from lower-middle class individuals occupied in unskilled manual jobs on the railway and on the land, to upper-middle class professionals and successful dealers catering to the newly emerging tourist demand.

Tourists and visitors to Barmouth also feature in Morris & Son's measure book, with 15.9% of the sample from 'Measure Book 1' living in England in the 1891 census. Although Barmouth was never as fashionable as places like Brighton or Bath, visitors stemmed from a higher social strata than the local clientele, mainly amongst the

¹⁰ Hughes, J., *Hughes' New Guide to Barmouth*, 2nd edn., (Barmouth: John Hughes, 1902), p. 8.

¹¹ Heywood, J., *John Heywood's Illustrated Guide to Barmouth and Dolgelly, With Short Excursions in their Vicinity*, (Manchester & London: John Heywood, 1889), p. 7.

¹² Census of England and Wales, 1891, *Ages, Condition as to Marriage, Occupations, Birth-Places, and Infirmities*, vol. III, 1893-94, CVI (1), p. 495.

¹³ Hughes, J., *Hughes' New Guide to Barmouth*, 2nd edn., (Barmouth: John Hughes, 1902), p. 5.

¹⁴ Heywood, J., *John Heywood's Illustrated Guide to Barmouth and Dolgelly, With Short Excursions in their Vicinity*, (Manchester & London: John Heywood, c.1903), p. 14.

lower-upper classes. Tourists needed to be able to afford both the time and money to take a vacation and, without being ‘spoken-for’, may well have needed to settle their bespoke orders up-front. Barmouth’s healthy environment meant that it was recommended as a place for invalids to spend winter¹⁵, although it is not clear how popular the North Welsh town was with the sick, with the Continent a more fashionable destination. Only two of Morris & Son’s tourist clientele died within four years of their bespoke order, one was aged 37 and the other aged 53. Invalids seeking a fresh air ‘cure’ in Barmouth do not appear to bias the anthropometric data provided by Morris & Son.

4.2. A History of Henry Poole & Co. and Sartorial Consumption on Savile Row

In contrast to the middle class local clientele and lower-upper class tourist clientele of Morris & Son, Henry Poole & Co. was (and is) a Savile Row, prestigious tailor of London, patronised by the upper classes. The luxury of a bespoke garment from Henry Poole & Co. was not acquired cheaply and therefore the firm’s clientele can broadly be described as ‘elite’ but this is a vague label requiring refinement. Henry Poole & Co.’s customers were a heterogeneous group bound by shared ideals more than circumstances.

Tautologically, Henry Poole & Co.’s customers were customers of Henry Poole & Co; they were individuals who chose to patronise Henry Poole & Co. specifically, rather than any other competing elite tailor. Hence it is important to uncover what was unique about Henry Poole & Co.’s reputation, style, or shopping experience and who would have favoured the firm for these reasons. Ultimately what resounds is that Henry Poole & Co. was simply the best, in accordance with the firm’s original slogan – ‘there is only one Poole – all the rest are puddles’¹⁶.

¹⁵ Heywood, J., *John Heywood’s Illustrated Guide to Barmouth and Dolgelly, With Short Excursions in their Vicinity*, (Manchester & London: John Heywood, c.1903), p. 7.

¹⁶ Walker, R., *The Savile Row Story: An Illustrated History*, (London: Prion, 1988), p. 52.

Foremost, Henry Poole & Co. was a bespoke tailoring firm in the heart of the luxury Mayfair and Piccadilly area of London with a long heritage amongst fashionable tailors. Richard Boyle, third Earl of Burlington, built the Burlington Estate in this area of London in the 1730s. By the late eighteenth century fashionable tailors had already begun locating themselves in the region and they gained attention and notoriety following the patronage of socialite George ‘Beau’ Brummel and his friend the Prince of Wales. The reputation of tailors in this area was further cemented by their supply of uniforms during the Napoleonic wars.

In 1846 Henry Poole inherited his father’s Burlington Street tailoring firm and made a momentous decision. Henry converted the rear door of the shop into the new entrance and thus founded the tailoring industry on Savile Row¹⁷. For a firm that continues to operate today the accolade of being ‘the founders of Savile Row’ is a fantastic marketing slogan and one that, of the remaining Savile Row tailors, Henry Poole & Co. deserves the most. However, there were already tailoring establishments set up on the Row when Henry Poole reversed his property (although they were short-lived) and until at least the last quarter of the nineteenth century the entire region housed fashionable tailors without one road being prized over any other¹⁸. Although Henry Poole was largely responsible for ensuring that one London street became a worldwide synonym for the best in gentlemen’s bespoke tailoring, contemporaries would not have perceived his firm as the ‘founders of Savile Row’ or recognised the significance of this. It is therefore inaccurate and anachronistic to suggest that Henry Poole & Co.’s reputation and popularity originally stemmed from this¹⁹.

Nonetheless, Henry Poole & Co., established in 1806, had a long-standing heritage amongst elite bespoke tailors and had gained eminence. The firm was renowned for its noble customers, specifically gaining its first royal warrant from

¹⁷ Sherwood, J., *Savile Row: The Master Tailors of British Bespoke*, (London: Thames & Hudson, 2010), p. 55.

¹⁸ Walker, R., *The Savile Row Story: An Illustrated History*, (London: Prion, 1988), p. 51; Howarth, S., *Henry Poole: Founders of Savile Row, The Making of a Legend*, (Honiton: Bene Factum, 2003), p. 3.

¹⁹ Howarth, S., *Henry Poole: Founders of Savile Row, The Making of a Legend*, (Honiton: Bene Factum, 2003).

Emperor Napoleon III in 1858 with a further twenty-seven royal warrants earned during the 1860s and forty accumulated in total to date²⁰. Until the late nineteenth century Savile Row's luxury tailors avoided what they perceived as the vulgarity of formal advertising or window displays²¹. Consequently, the elite firms depended on their reputation and their customers' public display of their garments to advertise themselves. Henry Poole & Co.'s success in both of these regards perpetuated the virtuous circle of a high-class clientele.

An individual's choice of bespoke tailor was highly dependent on the advice and recommendations of friends and acquaintances²². In his autobiography, the American H. C. Chatfield-Taylor recalls how in 1925 he decided to 'patronise the tailors of Savile Row and Conduit Street in the order to which [he] heard their merits praised'²³. Until Henry Poole joined his father's firm aged fifteen, he was schooled at the 'Academy for Noblemen's and Gentlemen's Sons'. This early education acquitted Henry with a love of horses and a network of influential friends in the sporting world²⁴. These contacts amongst high society enabled Henry to drum up the customers and success the family tailoring business required²⁵.

The firm's initial prosperity followed the entry of Henry's father, James Poole, into the volunteer corps of infantry in March 1815. James Poole had to provide his own uniform and according to legend he made his personal kit to such a high standard that others, including officers, requested that he construct their uniforms too²⁶. Many bespoke tailors of the area retained a military specialism following the

²⁰ Walker, R., *The Savile Row Story: An Illustrated History*, (London: Prion, 1988), pp. 54-5.

²¹ Breward, C., *The Hidden Consumer: Masculinities, Fashion and City Life 1860-1914*, (Manchester & New York: Manchester University Press, 1999), p. 106.

²² Ugolini, L., *Men and Menswear: Sartorial Consumption in Britain 1880-1939*, (Aldershot: Ashgate, 2007), pp. 222-5.

²³ Chatfield-Taylor, H. C., *Cities of Many Men: A Wanderer's Memories of London, Paris, New York and Chicago During Half a Century*, (London: Stanley Paul, 1925, pp. 24-5, as cited in Ugolini, L., *Men and Menswear: Sartorial Consumption in Britain 1880-1939*, (Aldershot: Ashgate, 2007), p. 222.

²⁴ Howarth, S., *Henry Poole: Founders of Savile Row, The Making of a Legend*, (Honiton: Bene Factum, 2003), p. 24.

²⁵ Howarth, S., *Henry Poole: Founders of Savile Row, The Making of a Legend*, (Honiton: Bene Factum, 2003), p. 27.

²⁶ Howarth, S., *Henry Poole: Founders of Savile Row, The Making of a Legend*, (Honiton: Bene Factum, 2003), p. 11.

high demand for uniforms during the Napoleonic wars, however James diversified. In 1839 he submitted a new design for formal dress at the Royal Court and his design was accepted. Although not a Royal Warrant, James Poole had gained royal approval along with fame for his livery and court dress²⁷. In 1839 the firm also benefitted when Jem Mason, won the first Grand National. James Poole and his son gained publicity by being associated with Jem at the height of his fame and by ensuring that whenever Jem received attention he was dressed in the finest Poole attire²⁸. This, and the custom of others from amongst the Tattersall Yard sporting set, brought the tailors a reputation for providing quality hunting and racing outfits²⁹.

By the 1840s the Poole's were prominent military, court, and sportswear tailors. However, the firm's specialisms did not dictate the nature of its clientele. What was more important was that the firm was becoming increasingly prevalent and important amongst 'society'. Like all the elite bespoke tailors, Henry Poole & Co.'s output was diverse. On the whole, the firm's customers did not frequent Henry Poole & Co. for particular items but because they coveted the house style. Yet this was, and is, hard to define. The current chairman, Angus Cundey, describes it as – 'Poole leads and others follow'³⁰. Simon Cundey, the current director, when explaining the ethos of a Henry Poole suit relates, 'it's all about balance, it's all about the finish of the garment, it's all about the customers'³¹. Bespoke style is distinct from fashion – it is

²⁷ Howarth, S., *Henry Poole: Founders of Savile Row, The Making of a Legend*, (Honiton: Bene Factum, 2003), pp. 28-30; Walker, R., *The Savile Row Story: An Illustrated History*, (London: Prion, 1988), p. 52; Sherwood, J., *The London Cut: Savile Row Bespoke Tailoring*, Fondazione Pitti Discovery, (Milan: Marsilio, 2007), p. 63.

²⁸ Howarth, S., *Henry Poole: Founders of Savile Row, The Making of a Legend*, (Honiton: Bene Factum, 2003), pp. 30-1.

²⁹ Walker, R., *The Savile Row Story: An Illustrated History*, (London: Prion, 1988), p. 50.

³⁰ Sherwood, J., *The London Cut: Savile Row Bespoke Tailoring*, Fondazione Pitti Discovery, (Milan: Marsilio, 2007), p. 68.

³¹ *A Cut Above the Rest: A Film on Henry Poole & Co.*, online video, 'Henry Poole & Co.: Founders of Savile Row', *The Telegraph*, 4 February 2010, accessed 21 January 2013, at <http://www.telegraph.co.uk/finance/businessclub/7159027/Henry-Poole-and-Co-founders-of-Savile-Row.html>

the achievement of natural elegance, or as *The Tailor and Cutter* outlined, 'modernity with dignity'³².

As McDowell comments, 'not only did Savile Row provide the clothes, it also furnished the rules of male dress'³³. As clothing consumption became increasingly democratised during the nineteenth century one of the few ways to distinguish oneself was to transcend fashion and achieve *style*. Henry Poole & Co.'s sartorial knowledge could be trusted to achieve this. The craftsmanship of the firm could be relied upon to make the body look its best. A visit to Henry Poole & Co. was not dependent on its specialism or any specific cut, but on what the firm represented. Wearing a Henry Poole & Co. suit said less about the type of clothes you liked to wear or the way you preferred them to look, than about who you wanted to be.

This argument aligns with that of Breward who suggests that sartorial preferences were not simply based on economic, technological or business circumstances but also on moral and political mores³⁴. Patronising Henry Poole & Co. represented a decision to wear the finest bespoke. This was a particularly morally and politically charged decision from the mid-nineteenth century onwards in retaliation against the increasingly popularised ready-to-wear industry. As McDowell recognises, frequenting Savile Row was '...above all else an attitude of mind'³⁵. Improved quality, well-fitting, ready-made items became available from the 1820s and many middle class consumers moved from buying bespoke to ready-made because it was much cheaper. Poole's customers were those that avoided this. Perhaps they frowned upon the supposed cheap materials and poor quality of ready-made items but more pertinently, as a respectable appearance began to proliferate, the exclusivity and

³² Howarth, S., *Henry Poole: Founders of Savile Row, The Making of a Legend*, (Honiton: Bene Factum, 2003), p. 21.

³³ McDowell, C., *The Man of Fashion: Peacock Males and Perfect Gentlemen*, (London: Thomas and Hudson, 1997), p. 94.

³⁴ Breward, C., *The Hidden Consumer: Masculinities, Fashion and City Life 1860-1914*, (Manchester & New York: Manchester University Press, 1999), pp. 40-1.

³⁵ McDowell, C., *The Man of Fashion: Peacock Males and Perfect Gentlemen*, (London: Thomas and Hudson, 1997), p. 94.

idiosyncrasy of bespoke meant that it was the only guaranteed means of distinguishing oneself as elite³⁶.

The sartorial identity of Henry Poole & Co. was not only bound-up with British style but more specifically with a 'London look'. Breward has argued that fashionable consumption could be used as a badge of belonging to the city³⁷. This was increasingly relevant during the second half of the nineteenth century as the venues for display multiplied – Mayfair balls, Sunday parades in Hyde Park, Tattershall horse auctioneers, St. James' Street gentlemen's clubs, boxing rings, sports bars *et cetera*, were all spaces, specifically spaces in London, for appearances to be judged³⁸.

Although it is clear that customers within the dataset purchased bespoke items, this does not necessarily mean that their entire wardrobe was stocked with bespoke. In 1880, trade journal *The Tailor and Cutter* stated:

...it is well known that while many, moving in the higher circles of society, have their coats and vests from our West End houses, they patronise without compunction those firms who advertise trousers made to measure for 13s 6d³⁹

Equally, many of those who frequented the ready-made sector would purchase bespoke garments for particularly special occasions or fitted wear⁴⁰. Others clearly patronised Henry Poole & Co. for the bulk of their sartorial requirements. Thus it is likely that 'Measure Book A' contains a sample of both upper-middle class customers ordering specific items for a particular purpose, and upper class customers whose entire wardrobes were bespoke. What unified Henry Poole & Co's customers was not a shared wardrobe, nor a similar economic standing, but a mutual desire to utilise the reputation and luxury of select garments from Poole's to establish *status*. Gentlemen from a range of social backgrounds were equally familiar:

³⁶ Breward, C., *The Hidden Consumer: Masculinities, Fashion and City Life 1860-1914*, (Manchester & New York: Manchester University Press, 1999), p. 49.

³⁷ Breward, C., *Fashioning London: Clothing and the Modern Metropolis*, (Oxford & New York: Berg, 2004), p. 26.

³⁸ Breward, C., *Fashioning London: Clothing and the Modern Metropolis*, (Oxford & New York: Berg, 2004), pp. 44-6.

³⁹ *The Tailor and Cutter*, 8 April 1880, p. 155, as cited in Breward, C., *The Hidden Consumer: Masculinities, Fashion and City Life 1860-1914*, (Manchester & New York: Manchester University Press, 1999), p. 28.

⁴⁰ Ugolini, L., *Men and Menswear: Sartorial Consumption in Britain 1880-1939*, (Aldershot: Ashgate, 2007), pp. 9-10; Chenoune, F., *A History of Men's Fashion*, (Paris: Flammarion, 1993), p. 69.

As a passport to good society, dress is equally necessary with address; for although, in some respect, manners make the man, still do we not also appreciate his taste, and fix his standard in genteel life by his good habits? Consequently, his tailor is quite as necessary and influential an ally as even the schoolmaster...⁴¹

During an age in which industriousness and efficiency were exalted, engaging in the protracted process of ordering and being measured for bespoke items could be interpreted as politically charged in itself. Currently a bespoke suit takes four fittings, fifty-two hours of manpower and three months from ordering to delivery⁴². In the nineteenth century the bespoke tailoring experience was an overtly recreational activity. Henry Poole & Co. established themselves as even more leisured than most, operating much like a gentleman's club of St. James' Street - customers ordered garments whilst drinking Poole's wine, smoking his cigars and mingling with other men of high society⁴³. A Henry Poole & Co. suit identified its wearer as an individual at liberty to revel in the hedonism of a bespoke purchase. Again, this was a statement about status.

The grandeur and lavish decoration of Poole's shop identified Henry Poole & Co. as the pinnacle of the tailoring profession and an opulent, luxurious space imparting distinction on those with access. Most bespoke tailoring shops of the nineteenth century were infamously sparse and conservative, occupying the upper-floor of a building and gearing the internal organisation of the shop towards accurate fitting and efficient production⁴⁴. As Breward highlights, 'Poole's appears to have been a well-appointed exception, an early example of a concern with the architectural ambience of consumption that did not fully affect other tailors until the [twentieth

⁴¹ *The Gentleman's Magazine of Fashions, Fancy Costume and the Regimentals of the Army*, 1 May 1828, Walker, R., *The Savile Row Story: An Illustrated History*, (London: Prion, 1988), pp. 34-5.

⁴² Sherwood, J., *The London Cut: Savile Row Bespoke Tailoring*, Fondazione Pitti Discovery, (Milan: Marsilio, 2007), p. 12.

⁴³ Sherwood, J., *The London Cut: Savile Row Bespoke Tailoring*, Fondazione Pitti Discovery, (Milan: Marsilio, 2007), pp. 64-5; Ugolini, L., *Men and Menswear: Sartorial Consumption in Britain 1880-1939*, (Aldershot: Ashgate, 2007), pp. 225-6; Anderson, F., 'Fashioning the Gentleman: A Study of Henry Poole & Co., Savile Row Tailors 1861-1900', *Fashion Theory*, vol. 4, 4 (2000), p. 409.

⁴⁴ Breward, C., *The Hidden Consumer: Masculinities, Fashion and City Life 1860-1914*, (Manchester & New York: Manchester University Press, 1999), pp. 104-6; Ugolini, L., *Men and Menswear: Sartorial Consumption in Britain 1880-1939*, (Aldershot: Ashgate, 2007), pp. 230-3.

century]⁴⁵. The showroom was more consumer-orientated and spectacular than other bespoke firms, described by contemporaries at the end of the nineteenth century as having:

...huge forests of cloth, arranged so that each piece could be seen by the customer. One large mahogany table of magnificent build, and which we were told cost £300 to make, was heaped up with black cloths, on another was placed blues, on a third greys, on another fancies, the next containing half mourning goods; while away...on one side was a magnificent show case, which had been prepared and fitted up by the firm with specimens of English tailoring...for the Vienna exhibition...Here and there were placed mirrors, and in front of these some magnificent bronze ornaments. These we were informed were relics of the Great Exhibition of 1851...The floor of this room was richly carpeted, and the walls and ceilings tastefully decorated, the effect being heightened by the subdued light which came through the frosted glass in the ceiling⁴⁷

The privacy of the fitting rooms created a sensual atmosphere of mystique and maintained a style of conspicuousness extravagance:

They were miniature palaces; the pile of the carpet reminded one of rich meadow land; the decorations of the walls were one harmony of gold and satin and mirrors; the seats were cushioned in the most luxurious fashion, and the fittings of the most costly character. Moveable mirrors, adjustable electric lights, and swinging side glasses, all lent their aid, while the top lights from the ceiling were of the softest character, all adding to the palatial character of the apartments. Secrecy and comfort, ornamentation and utility, had all been studied...There were some five or six of these fitting rooms, each decorated in its own style; and we feel our own inadequacy to describe the beauty of their satin upholstered walls, their painted panels and ceilings in relief. One room would be white and gold, another green and gold...the treasures of art being ransacked to add beauty...The express purpose was the fitting on of clothes, and that, too for gentlemen...One could hardly enter these rooms without experiencing an inspiration of style and beauty; and we can readily understand customers feeling that those who could show such taste in the fitting up of their premises, had certainly mastered the laws of beauty and proportion, and were consequently equal to the task of clothing them in a befitting manner⁴⁸

Henry Poole & Co.'s shop demonstrated that it was an architect of beauty, and ensured that it was an architect of identity. If Henry Poole & Co. was a 'miniature palace' then its customers would either be kings, or feel like them.

Henry Poole & Co.'s customers were individuals who wanted to patronise a firm at the pinnacle of the elite bespoke tailoring industry. Poole's long heritage, famous clientele and subsequent reputation established it as the height of luxury and

⁴⁵ Breward, C., *The Hidden Consumer: Masculinities, Fashion and City Life 1860-1914*, (Manchester & New York: Manchester University Press, 1999), p. 108.

⁴⁷ 'Academy Students at Poole's', *The Tailor and Cutter*, 22 July 1897, p. 369, as cited in Breward, C., *The Hidden Consumer: Masculinities, Fashion and City Life 1860-1914*, (Manchester & New York: Manchester University Press, 1999), pp. 106-7.

⁴⁸ 'Academy Students at Poole's', *The Tailor and Cutter*, 29 July 1897, p. 381, as cited in Breward, C., *The Hidden Consumer: Masculinities, Fashion and City Life 1860-1914*, (Manchester & New York: Manchester University Press, 1999), p. 107.

finest bespoke. Attending Henry Poole & Co. made a political and moral statement about one's commitment to bespoke over the emerging ready-to wear industry and also about one's available leisure time. The firm's customers were not unified by the purchase of any particular garments, style, or wardrobe; instead by their motive for patronising Henry Poole & Co. - to achieve or maintain social standing by associating with its splendour. Henry Poole & Co. created clothes but moreover it created men.

4.3. The Tailors' Customers

This contextual history of Barmouth and Henry Poole & Co. paints a strong picture of the contrasting nature of the two tailors' clientele. Nominally linking the customers within 'Measure Book 1' and 'Measure Book A' to census records, birth, marriage and death indices and probate records provides socioeconomic variables for the specific customers that have been sampled. In the following sections, the sample of Morris & Son and Henry Poole & Co.'s customers analysed in this thesis have been defined by their geographical origin, age and birth cohort, social status and social mobility.

4.3.1. Geographical Origins

The density of measurements taken within 'Measure Book 1' from customers living within Barmouth and its surrounding area is the most striking feature of Figure 14. Of Morris & Son's customers in 'Measure Book 1', 72.8% lived in Barmouth, 81.6% lived within fifteen kilometres of Barmouth and 84.1% lived within Wales. This sample is therefore useful for examining the net nutritional status of individuals living in Wales and, more specifically, the inhabitants of a very small rural town in a remote, coastal region. Eighty-nine percent of the customers in 'Measure Book 1' lived in a rural place.

Visitors to Morris & Son from beyond Wales tended to live in London, the South East and the western regions of England bordering Wales. These were areas

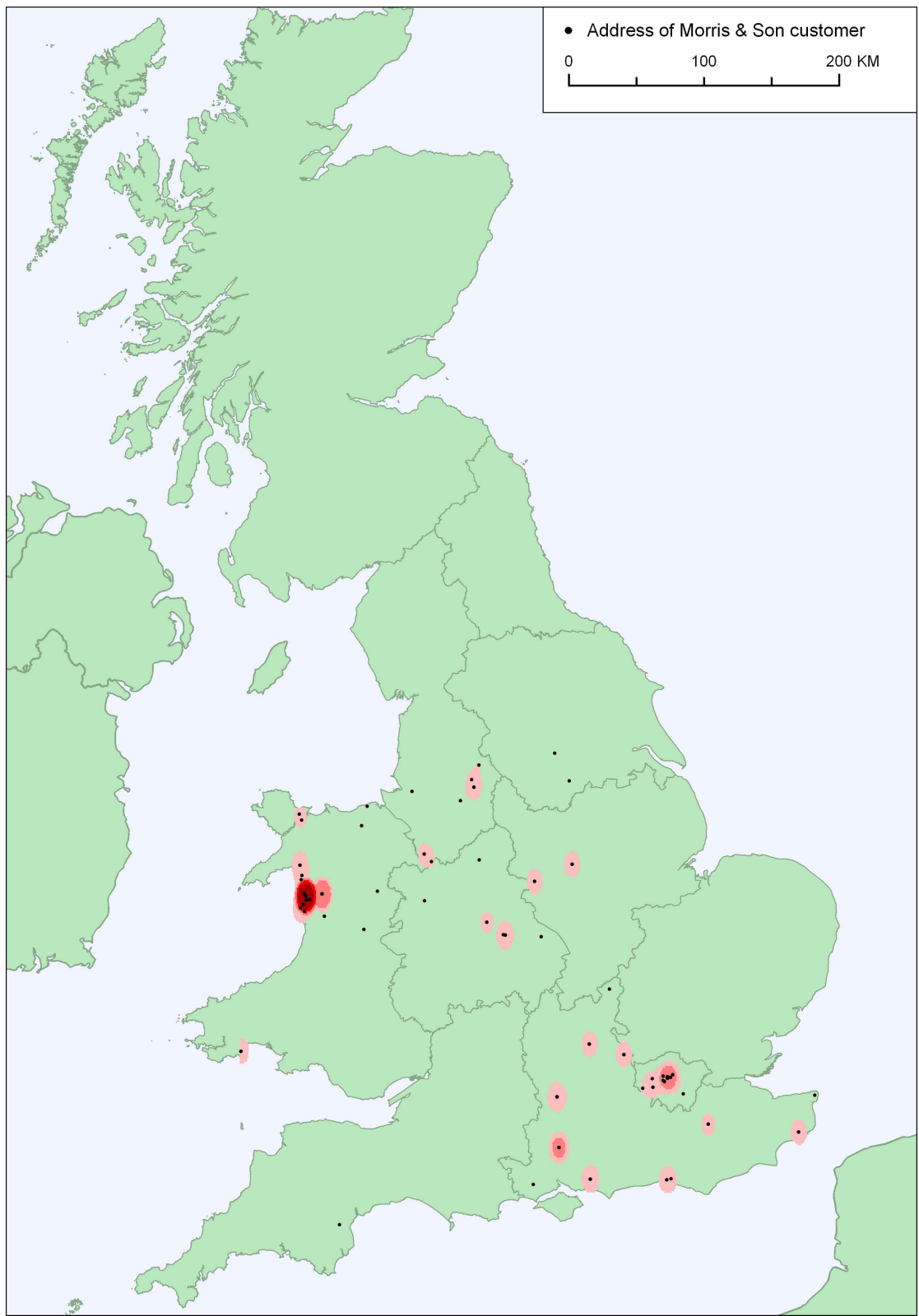
from which it was fairly easy to access Barmouth via the railway network. The Cambrian Railway System made Barmouth accessible from the northern counties of Wales and linked Barmouth to Crewe or Chester via Whitchurch, Shrewsbury via Welshpool, or Hereford via Three Cocks Junction. Great Western trains ran from nearby Dolgelly and connected Barmouth to London via Ruabon⁴⁹. By 1900 Barmouth could be reached from London in about eight hours⁵⁰.

Although the place of birth of Morris & Son's customers was slightly more dispersed, as Figure 15 shows, the majority of Morris & Son's customers were also born in Barmouth or North Wales. This means that the majority of the sample from Morris & Son provides an intriguing group of individuals whose only regional influences on their nutritional status came from a relatively small area around North Wales. This helps to clarify the determinants of their net nutritional status. Again, the 28.8% of Morris & Son's customers born outside Wales tend to represent regions around London, the South East and western England.

⁴⁹ Bartholomew, J., *Bartholomew's Gazetteer of the British Isles: Topographical and Statistical*, (Edinburgh: Adam and Charles Black, 1887), Plate 16: 'England and Wales Railways'.

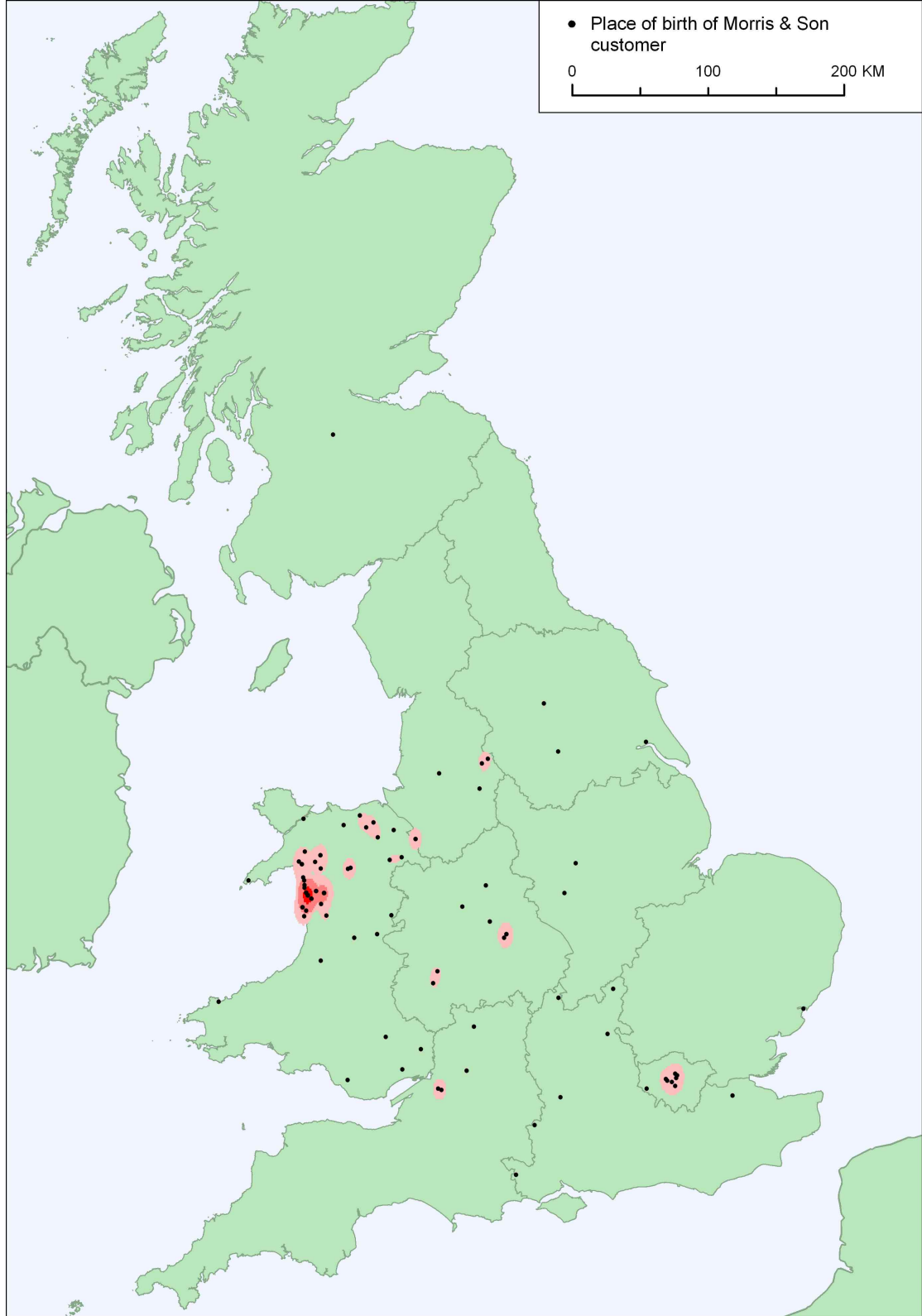
⁵⁰ 'The Llangollen Railway's History: Construction of the Ruabon to Barmouth Line', *Llangollen Railway*, accessed 27 January 2014, www.llangollen-railway.org.uk/historyoftheline.html

Figure 14: Density Map of the Address of Morris & Son's Customers in 'Measure Book 1'



Sources: Morris & Son, 'Measure Book 1'; and England and Wales Census Records.

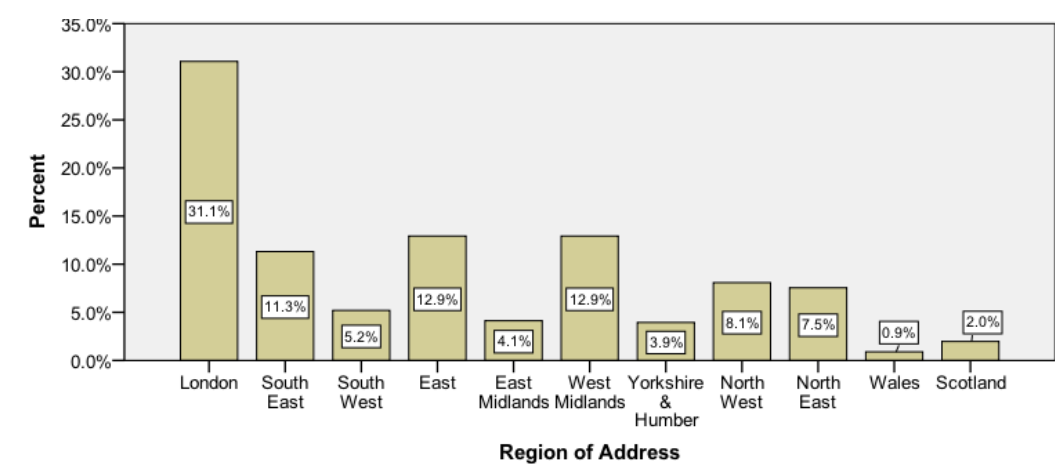
Figure 15: Density Map of the Place of Birth of Morris & Son's Customers in 'Measure Book 1'



Sources: Morris & Son, 'Measure Book 1'; and England and Wales Census Records.

In contrast to the relative homogeneity of the regional origins of Morris & Son's customers, Figure 17 illustrates that broadly speaking Henry Poole & Co.'s customers within 'Measure Book A' lived throughout England. The regional breakdown in Figure 16 highlights that although all regions of Britain were represented within Poole's 'Measure Book A' – 85.8% of the customer's identified lived in London, the South East, East, West Midlands, or North East. Nearly a third of all orders came from customers living in the London region.

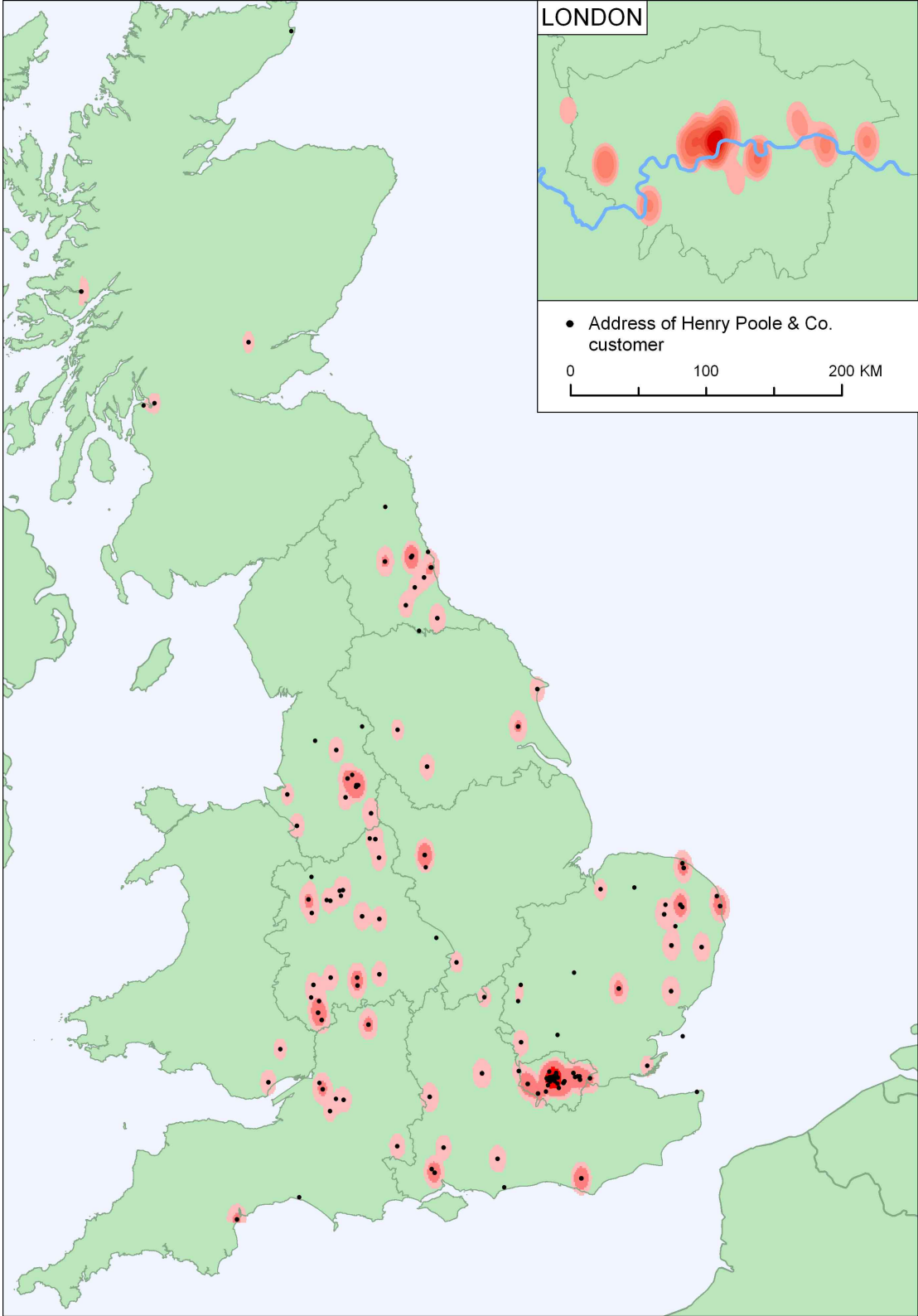
Figure 16: Region of Address of Henry Poole & Co.'s Customers Sampled



Sources: Henry Poole & Co, 'Measure Book A'; and Census Returns for England and Wales.

n = 557

Figure 17: Density Map of the Address of Henry Poole & Co.'s Customers in 'Measure Book A'



Sources: Henry Poole & Co., 'Measure Book A'; and England and Wales Census Records.

The distribution of the addresses of Henry Poole & Co.'s customers roughly reflects the distribution of hubs of wealth and industry during the nineteenth century, as outlined by Rubinstein⁵¹. Henry Poole & Co.'s customers from London in 'Measure Book A' include those with wealth generated from commerce in the City, such as actuary Charles Jellicoe; as well as those with a range of other retailing, manufacturing and shipping engagements in London's outlying districts, such as printer and publisher Alfred Head Baily, and paint and varnish manufacturer John Noble. Greater Manchester was the location of wealthy cotton manufacturers and other industrialists, such as calico printer Gustav Oppenheim from Chorlton-on-Medlock, whilst Manchester itself was the sight of commercial interests, exemplified by wealthy stockbroker, Henry Cooke. Liverpool was another commercial hub but Rubinstein has found that fortunes here were also generated in the soap industry and this is reflected within the sample of Henry Poole & Co. customers by kelp proprietor, Adam Mosman (kelp was a key alkali used in the nineteenth century soap manufacturing process). Finally, the wealth created by the coal-fields around Tyneside is captured within the Henry Poole & Co. sample by individuals such as Addison Potter, coke and brick manufacturer of Newcastle. Thus it is possible to suggest that geographically Henry Poole & Co.'s customers in 'Measure Book A' represent the whole of Britain but particularly areas that were the centre of successful commerce and industry in the second half of the nineteenth century.

The predominance of London amongst the addresses of Henry Poole & Co.'s customers within 'Measure Book A' is partly explained by its foci as a centre of wealth in Britain, however two other factors must also be taken into consideration. Firstly, Henry Poole & Co.'s shop was based in central London and Chapter 3 outlined that it is likely that many of those that feature in 'Measure Book A' attended the premises in person and therefore are more likely to have been local clientele. Secondly,

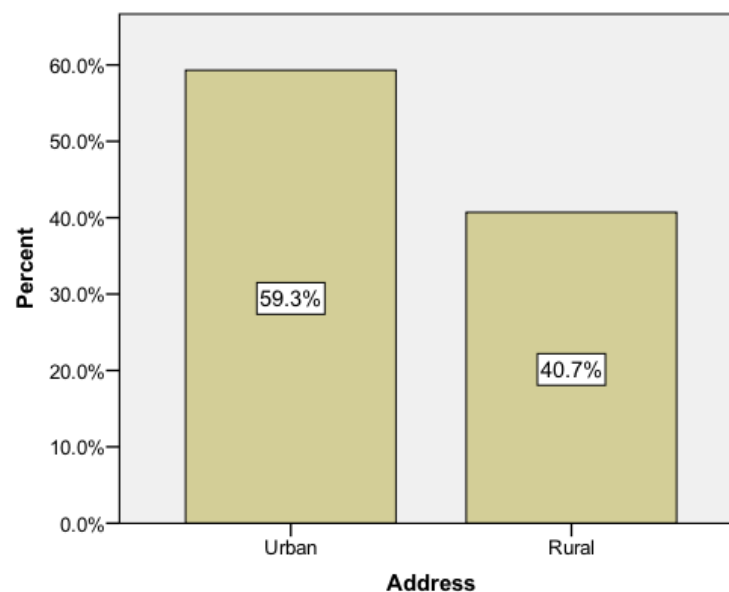
⁵¹ Rubinstein, W. D., *Men of Property: The Very Wealthy in Britain Since the Industrial Revolution*, 2nd edn., (London: Social Affairs Unit, 2006), pp. 128-35.

customers' addresses have been determined using the census and this was always taken at the beginning of 'the Season' when any customers with both a 'country' and a 'city' residence would have been more likely to reside in the capital.

Nonetheless, the representation of all regions of address within 'Measure Book A', combined with the large sample of individuals living in London, means that Henry Poole & Co.'s measuring book is useful to compare the impact of different regional address on nutritional status, and to contrast the impact of living in London rather than anywhere else.

The varied regional distribution of Henry Poole & Co.'s customers is reflected in their division between urban and rural addresses, shown in Figure 18. Nearly sixty percent of the customers identified in 'Measure Book A' lived in urban locations at the time that they placed their order, whilst just over forty percent lived at rural addresses.

Figure 18: Percentage of Urban and Rural Addresses Amongst Henry Poole & Co. Customers



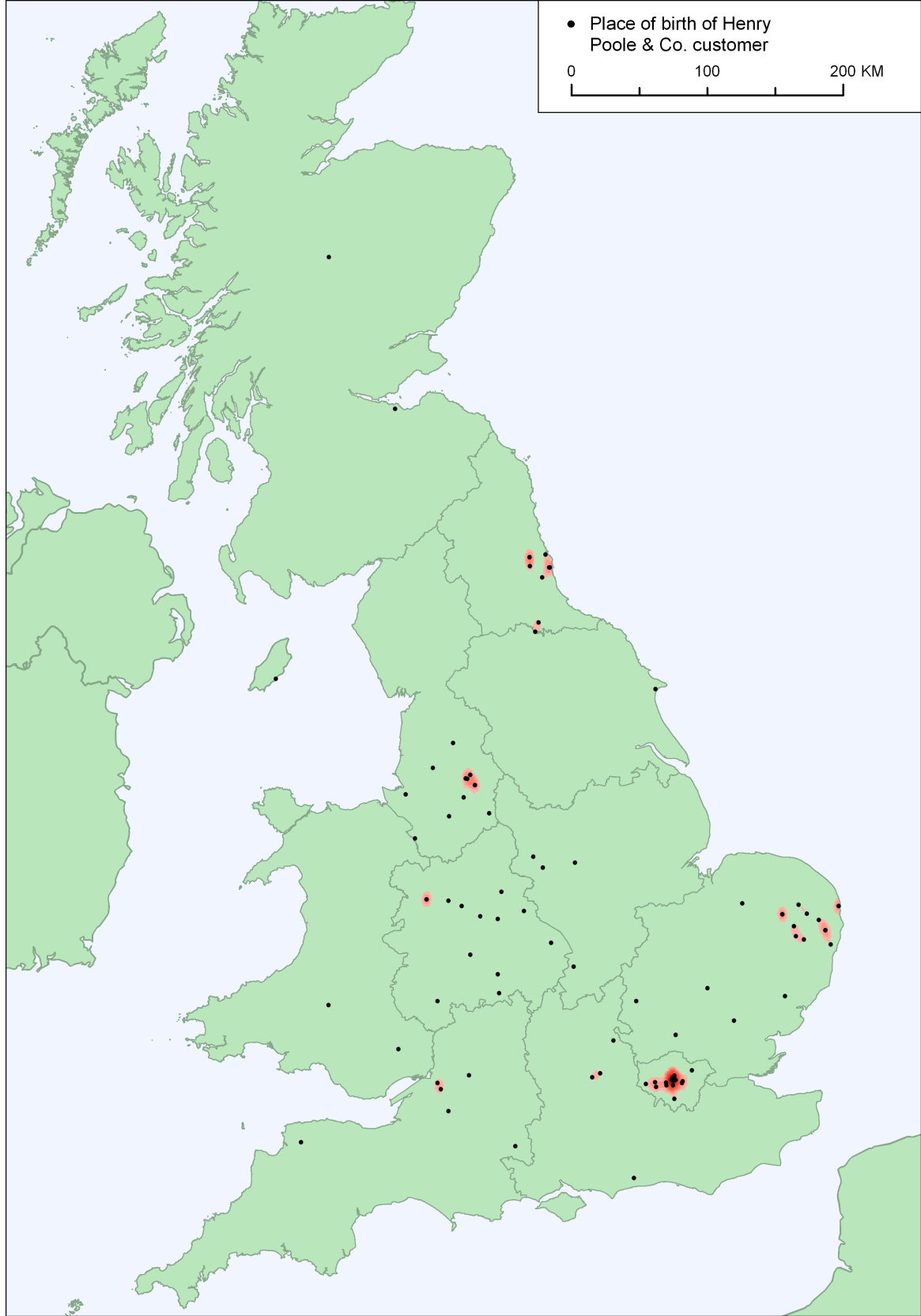
**Sources: Henry Poole & Co., 'Measure Book A'; Census Returns for England and Wales.
n = 546**

This distribution of Henry Poole & Co.'s customers between urban and rural addresses provides an opportunity to consider whether urban penalties were relevant

to the elites. This is an interesting question because, 'it was an ever-present fear on the part of the rich that the disease and sickness which inevitably infested the slums...might spill over', after all, the 'slums...stood on the doorstep...'⁵². The wealthy, urban upper classes amongst the tailors' customers will reveal whether the benefits of high standards of living and low housing density were sufficient to avoid the health snare and health scare of the city.

⁵² Thorold, P., *The London Rich: The Creation of a Great City from 1666 to the Present*, (London: Viking, 1999), p. 249, p. 248.

Figure 19: Density Map of the Place of Birth of Henry Poole & Co.'s Customers in 'Measure Book A'



Sources: Henry Poole & Co., 'Measure Book A'; and England and Wales Census Records.

Again, the place of birth of Henry Poole & Co.'s customers in 'Measure Book A' displays a similar pattern of distribution to their address, evident in Figure 19. Hubs around London, Norwich, the West Midlands, Manchester, Liverpool, and Newcastle predominate. On the whole, customers of Henry Poole & Co. appear to have maintained ties to their place of birth.

In conclusion, Morris & Son's customers in 'Measure Book 1' can be summarised as a sample of a majority of Welsh-born locals of rural, coastal Barmouth and a minority of South East and West England tourists. Henry Poole & Co.'s customers in 'Measure Book A' were individuals who lived throughout Britain in both urban and rural areas, but were particularly based in London and other industrial and commercial centres of wealth.

These findings mean that the Morris & Son sample is useful for examining the net nutritional status of a relatively homogenous group of rural, coastal individuals. The Henry Poole & Co. sample will contribute to the existing anthropometric debate surrounding regional health inequalities. Humphries and Leunig have described this as a topic of 'unfinished anthropometric business'⁵³. In particular, there is an ongoing debate within the existing historical literature as to whether urban disamenities impede body growth⁵⁴. The sample from Henry Poole & Co. introduces a new line of enquiry to this debate - were the more affluent able to avoid the threat of urban disamenities?

4.3.2. Age and Birth Cohort

Henry Poole & Co.'s customers in 'Measure Book A' were born between 1780 and 1826, with a central tendency between 1800 and 1816, as Figure 20 shows.

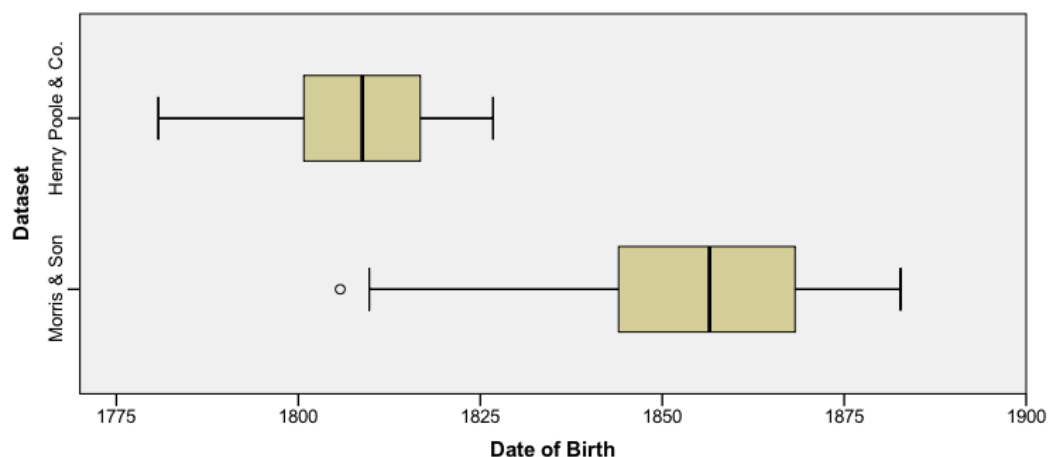
There was only a small degree of overlap between the birth cohorts of Henry Poole &

⁵³ Humphries, J. and Leunig, T., 'Cities, Market Integration, and Going to Sea: Stunting and the Standard of Living in Early Nineteenth Century England and Wales', *Economic History Review*, vol. 62, 2 (2009), p. 460.

⁵⁴ See for example: Nicholas, S. and Steckel, R. H., 'Heights and Living Standards of English Workers During the Early Years of Industrialization, 1770-1815', *The Journal of Economic History*, vol. 51, 4 (1991), p. 942; Humphries, J. and Leunig, T., 'Cities, Market Integration, and Going to Sea: Stunting and the Standard of Living in Early Nineteenth Century England and Wales', *Economic History Review*, vol. 62, 2 (2009), pp. 458-78; and Floud, R., Wachter, K., and Gregory, A., *Height, Health and History*, (Cambridge: Cambridge University Press, 1990).

Co.'s customers and Morris & Son's customers. The date of birth of Morris & Son's customers ranged between 1805 and 1882, with a central tendency between the birth years of 1844 and 1868. Based on cohort effects alone, the net nutritional status of Morris & Son's customers should have been greater than that of Henry Poole & Co. customers.

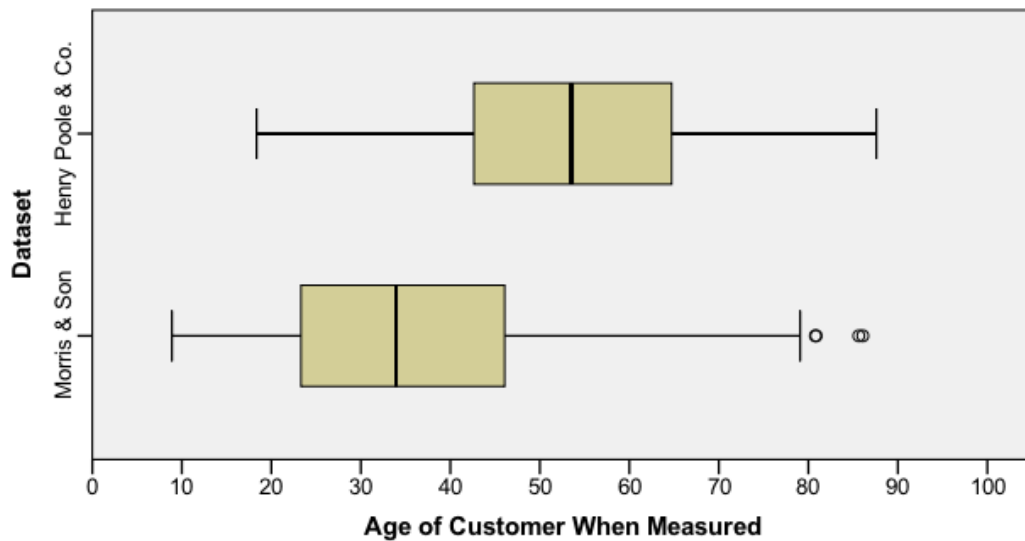
Figure 20: Date of Birth of Morris & Son and Henry Poole & Co. Customers Sampled



Sources: Morris & Son, 'Measure Book 1'; Henry Poole & Co., 'Measure Book A'; Census Returns for England and Wales; and the National Birth Index.

The age distribution of the Morris & Son and Henry Poole & Co. samples are also different, as Figure 21 shows. Morris & Son's customers in 'Measure Book 1' placed clothing orders between the ages of eight and eighty-six, with a mean age at time of measurement of 35.7 (SD = 15.3). The central fifty percent of the Morris & Son distribution were aged between twenty-three and forty-six. In contrast, customers in 'Measure Book A' placed clothing orders with Henry Poole & Co. between the ages of eighteen and eighty-seven. The mean age of measurement within the Henry Poole & Co. dataset was higher than that of the Morris & Son dataset, at 52.8 (SD = 14.8). The central portion of the distribution was also older than those attending Morris & Son, ranging between forty-two and sixty-four.

Figure 21: Age of Morris & Son and Henry Poole & Co. Customers Sampled at Time of Measurement



Sources: Morris & Son, 'Measure Book 1'; Henry Poole & Co., 'Measure Book A'; Census Returns for England and Wales; and the National Birth Index.

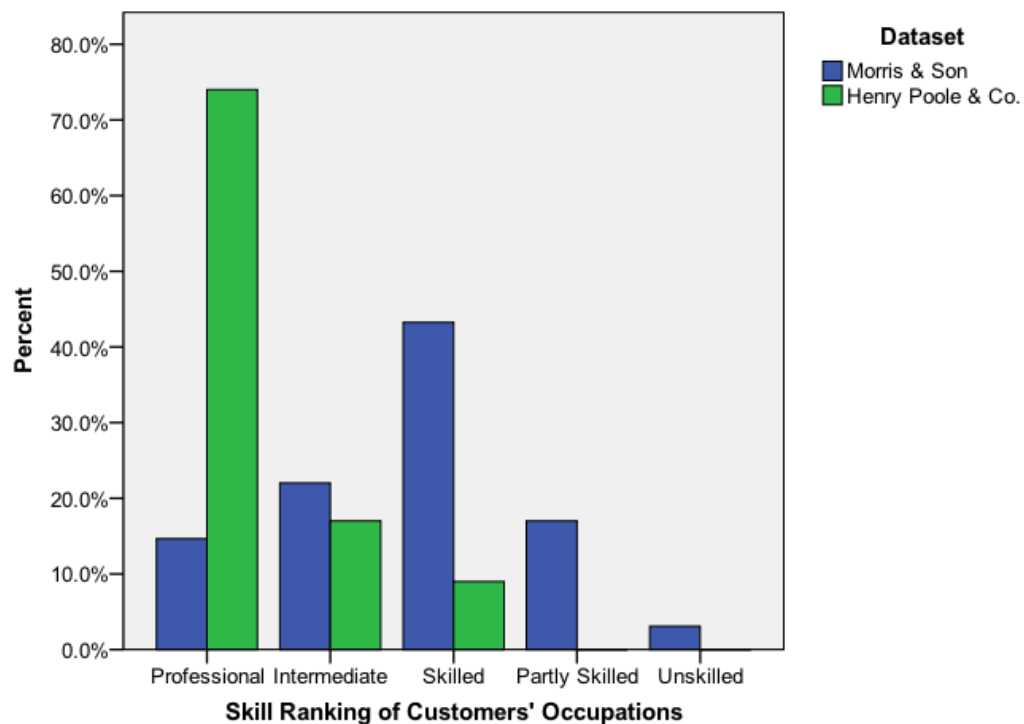
The fact that the tailors' records sample almost an entire lifetime is a great advantage. Both the Morris & Son and Henry Poole & Co. record books include individuals over roughly a seventy-year age range. This enables both Morris & Son's and Henry Poole & Co.'s measurement books to be used to analyse changes in body shape over the life span during the nineteenth century. In particular, the distribution of Henry Poole & Co.'s customers' ages means that anthropometric data can be used to assess whether the modern concept of 'middle-age spread' was a nineteenth century phenomenon.

4.3.3. Social Status

The classification of the occupations of Morris & Son and Henry Poole & Co. customers by their skill ranking and occupational industry provides a gauge of socioeconomic status. Figure 22 shows that although Morris & Son's customers were homogenous in terms of their address and origins, their social class, as defined by their occupation, was more varied. Although 43.2% of customers within Morris & Son's 'Measure Book 1' worked in 'skilled' occupations, all occupational groups - from

the professional to the unskilled - were represented within the sample. Figure 23 highlights that visitors to Barmouth from outside Wales almost all held occupations in the three highest skill rankings. In fact, nearly fifty percent of the professionals sampled within 'Measure Book 1' were from outside Wales.

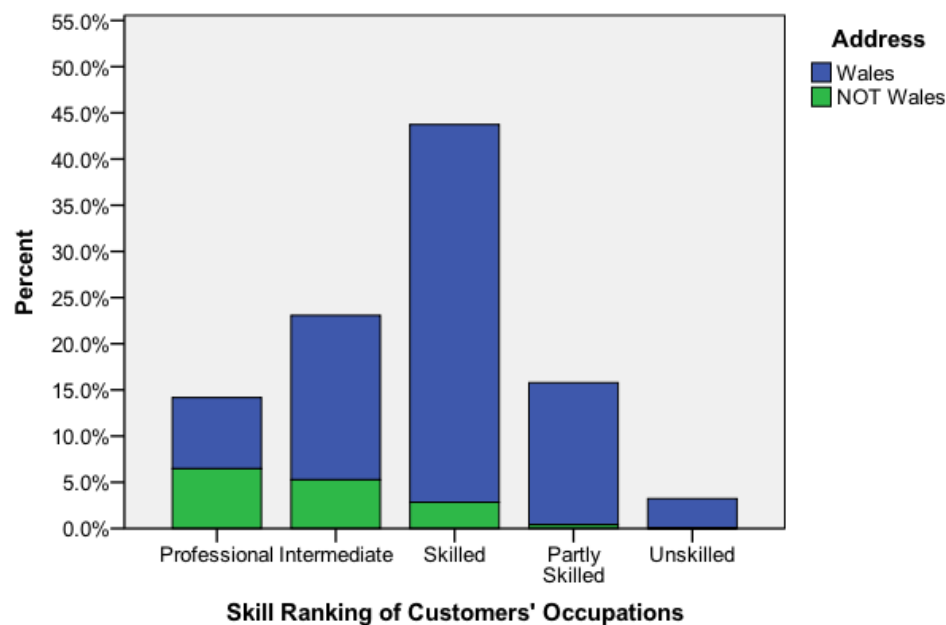
Figure 22: Occupational Skill Ranking of Morris & Son and Henry Poole & Co. Customers



Sources: Morris & Son, 'Measure Book 1'; Henry Poole & Co., 'Measure Book A'; Census Returns for England and Wales

n = 259 (Morris & Son), n = 100 (Henry Poole & Co.)

Figure 23: Occupational Skill Ranking of Morris & Son Customers Divided by Addresses in Wales and Other Visitors



Source: Morris & Son, 'Measure Book 1'; Census Returns for England and Wales

n = 259

In contrast to the varied social backgrounds of Morris & Son's customers, Figure 22 shows that Henry Poole & Co.'s customers in 'Measure Book A' only stemmed from the three highest occupational tiers. Nearly seventy-five percent of the customers sampled in 'Measure Book A' were professionals. It is clear that the Henry Poole & Co. sample of customers can be used to examine the nutritional status of the upper classes, especially in comparison to the broad ranging, more middle class individuals catered for by Morris & Son.

However, the fact that a quarter of the sample in Henry Poole & Co.'s 'Measure Book A' came from 'intermediate' and 'skilled' occupations also confirms Andersons' assertion that:

...by contrast with the popular image of nineteenth century Savile Row firms as catering only to titled customers, [Henry Poole & Co.'s] clientele also included a substantial number of commoners of a variety of occupations and sources of wealth⁵⁵

⁵⁵ Anderson, F., 'Fashioning the Gentleman: A Study of Henry Poole & Co., Savile Row Tailors 1861-1900', *Fashion Theory*, vol. 4, 4 (2000), p. 409.

Categorising the occupations of the tailors' customers by Booth's industrial classification system elucidates the social status and sources of wealth of these individuals further. Table 3 identifies that nearly two-thirds of Henry Poole & Co.'s customers identified in 'Measure Book A' were occupied amongst the public and professional services, fifteen percent were engaged in manufacturing, roughly ten percent were dealers, a further ten percent were independent and the remainder engaged in assorted industries. As stated previously, the percentage of Henry Poole & Co.'s customers that were sampled as landholders is underestimated because each individual was only assigned one occupation and this was chosen on the basis of their predominant occupation or source of wealth within the census. Many of Henry Poole & Co.'s customers are likely to have been landholders as well as occupied in a profession - Table 3 classifies the latter.

Table 3: Industrial Classification of Morris & Son and Henry Poole & Co. Customers

			Dataset	
			Morris & Son	Henry Poole & Co
Booth's Industrial Classification of Customers' Occupations	Agriculture and Fishing	Count	47	1
		% of Dataset	18.1%	1.0%
	Mining	Count	7	1
		% of Dataset	2.7%	1.0%
	Building	Count	25	0
		% of Dataset	9.7%	0.0%
	Manufacture	Count	13	15
		% of Dataset	5.0%	15.0%
	Transport	Count	14	0
		% of Dataset	5.4%	0.0%
	Dealing	Count	59	9
		% of Dataset	22.8%	9.0%
	Industrial Service	Count	11	1
		% of Dataset	4.2%	1.0%
	Public Service and Professional	Count	46	62
		% of Dataset	17.8%	62.0%
	Domestic Service	Count	26	0
		% of Dataset	10.0%	0.0%
Other – Property Owning and Independent	Count	11	11	
	% of Dataset	4.2%	11.0%	
Total			259	100
			100.0%	100.0%

Sources: Morris & Son, 'Measure Book 1'; Henry Poole & Co., 'Measure Book A'; Census Returns for England and Wales

The distribution of Henry Poole & Co.'s customers in 'Measure Book A' broadly reflects the key industries that Rubinstein highlights were a source of wealth during the process of industrialisation – manufacturing, commerce and landholding⁵⁶. The more anomalous group within the sample are the public servants and professionals. However, as Willis recalls:

...it was an age when everyone made the best of his appearance. No proper clerk would dare to appear at the office without the official black coat and vest and pin striped trousers...People were expected to dress in clothes suitable to their calling⁵⁷

⁵⁶ Rubinstein, W. D., *Men of Property: The Very Wealthy in Britain Since the Industrial Revolution*, 2nd edn., (London: Social Affairs Unit, 2006), pp. 127-8.

⁵⁷ Willis, F., *101 Jubilee Road: A Book of London Yesterdays*, (London: Phoenix House, 1848), p. 20; as cited in Breward, C., *The Hidden Consumer: Masculinities, Fashion and City Life 1860-1914*, (Manchester & New York: Manchester University Press, 1999), p. 87.

This suggests, in alignment with the evidence of Chapter 3, that the decision to frequent Henry Poole & Co. and purchase new garments was not solely dependent on wealth but also occupation and status.

For Morris & Son's customers, Table 3 shows that they were dispersed much more broadly between industrial classifications. Customers within 'Measure Book 1' represent all of Booth's industrial categories, although roughly twenty percent were found in the 'agriculture and fishing', 'dealing' and 'public service and professional' categories respectively. The industrial background of the customers in 'Measure Book 1' reflects the economic transformation that occurred in Barmouth over the second half of the nineteenth century. Many customers of Morris & Son were still engaged in Barmouth's 'traditional', lower class industries of agriculture, fishing and mining, but there was also a growing number of middle class locals servicing the tourist industry as dealers, public servants and professionals.

Occupations provide one indication of an individual's social status, however it is also useful to examine the amount of wealth individuals left in probate to gain an indication of their personal assets and further insight into social status. Rubinstein's analysis of probate data for England and Wales in 1858 enables the wealth in probate of Morris & Son and Henry Poole & Co. customers to be compared to the population as a whole. The divisions in ranges of wealth match those used by Rubinstein to ensure that they are directly comparable⁵⁸. The notation '20 – 100' is taken to mean '20 – 99', '100 – 200' as '100 – 199' et cetera. Rubinstein's data has also been adjusted relative to the value of the pound in 1880⁵⁹.

In 1858 only twenty-one percent of adult men who died left any estate in probate at all⁶⁰. This helps to explain the overlap between the distributions within Figure 24. Morris & Son's customers and Henry Poole & Co.'s customers are being

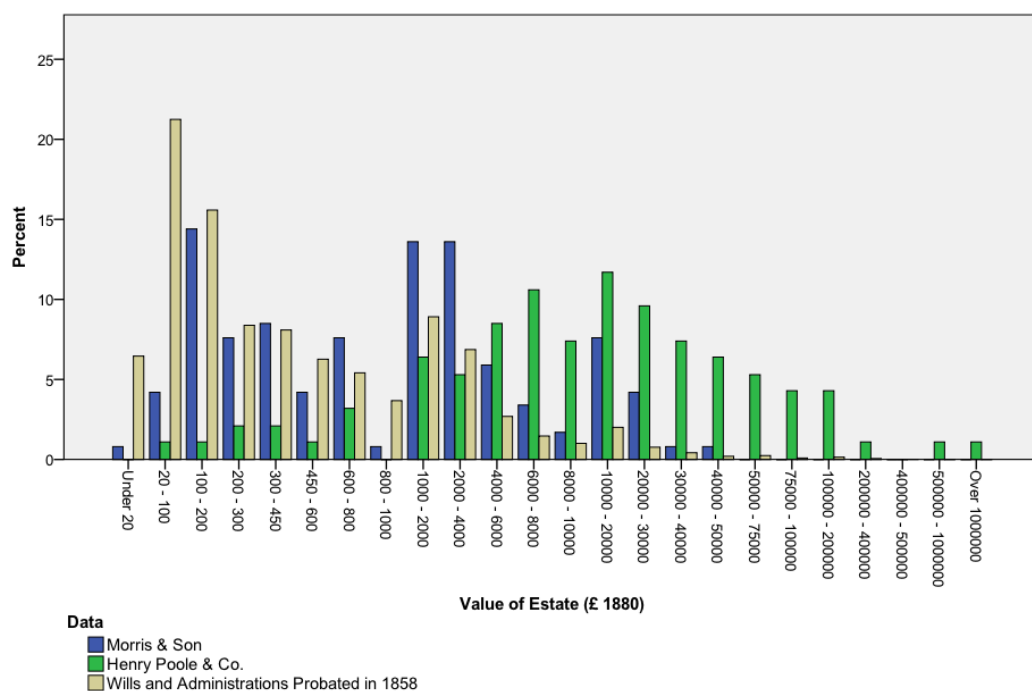
⁵⁸ Rubinstein, W. D., *Men of Property: The Very Wealthy in Britain Since the Industrial Revolution*, 2nd edn., (London: Social Affairs Unit, 2006), p. 42.

⁵⁹ Again using: 'Five Ways to Compute the Relative Value of a UK Pound Amount, 1270 to Present', *MeasuringWorth.com*, accessed 21 January 2014, www.measuringworth.com/ukcompare/

⁶⁰ Rubinstein, W. D., *Men of Property: The Very Wealthy in Britain Since the Industrial Revolution*, 2nd edn., (London: Social Affairs Unit, 2006), p. 41.

compared to the wealthiest fifth of the population that died in 1858. By virtue of being able to afford tailored clothes (or working for people that could) Morris & Son's customers and Henry Poole & Co.'s customers did not include the poor majority, neither do the wills and administrations probated in 1858. Thus, Figure 24 reveals that Henry Poole & Co.'s customers died with much higher levels of wealth than the rest of the population. Morris & Son's' customers could count themselves more akin to the small portion of the population with something to call their own.

Figure 24: Value of Estate in Probate of Morris & Son and Henry Poole & Co. Customers Compared to Wills and Administrations Probated in 1858



Sources: Morris & Son, 'Measure Book 1'; Henry Poole & Co., 'Measure Book A'; the National Probate Calendar; and *Twenty-Second Annual Report of the Registrar-General of Births, Marriages and Deaths*, p. 181, as cited in Rubinstein, W. D., *Men of Property: The Very Wealthy in Britain Since the Industrial Revolution*, 2nd edn., (London: Social Affairs Unit, 2006), p. 42.

n = 118 (Morris & Son), n = 94 (Henry Poole & Co.)

A two-tailed Kolmogorov-Smirnov two-sample test proves at the 99% confidence level that the cumulative distribution function of the estate in probate of

Henry Poole & Co.'s customers in 'Measure Book A' is statistically significantly greater than the cumulative distribution function of customers of Morris & Son, $K_D > K_{critical}$, $D = 0.531$, $K_{critical} = 0.225$, $\alpha = 0.01$. Equally, it proves at the 99% confidence level that the cumulative distribution function of the estate in probate of Henry Poole & Co.'s customers in 'Measure Book A' is statistically significantly greater than the cumulative distribution function of all wills and administrations probated in 1858, $K_D > K_{critical}$, $D = 0.685$, $K_{critical} = 0.168$, $\alpha = 0.01$. This is an expected result given that all previous indications of the social status of Henry Poole & Co.'s customers suggested that they represented an elite group of wealthy individuals engaged in prestigious occupations.

Morris & Son's customers also have a statistically significantly greater value of estate in probate than the cumulative distribution function of all wills and administrations probated in 1858, $K_D > K_{critical}$, $D = 0.268$, $K_{critical} = 0.150$, $\alpha = 0.01$, however the estates of Morris & Son customers are distributed much more similarly to the whole population than those of Henry Poole & Co. This is statistically evidenced by the fact that K_D is much closer to $K_{critical}$ than in either of the previous Kolmogorov-Smirnov tests.

Wealthy visitors to Barmouth within the Morris & Son sample positively stretch the distribution. A two-tailed t-test proves that within the Morris & Son sample, customers with addresses outside Wales ($M = £6,516.71$, $SD = 7448.0$) had a statistically significantly greater value of estate in probate than customers of Morris & Son from within Wales ($M = £3,218.16$, $SD = 7440.4$), $t = 2.177$, $p = 0.032$. However, even Morris & Son's customers local to Wales had a greater value of estate in probate than all wills and administrations probated in 1858, $K_D > K_{critical}$, $D = 0.205$, $K_{critical} = 0.179$, $\alpha = 0.01$.

To contextualise these distributions of probate values it is useful to compare the levels of estate in probate achieved within different occupational skill rankings and industries. Consulting Table 4 and Table 5 in conjunction it is possible to make some generalising conclusions. It appears that the Morris & Son customers who left under

£1,000 of wealth in probate tended to be lower- or lower-middle class individuals working within 'unskilled' occupations within the industries of 'agriculture and fishing', 'mining', or 'industrial service'. A more middle-classed portion of the Morris & Son sample, within 'skilled' and 'intermediate' level occupations engaged in 'dealing' and 'transport', achieved a value of estate in probate in the region of £2,000 to £5,000. The higher-middle- and lower-upper classes amongst Morris & Son's customers were 'professionals' engaged in public service, property owning or independent and died with an estate in the region of £7,000 to £10,000. These divisions of probate levels to social class roughly conform to Rubinstein's findings that a 'middling-sort' of shopkeepers, farmers, clergymen, schoolteachers, and bank clerks, who earned between £100 and £400 per annum, typically left estates between £1,000 and £10,000 in value⁶¹.

On average, customers of Henry Poole & Co. were a league apart from Morris & Son's customers. Even those engaged in 'manufacturing' and 'dealing' that might be classified as of a middling 'skilled' level, were extremely wealthy with an estate in probate averaging over £50,000. Often these were manufacturers and suppliers at the peak of their respective industries. The lowest wealth amongst Henry Poole & Co.'s customers tended to be achieved by professionals working at an 'intermediate' skill level who died on average with £10,000 to £20,000 in probate.

⁶¹ Rubinstein, W. D., *Men of Property: The Very Wealthy in Britain Since the Industrial Revolution*, 2nd edn., (London: Social Affairs Unit, 2006), p. 149.

Table 4: Mean Value of Estate in Probate of Morris & Son and Henry Poole & Co. Customers Categorised by Occupational Skill Ranking

Skill Ranking of Occupations	Morris & Son			Henry Poole & Co.		
	Mean	N	SD	Mean	N	SD
Unskilled	£284.00	3	74.5			
Partly Skilled	£1,645.00	10	3137.2			
Skilled	£3,908.44	39	7742.9	£54,421.25	8	69590.1
Intermediate	£2,696.31	29	4847.5	£12,956.93	15	18384.0
Professional	£8,193.31	26	10633.1	£53,441.00	69	162496.9
Total	£4,307.94	107	7797.4	£46,925.58	92	142769.8

Sources: Morris & Son, 'Measure Book 1'; Henry Poole & Co., 'Measure Book A'; Census Returns for England and Wales; and the National Probate Calendar.

Table 5: Mean Value of Estate in Probate of Morris & Son and Henry Poole & Co. Customers Categorised by Occupational Industry

Industrial Classification of Occupations	Morris & Son			Henry Poole & Co.		
	Mean	N	SD	Mean	N	SD
Agriculture and Fishing	£556.68	19	568.3	£4,690.00	1	
Mining	£438.00	3	314.3	£1,300.00	1	
Building	£8,377.80	5	10737.5			
Manufacture	£2,239.80	6	1744.5	£152,651.00	14	343635.8
Transport	£3,621.33	6	5175.8			
Dealing	£4,698.57	30	8631.8	£68,803.33	9	62551.6
Industrial Service	£978.50	6	1866.3	£73,300.00	1	
Public Service and Professional	£7,163.32	22	7188.4	£19,150.95	55	25602.4
Domestic Service	£1,075.5	4	1134.7			
Others – Property Owning and Independent	£10,547.17	6	17954.6	£38,928.82	11	66762.8
Total	£4,307.94	107	7797.4	£46,925.58	92	142769.8

Sources: Morris & Son, 'Measure Book 1'; Henry Poole & Co., 'Measure Book A'; Census Returns for England and Wales; and the National Probate Calendar.

However, the averages in Table 4 and Table 5 fail to highlight the uneven distribution of wealth amongst Henry Poole & Co.'s customers evident within Figure 24. Two customers with an estate in probate of £889,000 and £1,030,000 respectively can be labelled as outliers with estates worth more than £650,000 more

than the next highest estate. The two customers in question, John Noble and Thomas Rolls Hoare, were partners in the successful paint and varnish manufacturing firm Nobles & Hoare.

Thirty percent of the sample identified died with a value of estate in probate less than £6,000 and twenty percent died with an estate worth less than £3,000. Based on the analyses of Morris & Son's customers, these Henry Poole & Co. customers could be considered to originate more amongst the middle- and upper-middle classes. This provides further evidence that although the majority of the Henry Poole & Co. sample contains members of the upper classes there were also customers more akin to rest of the population who left an estate in probate in 1858. Those Henry Poole & Co. customers from a lower social strata are likely to have frequented Savile Row not because their budgets were unconstrained and luxury was easily accessible but because they required particular garments for special occasions, to elevate their status, or because their work-place imposed strong obligations to appear respectable.

Breward and Ugolini identify a particularly troubled cohort upon whom there was a high expectation of appropriate attire and thus sartorial expense, without necessarily a correlate level of income to make this easily affordable⁶². Future analyses will determine whether the more economically constrained middle classes and professionals within the Henry Poole & Co. sample had a different body size and health outcome than the upper classes and very wealthy. If they purchased Henry Poole & Co. items despite finding them difficult to afford, they may have made economic savings elsewhere, such as in the number of calories they consumed. If their net nutritional status was lowered substantially enough this would reduce their waist circumference and waist-hip ratio relative to the rest of the sample. Equally, the opposite may be true of the very rich. Economically unconstrained, it would have

⁶² Breward, C., *The Hidden Consumer: Masculinities, Fashion and City Life 1860-1914*, (Manchester & New York: Manchester University Press, 1999), pp. 82-7; Ugolini, L., *Men and Menswear: Sartorial Consumption in Britain 1880-1939*, (Aldershot: Ashgate, 2007), pp. 53-4.

been feasible to consume calories in abundance. Thus comparing the Morris & Son and Henry Poole & Co. samples enables an examination of the degree of correlation between wealth and a propensity towards over-weight or obesity and the risk of obesity-related diseases.

Overall the sample of Morris & Son's customers in 'Measure Book 1' can be described as of middling social class. The majority worked in skilled professions within the agriculture and fishing, dealing, or public service industries. These individuals were fairly economically successful and managed to leave an estate in probate slightly higher than the wills and administrations of the general population in 1858. A subset of the Morris & Son sample, more often from amongst the visitors to Barmouth, achieved skilled and prestigious 'professional' occupations and ranked amongst the upper-middle- and lower-upper classes.

Henry Poole & Co. customers within 'Measure Book A' were much more consistently upper class, classified in the majority as highly-skilled and engaged in occupations reflecting sources of wealth during industrialisation – commerce, manufacturing, and landowning. Many of the sampled Henry Poole & Co. customers were extremely wealthy, with occupations at the peak of their industry and a value of estate in probate considerably higher than the the average of all wills and administrations probated in 1858. However, a subset of the Henry Poole & Co. sample in 'Measure Book A' were more akin to the general population with an estate in probate, stemming from the middle- or upper-middle classes, in professional occupations that called for sartorial elegance without necessarily a commensurate degree of wealth.

This proves that, as hoped, both collectively and within their respective datasets, the Morris & Son and Henry Poole & Co. measurement books sample a broad range of social statuses. They are useful for comparing the net nutritional status of individuals ranging from the lower-classes to the upper echelons of society. The effects of a wide range of occupations on body size and health can also be

explored. In particular, it will be interesting to examine whether there were some respectable professions that exerted a high degree of income pressure and jeopardised nutritional status.

4.3.4. Social Mobility

Human growth is a product of both fetal and post-natal development. Human biologists have emphasised for many years that the fetal development of a child is highly correlated to the socioeconomic conditions of its mother⁶³. In an array of publications since the 1990's, Barker and co-authors have theorised that amongst low-weight babies, relative improvement in nutritional conditions increases the likelihood of chronic diseases in later life⁶⁴. This research highlights the importance of identifying the socioeconomic status of individuals' parents to gain an insight into individuals' fetal conditions and associated adult health risks.

Cross-referencing the occupational skill level of the customers of Morris & Son and Henry Poole & Co. with their respective fathers suggests that the social status of Henry Poole & Co. customers was much more similar to their fathers' than those of Morris & Son.

Amongst Morris & Son's customers, 44.3% lay within the shaded boxes of Table 6, representing the same occupational skill level as their father. Of the remaining customers of Morris & Son whose occupation and fathers' occupation was identified, 32.3% had a higher skill level of occupation than their father, falling above the shaded diagonal, whereas 23.4% had a lower skill ranking than their father, lying below the diagonal on Table 6. Thus over three-quarters of the sample were either socially static or social climbers based on occupational evidence.

⁶³ Bogin, B., *Patterns of Human Growth*, (Cambridge: Cambridge University Press, 1988), pp. 20-1; Tanner, J. M., *Foetus into Man: Physical Growth from Conception to Maturity*, 2nd edn., (Ware: Castlemead, 1989), p. 43.

⁶⁴ Barker, D. J. P., *Fetal and Infant Origins of Adult Disease*, (London: British Medical Journal, 1992); Barker, D. J. P., *Mothers, Babies and Health in Later Life*, 2nd edn., (Edinburgh: Churchill Livingstone, 1998); Hales, C. N. and Barker, D. J. P., 'Type 2 (Non-Insulin Dependent) Diabetes Mellitus: The Thrifty Phenotype Hypothesis', *Diabetologia*, vol. 35, 7 (1992), pp. 595-601; Hales, C. N. and Barker, D. J. P., 'The Thrifty Phenotype Hypothesis', *British Medical Bulletin*, vol. 60, 1 (2001), pp. 5-20.

Table 6: Occupational Skill Level of Morris & Son's Customers and their Fathers

		Customers' Occupations				
		Unskilled	Partly Skilled	Skilled	Intermediate	Professional
Fathers' Occupations	Unskilled	0.0%	3.6%	1.2%	0.6%	0.0%
	Partly Skilled	3.0%	7.8%	6.6%	1.2%	1.2%
	Skilled	0.6%	3.6%	21.6%	9.0%	5.4%
	Intermediate	0.6%	2.4%	9.6%	8.4%	3.6%
	Professional	0.0%	0.6%	0.0%	3.0%	6.6%

Sources: Morris & Son, 'Measure Book 1'; Census Returns for England and Wales.

n = 167

In contrast, 62.5% of Henry Poole & Co.'s customers shared an equal skill ranking of occupation with their father. Again, the shaded diagonal line represents this, within Table 7. Furthermore, whereas amongst Morris & Son's customers there was a fairly even split between those who improved and declined in occupational skill ranking compared to their father, amongst Henry Poole & Co.'s customers 30.4% had a higher skill ranking than their father, lying above the blue line, and only 7.1% achieved less skilled jobs than their parent. On the whole, Table 7 identifies that once a family reached the upper classes, it stayed there. The Henry Poole & Co. sample is not expected to display any anthropometric or health signs of improvement in nutritional status compared to fetal expectations.

Table 7: Occupational Skill Level of Henry Poole & Co.'s Customers and their Fathers

		Customers' Occupations				
		Unskilled	Partly Skilled	Skilled	Intermediate	Professional
Fathers' Occupations	Unskilled	0.0%	0.0%	0.0%	0.0%	0.0%
	Partly Skilled	0.0%	0.0%	0.0%	0.0%	0.0%
	Skilled	0.0%	0.0%	1.8%	3.6%	7.1%
	Intermediate	0.0%	0.0%	1.8%	8.9%	19.6%
	Professional	0.0%	0.0%	1.8%	3.6%	51.8%

Sources: Henry Poole & Co., 'Measure Book A'; Census Returns for England and Wales.

n = 56

Sample sizes are a problem when trying to assess whether the industry of the tailors' customers' occupations changed compared to their fathers'. Once the data is broken down into 100 groups (Booth's ten industry categories for each customer and their father) it loses statistical significance. However, it is feasible to state that 33.1% of Morris & Son's customers in 'Measure Book 1' and 51.8% of Henry Poole & Co. customers in 'Measure Book A', worked in the same industry sector as their father. These findings, in combination with Table 6 and Table 7, imply that Henry Poole & Co.'s customers were a lot more stationary, both in terms of their industry and social status, compared to Morris & Son's customers.

This evidence suggests that the customers of Morris & Son were affected by the economic transition occurring within Barmouth during the second half of the nineteenth century. Within one generation, fathers who had worked in Barmouth's traditional primary industries of farming, mining and fishing, witnessed their sons engaged in occupations centred on tourism. Hotel proprietors Edward Edwards and Meredith Evans, whose fathers were both mariners, provide a direct example of this.

The Morris & Son sample of customers therefore seems to provide the anthropometric measurements of some individuals who were ‘self-made men’. These were not individuals who had risen to the upper-most echelons of society but they had improved their lot from humble beginnings in the lower- and lower-middle classes to a status amongst the upper-middle- and upper class local elites of Barmouth.

4.4. Conclusion

These analyses confirm that the customers within ‘Measure Book 1’ from Morris & Son and those in ‘Measure Book A’ from Henry Poole & Co. represent very different sectors of the British population in the second half of the nineteenth century.

When considered collectively, it is only the portion of the population at either extreme of the social scale that do not feature at all in either of these samples – the poor and the aristocratic. The poor could not afford to purchase tailored clothes. The lowest class of individuals within the Morris & So dataset tended to be those whose garments were purchased for them by their employer, such as those of Frederick Yenn, ‘page’ at Marine Hotel, or Joseph Redding ‘second boots’ at Corsygedol Hotel, both supplied with garments by Benjamin John Allsop, licensed victualler of those premises. By virtue of maintaining an occupation with sufficient respectability that they required a uniform, such individuals could not be described as poor. Previously harnessed anthropometric sources such as army records and, moreover, prison records are better suited to representing the poor majority of Britain at this time.

The range of social statuses sampled within these two tailors’ measuring books is however wide and illuminating. The anthropometric measurements within Morris & Son’s record largely represent individuals of a middling social status working within a range of skilled professions. The local catchment area of Morris & Son also means that their customers can be described as particularly representative of Wales and, more specifically, a small rural, coastal town with a strong tradition of primary industry.

However, the economic transition within Barmouth, brought about by the extension of the railway line and the growth of tourism, also enables the sample from Morris & Son to be used to represent individuals who were social climbers. 'Measure Book 1' includes customers who had risen from the lower-middle class to a more prestigious status as professionals, public servants and successful dealers. These individuals may have been particularly susceptible to obesity and chronic disease according to 'Barker's hypothesis'.

The highest stratas of society in the second half of the nineteenth century are represented by the sample in Henry Poole & Co.'s 'Measure Book A'. These customers lived in areas of Britain that reflected key hubs of wealth for commerce and industry. All of Henry Poole & Co.'s customers that have been sampled occupied at least 'skilled' jobs and these tended to be focused on the profitable industries of manufacture, dealing and professional and public service. The majority of Poole's customers worked in similar industries and skill levels as their father, identifying that they represent a portion of the British population endowed from birth. In effect, these individuals are likely to have experienced few or no limitations on their calorific consumption at any stage of their life, a fairly sedentary, skilled, office-based occupation, and a high standard of living. The impact of this on their net nutritional status can be identified in the chapters to follow.

A subset within Henry Poole & Co.'s 'Measure Book A' appears to represent a more struggling upper-middle class group of professionals upon whom there was a high degree of pressure to conduct oneself respectably, without necessarily the correlate income to be able to easily afford to. The calorific consumption of these individuals may have been more constrained, as future anthropometric analyses will determine.

Based on cohort effects alone, the Morris & Son sample should display a greater nutritional status than the Henry Poole & Co. sample because they were born half-a-century later, mainly in the third quarter of the nineteenth century. On the

other-hand, the effects of 'middle age spread' would be expected to be greater amongst the Henry Poole & co. sample who were measured later in life. The relationship between age, cohort effects and other socio-economic variables on the tailors' customers' waists can be examined in the following chapters.

Above all else the heterogeneity of the two samples stands out. To some extent this is problematic because, unlike a science experiment, it means that there are few control variables between the two samples. Once trends are identified it may prove difficult to determine their explanation. But history can never be an exact science. Whilst the heterogeneity of the datasets in use may be a downfall, it is also the most exciting feature of this research.

Part II: Waists, Hips and Early Life Health Jeopardy

The delineation of Morris & Son's and Henry Poole & Co.'s customers, provided in Chapter 4, suggests that not only did they represent different sectors of society, they are also likely to have had very different starts in life. Part II of this thesis explores this hypothesis over three chapters, using the customers' early adult anthropometric data to discuss ways in which early life environment could encourage central adiposity and jeopardise later life outcomes.

In Chapter 5 the tailors' measurements of lengths and girths are introduced as anthropometric variables. The epidemiological justification for using waist circumference, hip circumference, waist-hip ratio and leg lengths as varying markers of net nutritional status is provided. Barker's hypothesis of the fetal origins of adult disease is then presented and precedents using measures of central adiposity in historical research. In Chapter 6 cross-sectional analyses of Morris & Son and Henry Poole & Co. customers' early adult waists, hips and waist-hip ratios are conducted and used to suggest that Barker's hypothesis may be applicable to Morris & Son's customers. In Chapter 7 this theory is developed further, using the social and economic history of Barmouth, comparisons with the American military, and the longevity of the tailors' customers to suggest that Morris & Son's customers' later life health outcomes were impeded by their early life nutritional environments.

Chapter 5. Lengths and Girths in Anthropometric Research

Tailors' records introduce a relatively new set of anthropometric variables into the historian's domain. Previously, height measurements have been appropriated to inform historians about biological standards of living during the growing years and body mass index (BMI) has been used to reveal historical variance in mass. Tailors' records provide neither height nor mass, but lengths and girths.

For the purposes of assessing historical standards of living the most useful of the measurements taken by a tailor are waist circumference (WC), hip circumference (HC) and inside and outside leg measurements. Waist circumference and hip circumference can be used to calculate waist-hip ratio (WHR) - waist circumference divided by hip circumference - as another anthropometric marker.

There is an argument for the use of other tailors' measurements as anthropometric history tools – for example, shoulder width and thigh circumference both reveal something about muscularity. Muscularity, in turn, can tell us something about exercise and work-load. And energy expenditure in exercise and work-load can help to explain productivity and standards of living. However, the multiple causes, consequences and synergistic relationship between these other anthropometric variables, nutritional status and standard of living are too complicated to attempt to unpick within the scope of this project¹.

¹ To estimate muscle mass epidemiologists rely on using lots of anthropometric measurements in a single equation. See: Lee, R. C., Wang, Z., Heo, M., Ross, R., Janssen, I., and Heymsfield S. B., 'Total-Body Skeletal Muscle Mass: Development and Cross-Validation of Anthropometric Prediction Models', *The American Journal of Clinical Nutrition*, vol. 72, 3 (2000), pp. 796-803.

5.1. Legs, Waists, and Hips: Epidemiological Foundations

Like height and BMI, waist circumference, hip circumference, waist-hip ratio and leg length capture net nutritional status, however they vary in their sensitivity to net nutritional status at different stages of life.

Leg length is a major component of height and similarly captures net nutritional status during the growing years, from fetal development (and perhaps even transgenerational effects before that²) until full maturity. Like height, it is a product of both genotype and environment. A child inherits a genetic potential for leg growth but their environment will impact the extent to which this potential is met. Cross-sectional analyses based on a large population cancel out the effects of genetics such that variance can be attributed to environment. If during growth nutritional status is placed under stress (for example if there is a decline in food intake, a demand for energy to overcome disease, or an increase in work-load) then growth, including leg growth, is sacrificed in order to ration nutrients to more vital organs, particularly the brain. Leg length is particularly sensitive to nutritional stress during the years between birth and age seven, when a human's legs grow at a faster rate than any other body part³. As a result, it has been found that leg length can reflect nutritional status during infancy and childhood even better than overall height or weight⁴. Jantz and Jantz found that over the last 150 years lower-limb bones have displayed similar secular changes as height, confirming that they can serve as a proxy for stature⁵.

Waist circumference, hip circumference and waist-hip ratio describe the central adiposity of an individual at the time of measurement. Within modern health

² The effects of fetal undernutrition have been identified across two generations later, in grandchildren. See: Lumey, H., 'Obstetric Performance of Women after In Utero Exposure to the Dutch Famine', (New York: Columbia Univ. Ph.D. Thesis, 1988), as cited in Robinson, R. J., 'Introduction', in Barker, D. J. P. (ed.), *Fetal and Infant Origins of Adult Disease*, (London: British Medical Journal, 1992), p. 17.

³ Bogin, B. and Varela-Silva, M. I., 'Leg Length, Body Proportion, and Health: A Review with a Note on Beauty', *International Journal of Environmental Research and Public Health*, vol. 7, 3 (2010), p. 1060.

⁴ Leitch, I., 'Growth and Health', *British Journal of Nutrition*, vol. 5, 1 (1951), pp. 142-51; Bogin, B., and Varela-Silva, M. I., 'Leg Length, Body Proportion, and Health: A Review with a Note on Beauty', *International Journal of Environmental Research and Public Health*, vol. 7, 3 (2010), p. 1061.

⁵ Jantz, L. M. and Jantz, R. L., 'Secular Change in Long Bone Length and Proportion in the United States, 1800-1970', *American Journal of Physical Anthropology*, vol. 110, 1 (1999), pp. 64-5.

research they are used as both a supplement and an alternative to BMI calculations because they reveal something about the distribution of body fat as well as its generalised extent.

The concept of central obesity was first introduced by Vague in the 1940s and later, in 1956, he suggested for the first time that central obesity could be more important than peripheral obesity in relation to some diseases⁶. It has since been identified that this is because visceral adipose tissue is associated with a range of metabolic abnormalities, including decreased glucose tolerance, reduced insulin sensitivity, and adverse lipid profiles.

Although dispute still rages, overall there seems to be evidence to suggest that measures of central obesity are more strongly associated with diabetes than BMI and at least as indicative of cardiovascular disease and all-cause mortality⁷. The World Cancer Research Fund has reviewed that there is convincing evidence that abdominal fatness is a cause of colorectal cancer and it seems probable that it is a cause of cancers of the pancreas, breast (post-menopause), and endometrium⁸.

Epidemiologists and health experts continue to discuss which anthropometric measures are best adopted within a clinical setting. The World Health Organisation (WHO) has consistently suggested the use of BMI and waist circumference as concurrent indicators because although the measures are correlated, the level of

⁶ Vague, J., 'Sexual Differentiation. A Factor Affecting the Forms of Obesity', *Presse Médicale*, vol. 30, 2 (1947), pp. 339-40, and Vague, J., 'The Degree of Masculine Differentiation of Obesities: A Factor Determining Predisposition to Diabetes, Atherosclerosis, Gout, and Uric Calculous Disease', *American Journal of Clinical Nutrition*, vol. 4, 1 (1956), pp. 20-34, as cited in Qiao, Q. and Nyamdorj, R., 'The Optimal Cutoff Values and their Performance of Waist Circumference and Waist-to-Hip Ratio for Diagnosing Type II Diabetes', *European Journal of Clinical Nutrition*, vol. 64, 1, (2010), p. 23.

⁷ Huxley, R., Mendis, S., Zheleznyakov, E., Reddy, S., and Chan, J., 'Body Mass Index, Waist Circumference and Waist:Hip Ratio as Predictors of Cardiovascular Risk – A Review of the Literature', *European Journal of Clinical Nutrition*, vol. 64, 1 (2010), pp. 16-22; Ford, E. S., Mokdad, A. H., and Giles, W. H., 'Trends in Waist Circumference Among U.S. Adults', *Obesity Research*, vol. 11, 10 (2003), p. 1223; Qiao, Q. and Nyamdorj, R., 'Is the Association of Type II Diabetes with Waist Circumference or Waist-to-Hip Ratio Stronger than that with Body Mass Index?', *European Journal of Clinical Nutrition*, vol. 64, 1 (2010), pp. 30-4; Seidell, J. C., 'Waist Circumference and Waist/Hip Ratio in Relation to All-Cause Mortality, Cancer and Sleep Apnea', *European Journal of Clinical Nutrition*, vol. 64, 1 (2010), p. 40.

⁸ World Cancer Research Fund, American Institute for Cancer Research, *Food, Nutrition, Physical Activity, and the Prevention of Cancer: A Global Perspective*, (Washing DC: American Institute for Cancer Research, 2007), p. 228, accessed 10 January 2013, www.dietandcancerreport.org/cancer_resource_center/downloads/Second_Expert_Report_full.pdf

association varies and they seem to provide different information⁹. This dissertation does not argue that waist circumference or waist-hip ratio are better anthropometric markers than BMI, or indeed that any of them provide a perfect relationship with obesity and health. Waist and hip circumference are used within this research because they are measurements taken by a tailor that are available historically. Regardless of whether BMI is equal, better, or worse, there is a broad consensus that by representing central adiposity, waist circumference and waist-hip ratio can reveal morbidity and mortality risks associated with obesity.

5.2. Central Adiposity and Net Nutritional Status

Traditionally, anthropometric variables such as waist circumference, hip circumference and waist-hip ratio, which change with time after full growth maturity, have been labelled as measures of current net nutritional status. This is valid in the sense that amongst fully developed adults they vary during the lifetime based on net nutritional status at the time of measurement. However, two caveats should be highlighted: firstly, the sensitivity of these variables to current nutritional status is not equal; secondly, the extent to which these anthropometric measures also capture nutritional status during the growing years deserves more attention.

In terms of the first issue, ‘...waist circumference is a fairly unambiguous measure of abdominal fat...hip circumference reflects both muscle and fat as well as bony structure¹⁰. Waist circumference is more sensitive to current net nutritional status than hip circumference because it directly reflects the storage of excess energy as fat. On the other hand, although hip circumference does vary to a small degree according to current net nutritional status, it also has a large component that is constant through time after full development (the pelvis) and another component that

⁹ World Health Organization (WHO), *Obesity: Preventing and Managing the Global Epidemic*, Report of a WHO Consultation, Geneva 3-5 June 1997, (Geneva: World Health Organization, 2000), p. 10; and World Health Organization (WHO), *Waist Circumference and Waist-Hip Ratio*, Report of a WHO Expert Consultation, Geneva 8-11 December 2008, (Geneva: World Health Organization, 2011), p. 19.

¹⁰ Willett, W., *Nutritional Epidemiology*, 3rd edn., (Oxford: Oxford University Press, 2013), p. 233.

has a smaller and more complicated relationship to net nutritional status (muscle mass). As a result, it is far more dependent on net nutritional status during the growing years than waist circumference.

By combining waist circumference and hip circumference, waist-hip ratio has an even more complex relationship to net nutritional status at various life stages. The relative measurement is used in, 'an attempt to correct abdominal circumference for variation in body size'¹¹. Larger people would always be expected to have larger waist circumferences and vice versa; waist-hip ratio denotes the size of a person's waist proportional to their frame size (to the degree this is captured by hip circumference) to compensate for this. This provides the means to determine: current net nutritional status using waist circumference; net nutritional status during the growing years and, to a lesser extent, currently, using hip circumference; and current net nutritional status controlling for net nutritional status during the growing years using waist-hip ratio.

The work initiated by Barker justifies the second caveat cited above, that the effect of the growing years has been underestimated in all markers of current net nutritional status. In the early 1990s Barker and various co-authors posited that:

...factors affecting the fetus and the young have long lasting effects and are important causes of later diseases, such as ischaemic heart disease, stroke, and chronic bronchitis¹².

This hypothesis became known as the 'fetal origins of adult disease' or just the 'Barker hypothesis'. Since then, Barker's theory has been supported by a vast array of epidemiological evidence from prospective clinical data and experimental observations in many different populations and ethnic groups¹³. The concept of the 'fetal origins of adult disease' has been replaced with the preferred concept of the 'developmental origins of health and disease' to broaden the scope of the theory to

¹¹ Willett, W., *Nutritional Epidemiology*, 3rd edn., (Oxford: Oxford University Press, 2013), p. 233.

¹² Robinson, R. J., 'Introduction', in Barker, D. J. P. (ed.), *Fetal and Infant Origins of Adult Disease*, (London: British Medical Journal, 1992), p. 1. See also: Barker, D. J. P., *Mothers, Babies and Health in Later Life*, 2nd edn., (Edinburgh: Churchill Livingstone, 1998).

¹³ Hales, C. N. and Barker, D. J. P., 'The Thrifty Phenotype Hypothesis', *British Medical Bulletin*, vol. 60, 1 (2001), p. 5; Gluckman, P. D. and Hanson, M. A., 'The Developmental Origins of Health and Disease: An Overview', in Gluckman, P. and Hanson, M. (eds.), *Developmental Origins of Health and Disease*, (Cambridge: Cambridge University Press, 2006), p. 1.

cover the entire plastic phase of development and emphasise the value of this research not just for disease prevention but also health promotion¹⁴. Barker's original hypothesis remains at its core.

Based on analyses of 845 men born in Hertfordshire between 1920 and 1930, and 239 men born in Preston between 1935 and 1942, one of the key findings of Barker's early work was that:

After allowing for body mass index, mean [adult] waist to hip ratio fell with increasing birth weight... These trends were independent of duration of gestation and therefore reflected retarded fetal growth. Waist to hip ratio also fell with increasing weight at 1 year. All these trends were independent of adult height, alcohol consumption, smoking, social class, and age¹⁵.

On the basis of these results Barker and his co-authors argued:

The tendency to store fat abdominally, which is known to increase the risk of cardiovascular disease and diabetes independent of obesity, may be a persisting response to adverse conditions and growth failure in fetal life and infancy¹⁶

Although they could not determine the precise molecular or developmental mechanism behind this response they argued that, based on a paper by Björntrop, 'sustained adrenal overactivity, initiated by early growth restraint, is one possible explanation'¹⁷.

This explanation embraced an earlier concept formed by Lucas of 'fetal programming' whereby an early stimulus or insult, operating at a critical or sensitive period, results in long term change in the structure or function of the organism¹⁸. The Barker group's 'thrifty phenotype hypothesis' proposed that amidst conditions of undernutrition the fetus adapts its metabolism towards nutritional thrift to cope with the

¹⁴ Gluckman, P. D. and Hanson, M. A., 'The Developmental Origins of Health and Disease: An Overview', in Gluckman, P. and Hanson, M. (eds.), *Developmental Origins of Health and Disease*, (Cambridge: Cambridge University Press, 2006), p. 1.

¹⁵ Law, C. M., Barker, D. J. P., Osmond, C., Fall, C. H. D., and Simmonds, S. J., 'Early Growth and Abdominal Fatness in Adult Life', in Barker, D. J. P. (ed.), *Fetal and Infant Origins of Adult Disease*, (London: British Medical Journal, 1992), p. 291.

¹⁶ Law, C. M., Barker, D. J. P., Osmond, C., Fall, C. H. D., and Simmonds, S. J., 'Early Growth and Abdominal Fatness in Adult Life', in Barker, D. J. P. (ed.), *Fetal and Infant Origins of Adult Disease*, (London: British Medical Journal, 1992), p. 291.

¹⁷ Björntrop, P., 'The Associations Between Obesity, Adipose Tissue Distribution, and Disease', *Acta Medica Scandinavica*, Suppl. 723 (1988), pp. 121-34, as cited in Law, C. M., Barker, D. J. P., Osmond, C., Fall, C. H. D., and Simmonds, S. J., 'Early Growth and Abdominal Fatness in Adult Life', in Barker, D. J. P. (ed.), *Fetal and Infant Origins of Adult Disease*, (London: British Medical Journal, 1992), p. 295.

¹⁸ Lucas, A., 'Programming by Early Nutrition in Man', in Bock, G. R. and Whelen, J. (eds.), *The Childhood Environment and Adult Disease*, (Chichester: Wiley, 1991), pp. 38-55, as cited in Robinson, R. J., 'Introduction', in Barker, D. J. P. (ed.), *Fetal and Infant Origins of Adult Disease*, (London: British Medical Journal, 1992), p. 2.

harsh subsequent environment to which it expects to be exposed. In particular, they suggested that low fetal nutrition would result in poor development of pancreatic beta cells and hence a reduced capacity for insulin production¹⁹. If the capacity of the metabolism determined as a fetus was exceeded by postnatal conditions of relative plenty then this would affect body composition and increase health jeopardy in later life²⁰. As Gluckman and Hanson summarise:

...both pre- and postnatal environmental factors play vitally important roles, and what matters most is the degree of match/mismatch between them²¹

Since these initial findings, further research has been conducted into the relationship between developmental deprivation and later life body composition. Yajnik has emphasised that more research needs to be conducted into the role of maternal micronutrient nutrition, finding that deficiencies of vitamin B₁₂ in pregnant women were particularly associated with higher adiposity in their offspring²². Although the consensus remains that being small at birth predicts later obesity, the mechanism for this is still in dispute²³.

To a historian the precise mechanism behind the fetal origins of disease theory is not key. The important message is that deprivation during fetal development has been found to increase the likelihood of obesity and chronic diseases in later life. These results emphasise the importance of the second caveat. Just as height and leg length reflect the environmental ability of an individual to fulfil their genetic potential, measures of current net nutritional status such as waist-hip ratio reflect the ability of

¹⁹ Robinson, R. J., 'Introduction', in Barker, D. J. P. (ed.), *Fetal and Infant Origins of Adult Disease*, (London: British Medical Journal, 1992), p. 11.

²⁰ Hales, C. N. and Barker, D. J. P., 'Type 2 (Non-Insulin Dependent) Diabetes Mellitus: The Thrifty Phenotype Hypothesis', *Diabetologia*, vol. 35, 7 (1992), pp. 595-601. For an update on the hypothesis see: Hales, C. N. and Barker, D. J. P., 'The Thrifty Phenotype Hypothesis', *British Medical Bulletin*, vol. 60, 1 (2001), pp. 5-20.

²¹ Gluckman, P. D. and Hanson, M. A., 'The Developmental Origins of Health and Disease: An Overview', in Gluckman, P. and Hanson, M. (eds.), *Developmental Origins of Health and Disease*, (Cambridge: Cambridge University Press, 2006), pp. 1-2.

²² Yajnik, C., 'Nutritional Control of Fetal Growth', *Nutritional Reviews*, vol. 64, 5 (2006), p. S51; Yajnik, C. S., Deshpande, S. S., Panchanadikar, A. V., Naik, S. S., Deshpande, J. A., Coyaji, K. J., Fall, C. and Refsum, H., 'Maternal Total Homocysteine Concentration and Neonatal Size in India', *Asia Pacific Journal of Clinical Nutrition*, vol. 14, 2 (2005), p. 181.

²³ Symonds, M. E. and Gardner, D. S., 'The Developmental Environment and the Development of Obesity', in Gluckman, P. and Hansen, M. (eds.), *Developmental Origins of Health and Disease*, (Cambridge: Cambridge University Press, 2006), p. 255.

an individual to fulfil *or exceed* their metabolic competence. This metabolic competence is determined during fetal development. Although anthropometric measures such as waist-hip ratio do capture current net nutritional status they also reflect a significant, although not necessarily obvious, response to net nutritional status during the growing years as well. This is exciting. It means that we have historical adult body measurements that causally link conditions in utero, across life, influencing death. Waist-hip ratio connects the end of life, with its beginnings.

5.3. Historical Uses of Measures of Central Adiposity

As noted, waist circumference, hip circumference, waist-hip ratio and leg lengths are not directly comparable to height or BMI. A disadvantage of this is that it is difficult to compare the measurements of the tailors' customers to the majority of existing anthropometric history results. However, the use of indicators of central adiposity within historical research does have precedent:

In 1997, Costa and Steckel analysed the waist-hip ratio of Union Army soldiers measured by the US Sanitary Commission from 1863 to 1865. They found that the soldiers' waist-hip ratio ranged between 0.843 for Union Army soldiers aged 16-20 to a waist-hip ratio of 0.867 for those aged 31-35. They compared these waist-hip ratios to those acquired by Terry, Page and Haskell for World War Two soldiers²⁴. Their striking result was that whilst BMI was greater amongst World War Two recruits, waist-hip ratio was greater amongst Union Army soldiers. Costa and Steckel suggested that this provided historical evidence of Barker's hypothesis. They inferred that the short, lean Union Army recruits experienced fetal malnourishment, predisposing them to central obesity in adulthood. The theory was bolstered by evidence from Fogel and co-authors that cardiovascular disease was nearly three

²⁴ Terry, R. B., Page, W. F. and Haskell, W. L., 'Waist/Hip Ratio, Body Mass Index and Premature Cardiovascular Disease Mortality in U.S. Army Veterans During a Twenty-Three Year Follow-Up Study', *International Journal of Obesity*, vol. 16, 6 (1992), pp. 417-23, as cited in Costa, D. L. and Steckel, R. H., 'Long-Term Trends in Health, Welfare, and Economic Growth in the United States', in Steckel, R. H. and Floud, R. (eds.), *Health and Welfare During Industrialisation*, (Chicago & London: University of Chicago Press, 1997), pp. 57-8

times more common amongst Civil War veterans as amongst World War Two veterans²⁵. This aligned with Barker's hypothesis that fetal deprivation led to central adiposity and a higher risk of cardiovascular disease in later life²⁶.

Since these early findings, Costa has returned to the Union Army measurements and again assessed them alongside the data for World War Two soldiers but also two sets of data from the post-World War Two military, namely the 1950 Survey of Flying Personnel and the 1988 Anthropometric Survey of the US Army²⁷. She identified that over a hundred-year time-span, men in the American military became taller and heavier but, controlling for total body fat, their waist-hip ratios decreased²⁸. This chimed with Barker's original claim that linked birth weights with adult waist-hip ratio.

Investigating the relationship between body size and mortality from heart disease at older ages, Costa found that waist-hip ratio, unlike other anthropometric measures, was a strong predictor of subsequent mortality²⁹. She used this evidence to conclude:

The findings suggest that hypertension and ischemic and cerebrovascular heart disease were present in this past population and may even have been as prevalent as they are today. The findings are consistent with reports of high arteriosclerosis rates in past populations and suggest that our view of the epidemiological theory needs to be more nuanced. Although infectious and parasitic diseases were highly visible in the past, the burden of "modern" chronic diseases was still there³⁰

These results are again consistent with the findings of Barker, implying that as the population has become better nourished, it has grown taller and heavier but less

²⁵ Fogel, R. W., Costa, D. L. and Kim, J. M., 'Secular Trends in the Distribution of Chronic Conditions and Disabilities at Young Adult and Late Ages, 1860-1988: Some Preliminary Findings', unpublished manuscript, (1994), as cited in Costa, D. L. and Steckel, R. H., 'Long-Term Trends in Health, Welfare, and Economic Growth in the United States', in Steckel, R. H. and Floud, R. (eds.), *Health and Welfare During Industrialisation*, (Chicago & London: University of Chicago Press, 1997), p. 57.

²⁶ Costa, D. L. and Steckel, R. H., 'Long-Term Trends in Health, Welfare, and Economic Growth in the United States', in Steckel, R. H. and Floud, R. (eds.), *Health and Welfare During Industrialisation*, (Chicago & London: University of Chicago Press, 1997), pp. 57-9.

²⁷ Costa, D. L., 'The Measure of Man and Older Age Mortality: Evidence from the Gould Sample', *Journal of Economic History*, vol. 64, 1 (2004), pp. 1-23.

²⁸ Costa, D. L., 'The Measure of Man and Older Age Mortality: Evidence from the Gould Sample', *Journal of Economic History*, vol. 64, 1 (2004), p. 9.

²⁹ Costa, D. L., 'The Measure of Man and Older Age Mortality: Evidence from the Gould Sample', *Journal of Economic History*, vol. 64, 1 (2004), p. 15.

³⁰ Costa, D. L., 'The Measure of Man and Older Age Mortality: Evidence from the Gould Sample', *Journal of Economic History*, vol. 64, 1 (2004), p. 18.

prone to central adiposity. Costa's conclusion is consistent with the evidence from doctors' tracts and dieting manuals in Chapter 2 that obesity and chronic diseases were a real concern in the nineteenth century.

The anthropometric measurements of the tailors' customers provide the means to assess the relevance of Barker's hypothesis to nineteenth century British populations. Direct comparisons between the waist-hip ratios of Morris & Son and Henry Poole & Co.'s customers can be made, and these in turn can be compared with the central adiposity of American recruits over the last 150 years using the data provided by Costa, Steckel, and Terry, Page and Haskell³¹.

However, in making direct comparisons one should also be wary of the comparability of the anthropometric measures. The waist circumference and hip circumference of Union Army soldiers were measured after removing their shoes, coats and waistcoats, but still wearing their trousers and undergarments. Waist circumference was measured, rather vaguely, 'above the hips and below the ribs'³². Hip circumference was measured on the level of the trochanters (where the femur connects to the hip). Amongst Costa's later military samples waist circumference was measured at the midpoint between the hips and ribs, and hip circumference was measured at maximal buttock circumference, both roughly equivalent to the position of the earlier Union Army measurements. The state of dress or undress is not stated for the post-World War Two samples³³. Amongst the World War Two soldiers sampled by Terry *et. al.*, waist circumference was measured 'in a plane midway between the lowest margins of the ribs laterally and the superior margins of the iliac crests' and hip circumference was taken 'over the most lateral part of the greater trochanters of the

³¹ Costa, D. L. and Steckel, R. H., 'Long-Term Trends in Health, Welfare, and Economic Growth in the United States', in Steckel, R. H. and Floud, R. (eds.), *Health and Welfare During Industrialisation*, (Chicago & London: University of Chicago Press, 1997), pp. 47-89; Terry, R. B., Page, W. F. and Haskell, W. L., 'Waist/Hip Ratio, Body Mass Index and Premature Cardiovascular Disease Mortality in U.S. Army Veterans During a Twenty-Three Year Follow-Up Study', *International Journal of Obesity*, vol. 16, 6 (1992), pp. 417-23; Costa, D. L., 'The Measure of Man and Older Age Mortality: Evidence from the Gould Sample', *Journal of Economic History*, vol. 64, 1 (2004), pp. 1-23.

³² Costa, D. L., 'The Measure of Man and Older Age Mortality: Evidence from the Gould Sample', *Journal of Economic History*, vol. 64, 1 (2004), p. 20.

³³ Costa, D. L., 'The Measure of Man and Older Age Mortality: Evidence from the Gould Sample', *Journal of Economic History*, vol. 64, 1 (2004), p. 20.

femurs³⁴. Thus it appears that all of these comparative anthropometric measurements were taken at roughly the same place.

By virtue of not taking measurements for a medical purpose, the position of the tailors' measurements is more obscure. Plates from nineteenth century tailoring manuals show the waist circumference being taken roughly between the lowest rib and the top of the hip. This would appear to be comparable to the US military measurements. All of the measurements within this research have been taken from tailors' trouser construction. When discussing the measurement of trousers specifically, nineteenth century tailoring manuals outlined that the waist measurement should be 'taken very tight under the waistcoat' whilst the hip measurement was to be 'taken tight on the most prominent part of the hips'³⁵.

The extent to which tailors (and specifically Morris & Son and Henry Poole & Co.) read and moreover abided by such instruction is unknown - most tailors probably measured based on instinct and experience. Trouser measurements would reflect fashion trends for trouser height. Trousers worn very high were likely to have a smaller waist circumference measurement than those worn lower. However, the most prominent part of the hips is often somewhat higher than the trochanters, with tailors taking a 'seat' measurement around the widest circumference of the buttocks. Therefore Compaign and Devere's instruction implies that waist-hip ratios based on tailoring measurements might have an underestimated denominator and therefore an overestimated ratio of waist circumference to hip circumference. However, the direction to measure *tight* and *under* the waistcoat instils confidence that these were measurements closely reflecting true body size.

The potential inconsistencies in waist and hip measurement position between the tailors' records and American military records suggest that direct comparisons

³⁴ Terry, R. B., Page, W. F. and Haskell, W. L., 'Waist/Hip Ratio, Body Mass Index and Premature Cardiovascular Disease Mortality in U.S. Army Veterans During a Twenty-Three Year Follow-Up Study', *International Journal of Obesity*, vol. 16, 6 (1992), p. 418.

³⁵ Compaign, C. and Devere, L., *The Tailor's Guide; A Complete System of Cutting Every Kind of Garment to Measure*, (London: Simpkin, Marshall & Co.: 1856), p. 62.

between the waist-hip ratios should be treated with caution and sensitivity analyses will be conducted to try and account for this. However, there is no reason to believe that Morris & Son and Henry Poole & Co. measured their waist and hip circumference in different places or manners. Morris & Son measured a waist, hip and seat circumference, whereas Henry Poole & Co. measured just the waist and hip. To account for the possibility that Henry Poole & Co. measured their hip circumference in the same place as Morris & Son measured their seat circumference, all of the statistical analysis within this thesis were also conducted using seat as the denominator for Morris & Son's customers' waist-hip ratios. This had very little statistical impact and did not affect any trends or conclusions. As such, all of the following analyses report standard waist-hip ratios using waist circumference and hip circumference, without regard to seat.

The structure of the following chapters is as follows: Firstly, a cross-sectional analysis of the waist circumference, hip circumference and waist-hip ratio of Morris & Son and Henry Poole & Co. customers will be outlined. Using leg lengths and hip circumference as a marker of early life nutritional status these will then be used to assess the applicability of Barker's hypothesis to the tailor's customers in the second half of the nineteenth century. These results will then be compared to the findings of Steckel, Costa and Terry *et. al.* to identify whether British historical evidence bolsters their arguments of the applicability of the Barker hypothesis and to infer the morbidity of the tailors' customers from their American military recruits. Finally, the longevity of the tailors' customers will be assessed to substantiate inferences regarding the morbidity and mortality of Morris & Son and Henry Poole & Co.'s customers.

Chapter 6. Cross Sectional Analyses of Early Life Waists, Hips and Waist-Hip Ratio

In Chapter 4 it was highlighted that it is imperative to analyse Morris & Son and Henry Poole & Co. customers separately because they represent contrasting groups of the population from different cohorts, ages and geographic and socioeconomic backgrounds. Hence the following cross-sectional analyses are conducted separately for the two tailoring datasets.

In the cross-sectional dataset each case represents a new tailoring transaction providing the waist circumference, hip circumference and leg measurements of customers at different ages. The dataset comprises 709 measurements containing waist and hip circumferences. Tailors did not record age, and this information was harvested through carefully identifying individuals in the census and making the necessary computations based on date of measurement. This allowed age to be linked with 484 measurements placed by 296 customers: 204 from Morris & Son (three-quarters aged 21 years and above) and 92 from Henry Poole & Co.

The latter received far greater return business from their customers (more than double that of the Welsh tailor), with half placing at least a second order for trousers. One customer of Henry Poole & Co. ordered trousers on eleven separate occasions. Customers who visited their tailor frequently could bias the cross-sectional results. Repeat visits by Morris & Son customers were too infrequent to register any statistically measurable effect on body measurements, but this was not so among the customers of Henry Poole & Co. These men were somewhat older, and the older they were, the more visits they accumulated, confounding the number of visits with

age. Results were tested for their sensitivity to repeated appearance of the same individuals by restricting analysis to the first adult measurement of each customer: this had much the same effect as did controlling for age. The following reports the results for: all the data (Panel A); for customers aged 21.0 to 35.0 inclusive, henceforth referred to as 21-35 (Panel B); and for the first adult (aged over 21) measurement of each customer (Panel C).

Table 8 highlights some important initial differences between the middle-class customers of Morris & Son (measured later in the century) and the wealthier patrons of Henry Poole & Co (measured earlier). All the results of Panel A were highly statistically significant. Morris & Son's customers had smaller waist circumferences and hip circumferences than Henry Poole & Co.'s customers, but *larger* waist-hip ratios.

However, age is a confounding factor. Morris & Son's record book included more boys who were still growing, while Henry Poole & Co. tailored to a richer, older clientele. Restricting the analysis to young adults aged 21-35 years modifies the relationships (see Panel B in the table). Even with these much smaller samples, significant results emerged. The clients of both tailors shared similar waist sizes, but their hip dimensions were significantly different (with Morris & Son customers 2.8 inches smaller), and the difference in waist-hip ratio was appreciable (falling to 0.84 for customers of Henry Poole & Co.).

Similar results are found when the sample is instead restricted to the first adult measurement of each customer (Panel C). These results consistently suggest that Morris & Son's customers had a lower net nutritional status than Henry Poole & Co.'s customers. For Morris & Son customers, their narrower adult hip circumferences and greater propensity towards central adiposity are both suggestive of a lower nutritional status in utero and early infancy, when growth trajectories may have been set. The foundations of Barker's hypothesis are thus tentatively laid.

Table 8: Comparison of the Waist Circumference, Hip Circumference and Waist-Hip Ratio of Morris & Son and Henry Poole & Co. Customers

Panel A: All Data

	Dataset Group Statistics						T-Test Results			
	Morris & Son			Henry Poole & Co.			95% Confidence Intervals for Mean Difference			
	M	SD	n	M	SD	n	Lower	Upper	t	df
WC	33.5	4.06	404	37.0	5.11	312	-4.14	-2.76	9.78***	581.17
HC	36.5	4.07	403	41.3	3.61	306	-5.38	-4.23	-6.35***	707
WHR	0.92	0.03	403	0.89	0.07	306	0.014	0.032	5.13***	403.85
Age	35.8	15.4	512	52.9	14.8	537	-18.92	-15.26	18.32***	1047

Panel B: Age 21-35

	Dataset Group Statistics						T-Test Results			
	Morris & Son			Henry Poole & Co.			95% Confidence Intervals for Mean Difference			
	M	SD	n	M	SD	n	Lower	Upper	t	df
WC	33.3	2.15	84	33.0	3.73	37	-1.03	1.61	0.45	46.86
HC	36.5	1.96	84	39.3	2.54	37	-3.71	-1.83	5.91***	55.77
WHR	0.91	0.36	84	0.84	0.56	37	0.053	0.094	7.32***	49.79
Age	27.9	4.30	84	28.1	4.19	37	-1.94	1.39	0.33	119

Panel C: First Adult Measurement

	Dataset Group Statistics						T-Test Results			
	Morris & Son			Henry Poole & Co.			95% Confidence Intervals for Mean Difference			
	M	SD	n	M	SD	n	Lower	Upper	t	df
WC	34.9	3.73	157	34.4	3.81	92	-0.41	1.54	1.149	247
HC	37.9	3.47	157	39.4	2.33	92	-2.25	-0.80	4.144***	242.35
WHR	0.92	0.04	157	0.87	0.07	92	0.035	0.068	6.217***	117.57
Age	40.7	13.8	157	41.9	13.3	92	-4.74	2.28	0.691	247

*** = significant at 1% level

** = significant at 5% level

* = significant at 10% level

Sources: Morris & Son 'Measure Book 1', Henry Poole & Co. 'Measure Book A' and England and Wales Census Records.

Another measurement sensitive to early life conditions was leg length. Further evidence that Morris & Son's customers had a poorer net nutritional status during growth than Henry Poole & Co.'s customers comes from the assessment of their inside leg measurements.

Panel A in Table 9 shows that on average Morris & Son customers had an inside leg measurement two-and-a-half inches shorter than Henry Poole & Co. customers. Amazingly, even when still-growing adolescents are removed from the analysis (Panels B and C), a discrepancy of this magnitude remains. Contemporaries might have tried to argue that this deficiency could be explained by genetic differences between the infamously short, Celtic Welsh attending Morris & Son and the ethnically taller Anglo-Saxon English clientele frequenting Henry Poole & Co. However, a shortfall of two-and-a-half inches is considerably larger than the Welsh height disadvantage of an inch compared to the rest of Britain, identified by Galton in 1883¹. It is also far greater than the three-quarter inch Welsh height jeopardy identified by Knight and Eldridge for a more modern cohort of British adult males in the 1980s². The short legs of Morris & Son's customers point at a degree of deprivation beyond that imparted by genetics. This is a strong indicator that visitors to Morris & Son experienced a degree of stunting, failing to maximise leg length and thus height due to energy constraints during growth.

¹ Galton, F., 'Final Report of the Anthropometric Committee', *Report of the British Association for the Advancement of Science*, (1883), p. 258.

² Knight, I. and Eldridge, J., *The Heights and Weights of Adults in Great Britain*, (London: Her Majesty's Stationary Office, 1984), as cited in Floud, R., Wachter, K. and Gregory, A., *Height, Health and History: Nutritional Status in the United Kingdom, 1750-1980*, (Cambridge: Cambridge University Press, 1990), p. 203.

Table 9: Comparison of Inside and Outside Leg Measurements of Morris & Son and Henry Poole & Co. Customers

Panel A: All Data

	Dataset Group Statistics						T-Test Results			
	Morris & Son			Henry Poole & Co.			95% Confidence Intervals for Mean Difference			
	M	SD	n	M	SD	n	Lower	Upper	t	df
Inside Leg	30.4	1.88	366	32.9	1.81	275	-2.76	-2.18	16.772***	639
Outside Leg	42.5	2.38	363	41.4	2.39	307	0.73	1.45	5.908***	668

Panel B: Age 21-35

	Dataset Group Statistics						T-Test Results			
	Morris & Son			Henry Poole & Co.			95% Confidence Intervals for Mean Difference			
	M	SD	n	M	SD	n	Lower	Upper	t	df
Inside Leg	31.0	1.52	79	33.1	1.79	32	-2.76	-1.43	6.225***	109
Outside Leg	43.1	1.72	80	41.3	2.01	35	1.14	2.59	5.079***	113

Panel C: First Adult Measurement

	Dataset Group Statistics						T-Test Results			
	Morris & Son			Henry Poole & Co.			95% Confidence Intervals for Mean Difference			
	M	SD	n	M	SD	n	Lower	Upper	t	df
Inside Leg	30.6	1.60	148	33.0	2.10	85	-2.92	-1.95	9.958***	231
Outside Leg	42.9	1.99	148	41.1	2.53	89	1.18	2.42	5.743***	153.26

*** = significant at 1% level

** = significant at 5% level

* = significant at 10% level

Sources: Morris & Son 'Measure Book 1', Henry Poole & Co. 'Measure Book A'.

The longer mean outside leg measurement of Morris & Son's customers compared to Henry Poole & Co. customers does not contradict this argument. Both inside and outside leg measurements are affected by the fashionable length of trousers, and it would be expected these measurements would move in the same direction. Whereas inside leg measurements are otherwise unaffected by fashion

trends, the outside leg measurement represents the length from the bottom of the trousers until the top of the waistband. It is highly dependent on preferences for high or low fitting trousers. Thus the longer mean outside leg measurement of Morris & Son's customers, combined with their shorter mean inside leg measurement, suggests that Morris & Son's customers wore their trousers much higher than Henry Poole & Co.'s customers.

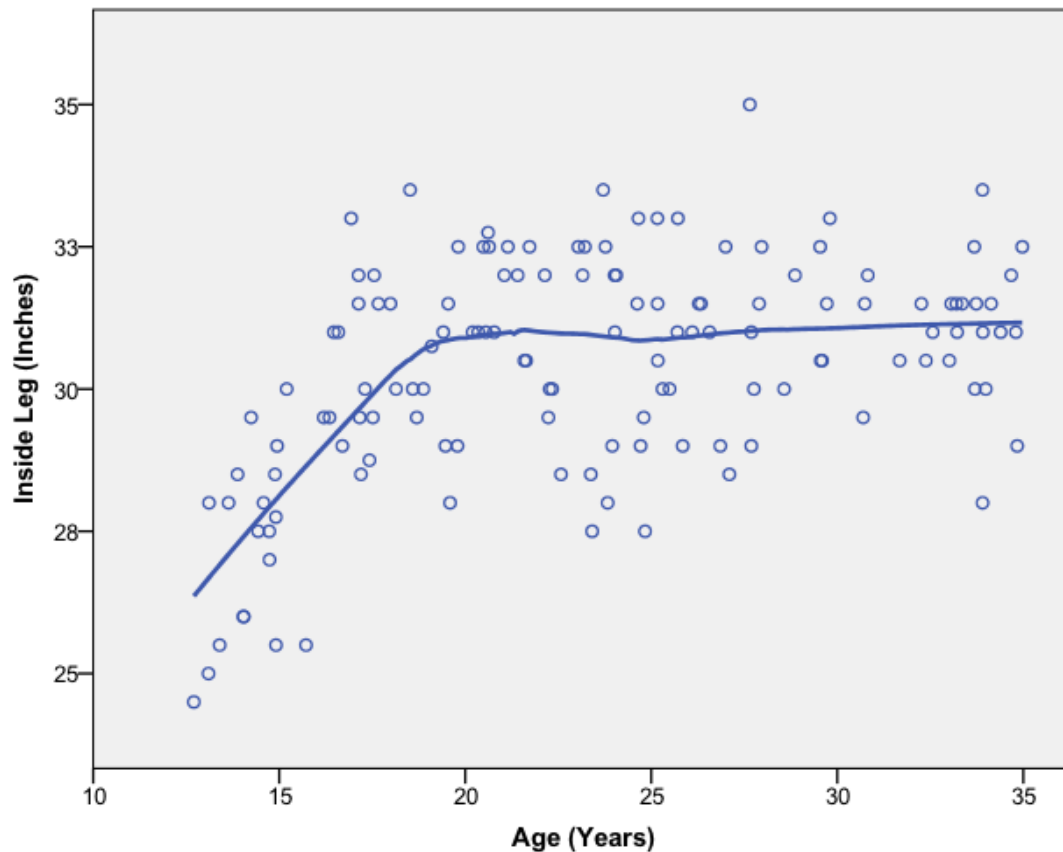
The implications of this are that the waist circumference measurements of Morris & Son's customers were perhaps also measured at a higher point than those of Henry Poole & Co., in accordance with their preference for a high waistband. A higher measuring point is likely to provide a smaller waist circumference measurement and therefore underestimate the waist-hip ratio of Morris & Son's customers by providing a smaller numerator. This would imply that Morris & Son's customers' waist circumferences and waist-hip ratios are downwardly biased compared to those of Henry Poole & Co. customers – the fact that Morris & Son's customers' waist-hip ratios remain greater than those of Henry Poole & Co. becomes even more dramatic.

Although Morris & Son's inside leg measurements suggest that they were stunted compared to Henry Poole & Co. customers, the loess trend line in Figure 25, based on all data on inside leg length by age, shows that their legs completed growth between the age of nineteen and twenty-one. This is in accordance with human biologists' modern expectation of age of male growth maturity³. Henry Poole & Co included fewer young males, but a regression with age dummies also confirmed adult leg-length being reached at around age 21 years. It implies that Morris & Son's customers were not so severely nutritionally deprived during their development that they extended their period of growth to compensate. Or, put another way, extending

³ Bogin, B., *Patterns of Human Growth*, (Cambridge: Cambridge University Press, 1988), p. 38; Tanner, J. M., *Foetus into Man: Physical Growth from Conception to Maturity*, 2nd edn., (Ware: Castlemead, 1989), pp. 166-7.

growth to improve their leg length does not appear to have been an option. This hints that in utero deprivation lowered their target stature.

Figure 25: Inside Leg Measurement of Morris & Son Customers Until Maturity



Sources: Morris & Son 'Measure Book 1' and England and Wales Census Records.

n = 135

The correlations between the customers' girths, central adiposity and their inside leg, shown in Table 10, throws further weight behind the relevance of the Barker hypothesis. All three panels show that amongst Henry Poole & Co. customers there was no statistically significant relationship between their waist or hip circumference and their inside leg measurement. This indicates that amongst this wealthy group of professionals, attained length had no impact on width. One possible explanation for this is that Henry Poole & Co.'s customers reached their genetic

potential in height so their lengths varied by genetics, whereas their widths varied by net nutritional status.

In contrast, amongst Morris & Son's customers, Panel A of Table 10 shows that their inside leg length had a big impact on width, and this relationship maintains after controlling for the influence of juveniles within the Morris & Son record book, as Panel B shows. This implies that inside leg length was a strong marker of net nutritional status both during the growing years and in later life amongst Morris & Son customers. Taller customers enjoyed a higher net nutritional status during their growing years and this continued in later life, enabling them to grow larger hips and acquire a larger waist circumference.

The crucial component of the Barker hypothesis is found in Panel C of Table 10 which shows that once the influence of adolescents and repeat measurements are removed, taller customers of both tailors gained a *smaller* waist-hip ratio. Furthermore, the weak correlation significant at the ten percent level in the homogenous samples treated separately, becomes stronger and highly significant in a more heterogeneous sample when the customers are combined, $r = -0.382$, $p = 0.000$. Those that had a lower net nutritional status during their growing years and achieved a smaller inside leg length also had a greater tendency towards central adiposity. This provides potential evidence of Barker's theory that fetal undernutrition causes metabolic changes which increase the propensity for the body to store energy centrally and set a lower growth trajectory.

This trend was evident amongst Henry Poole & Co.'s customers as well as Morris & Son's customers because Barker's hypothesis relies on a degree of mismatch between fetal and post-natal nutritional conditions, rather than absolute levels. Despite Henry Poole & Co.'s customers' higher overall standard of living, it remains feasible that some experienced generational improvement in their net nutritional status, especially those from amongst the 'skilled' or 'intermediate' upper-middle classes.

Table 10: Correlations Between Age and Body Shape Amongst Morris & Son and Henry Poole & Co. Customers

Panel A: All Data

		Age	WC	HC	WHR	Inside Leg	Outside Leg
Morris & Son	Age	1 (512)					
	WC	0.607*** (260)	1 (404)				
	HC	0.595*** (259)	0.952*** (403)	1 (403)			
	WHR	0.155** (259)	0.351*** (403)	0.052 (403)	1 (403)		
	Inside Leg	0.088 (243)	0.331*** (363)	0.391*** (362)	-0.061 (362)	1 (366)	
	Outside Leg	0.234*** (240)	0.501*** (363)	0.549*** (363)	0.015 (363)	0.903*** (359)	1 (363)
Henry Poole & Co.	Age	1 (537)					
	WC	0.591*** (229)	1 (312)				
	HC	0.486*** (225)	0.834*** (304)	1 (306)			
	WHR	0.509*** (225)	0.793*** (306)	0.331*** (304)	1 (306)		
	Inside Leg	-0.214*** (208)	-0.091 (265)	-0.072 (260)	-0.089 (262)	1 (275)	
	Outside Leg	0.012 (229)	0.183*** (295)	0.203*** (289)	0.055 (289)	0.353*** (267)	1 (307)

Panel B: Age 21-35

		Age	WC	HC	WHR	Inside Leg	Outside Leg
Morris & Son	Age	1 (84)					
	WC	0.161 (84)	1 (84)				
	HC	0.308*** (84)	0.795*** (84)	1 (84)			
	WHR	-0.150 (84)	0.552*** (84)	-0.066 (84)	1 (84)		
	Inside Leg	0.054 (79)	0.286** (79)	0.306*** (79)	0.02 (79)	1 (79)	
	Outside Leg	0.112 (80)	0.394*** (80)	0.433*** (80)	0.065 (80)	0.882*** (79)	1 (80)
Henry Poole & Co.	Age	1 (37)					
	WC	-0.124 (37)	1 (37)				
	HC	-0.083 (37)	0.840*** (37)	1 (37)			
	WHR	-0.120 (37)	0.863*** (37)	0.453*** (37)	1 (37)		
	Inside Leg	-0.254 (32)	-0.065 (32)	-0.141 (32)	0.031 (32)	1 (32)	
	Outside Leg	-0.076 (35)	0.607*** (35)	0.602*** (35)	0.457*** (35)	0.125 (31)	1 (35)

Panel C: First Adult Measurement

		Age	WC	HC	WHR	Inside Leg	Outside Leg
Morris & Son	Age	1 (157)					
	WC	0.449*** (157)	1 (157)				
	HC	0.419*** (157)	0.932*** (157)	1 (157)			
	WHR	0.239*** (157)	0.516*** (157)	0.171** (157)	1 (157)		
	Inside Leg	-0.150* (148)	0.033 (148)	0.106 (148)	-0.160* (148)	1 (148)	
	Outside Leg	0.014 (148)	0.270*** (148)	0.336*** (148)	-0.055 (148)	0.867*** (147)	1 (148)
Henry Poole & Co.	Age	1 (92)					
	WC	0.292*** (92)	1 (92)				
	HC	0.123 (92)	0.675*** (92)	1 (92)			
	WHR	0.302*** (92)	0.859*** (92)	0.224** (92)	1 (92)		
	Inside Leg	-0.111 (85)	-0.146 (85)	-0.117 (85)	-0.205* (85)	1 (85)	
	Outside Leg	-0.142 (89)	0.011 (89)	0.241** (89)	-0.101 (89)	0.340*** (83)	1 (89)

*** = significant at 1% level

** = significant at 5% level

* = significant at 10% level

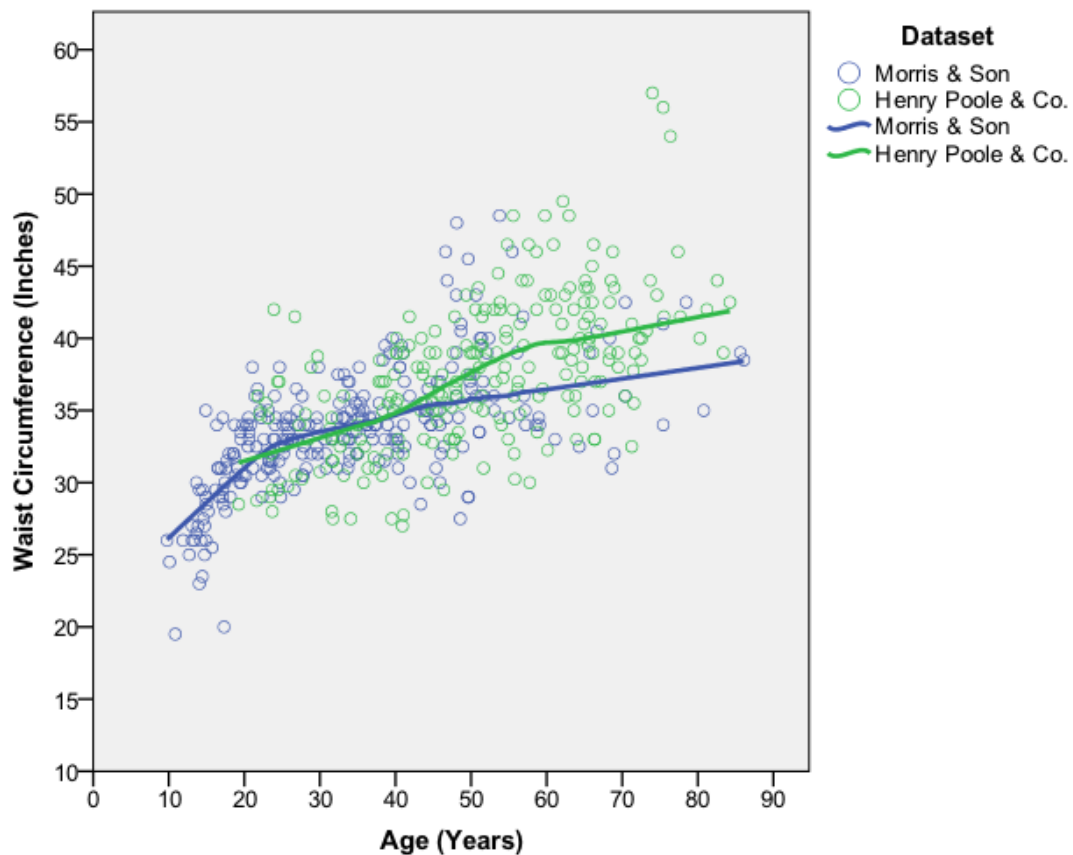
n value in parentheses

Sources: Morris & Son 'Measure Book 1', Henry Poole & Co. 'Measure Book A' and England and Wales Census Records.

Barker's hypothesis is more emphatically supported once the effect of age is examined. This is important to distinguish because Panel A of Table 10 implies that the waist circumference, hip circumference and waist-hip ratio of Morris & Son's customers was strongly positively correlated to their age, however as Panel B and Panel C prove, most of this correlation was a product of relationships amongst juveniles, before maturity. The relationship between customers' age and body shape can be seen from the loess trend lines in Figure 26, Figure 27 and Figure 28 and in the summary descriptive statistics in Table 11.

Figure 26 confirms that the nutritional status of Morris & Son's customers improved over their lifetime. The graph shows that until age forty, Morris & Son's customers had a very similar, if not larger, waist circumference than Henry Poole & Co.'s customers. Morris & Son's customers increased around their middle at a small but steady rate throughout their lifetime, raising by five inches over the course of adulthood (from their 20s to their 70s). The real discrepancy apparent in the figure is the girth of Henry Poole & Co. clients from mid-life. From being on parity, over their 40s and 50s, the waists of these wealthy customers expanded at a remarkable rate, suggesting considerable over-consumption and creating an appreciable gap in the two series of some four inches in later life, by age 60 ($t = 2.948$). Table 11 highlights that over the course of their adult lives, Henry Poole & Co. men gained nearly nine inches in girth – they gained fourteen inches on their teenage state. It seems safe to conclude that both groups were well nourished in adulthood, one to a point of excess.

Figure 26: The Effect of Age on Waist Circumference Amongst Morris & Son and Henry Poole & Co. Customers



Sources: Morris & Son 'Measure Book 1', Henry Poole & Co. 'Measure Book A' and England and Wales Census Records.

n = 260 (Morris & Son), n = 312 (Henry Poole & Co.)

Waist circumference is sensitive to current net nutrition. Hip circumference is somewhat less responsive to conditions in adulthood, tending to be a better indicator of net nutritional status during the growing years. Figure 27 shows that Morris & Son's customers achieved a hip circumference that was between two to three inches smaller than Henry Poole & Co. customers at every age. It is also notable that the boys measured at Morris & Son appear to have gained their adult hip size at a later age. Both factors imply that Morris & Son were catering to individuals who suffered from a poorer net nutritional status during development than Henry Poole & Co.'s customers, who carried a larger frame size.

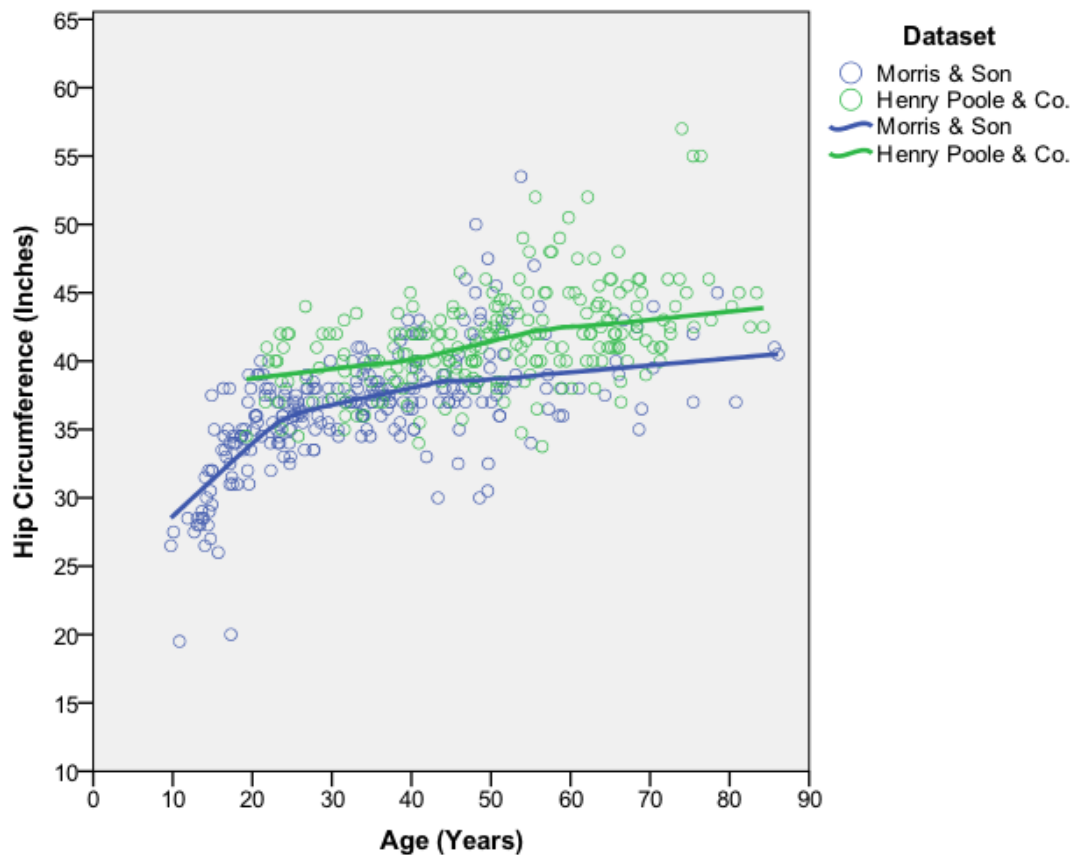
The high level of dependency of hip circumference on its bony structure is evidenced by the weak linear regression coefficient of hip circumference on age after

maturity (Morris & Son: $r = 0.095$, $p = 0.000$; Henry Poole & Co.: $r = 0.113$, $p = 0.000$).

The loess regression lines become very flat after age twenty, with both trend lines roughly in parallel, apart from some evidence of weight gain in their 40s and 50s amongst Henry Poole & Co.'s clients. Table 11 identifies that over the course of their adult lives Morris & Son's customers gained nearly four-and-a-half inches on their hip circumference whilst Henry Poole & Co.'s customers' hips grew by five-and-a-half inches over the same time-span.

That the hip circumference of Morris & Son customers increased with age, albeit less than waists, highlights that their net nutritional status did improve over their lifetime, enabling them to store excess energy on their girths. Thus two key elements of Barker's hypothesis are evident in Figure 27 – Morris & Son's customers were nutritionally deprived during development but they also improved their nutritional status during adulthood.

Figure 27: The Effect of Age on Hip Circumference Amongst Morris & Son and Henry Poole & Co. Customers



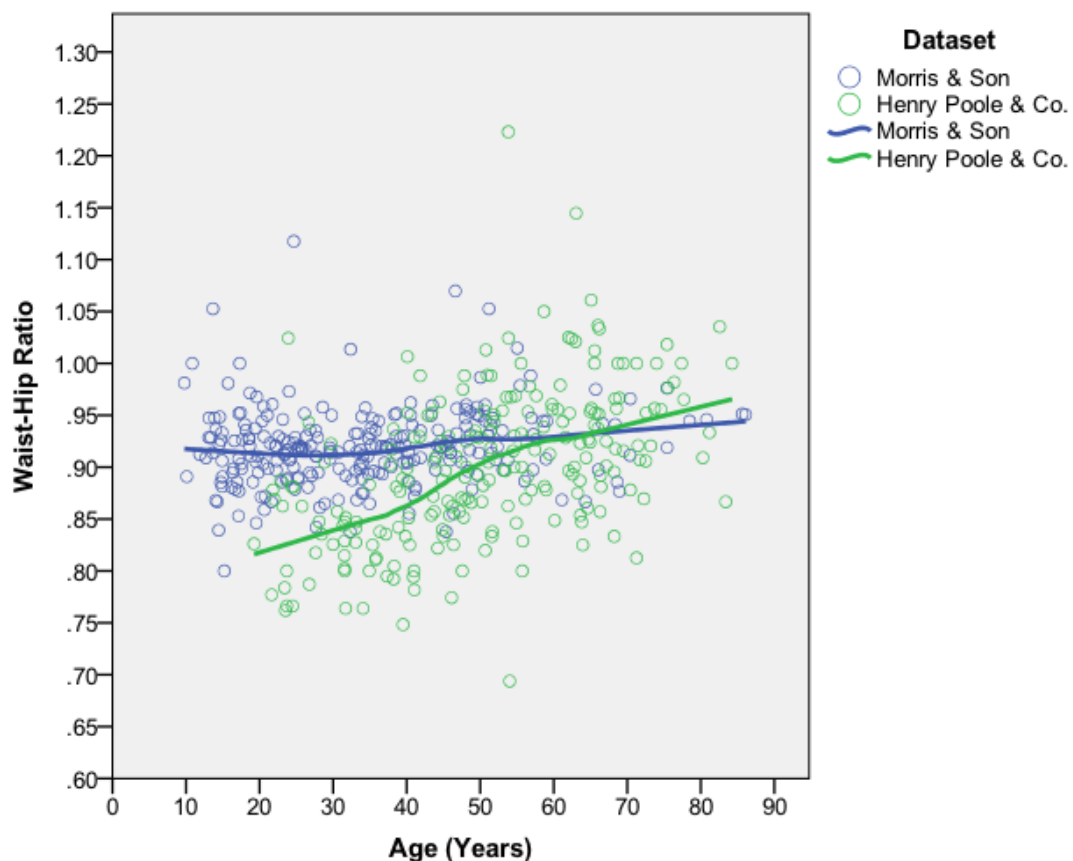
Sources: Morris & Son 'Measure Book 1', Henry Poole & Co. 'Measure Book A', and England and Wales Census Records.

n = 259 (Morris & Son), n = 225 (Henry Poole & Co.)

A third element of Barker's hypothesis may now be added. Morris & Son's customers experienced nutritional deprivation during early-life development, improved their nutritional status after birth, and also had a strong propensity to carry their weight centrally around their waists. Figure 28 shows emphatically the tendency of Morris & Son's customers to maintain a high degree of central adiposity. Notwithstanding the resplendent ever-expanding waists disported at Henry Poole & Co., it was Morris & Son's customers who had the greatest waist-hip ratios. Critically, waist-hip ratios were elevated right across their lives, at a largely constant level. While Henry Poole & Co. customers overtook those of Morris & Son from age sixty, they did so through sheer dint of expanding their girths, raising their waist-hip ratios, from a comparatively low level, constantly over the duration of their lives. That Morris & Son's customers

suffered elevated waist-hip ratios from early in life ties this disadvantage to conditions in utero. As noted earlier, the scale of this disparity is also possibly minimised by the measurement position of Morris & Son's waist circumference at a higher and narrower part of the body. It is only the cumulative benefit of higher net nutritional status throughout life that, after middle age, finally enabled Henry Poole & Co.'s customer to exceed the levels of central adiposity Morris & Son's customers maintained consistently throughout life.

Figure 28: The Effect of Age on Waist-Hip Ratio Amongst Morris & Son and Henry Poole & Co. Customers



Sources: Morris & Son 'Measure Book 1', Henry Poole & Co. 'Measure Book A' and England and Wales Census Records.

n = 259 (Morris & Son), n = 225 (Henry Poole & Co.)

Table 11: Summary Statistics of the Waist Circumference, Hip Circumference and Waist-Hip Ratio of Morris & Son and Henry Poole & Co. Customers of Different Age Groups

Age Group	Morris & Son	Henry Poole & Co.	Morris & Son	Henry Poole & Co.	Morris & Son	Henry Poole & Co.	Morris & Son	Henry Poole & Co.
			Waist Circumference (Inches)		Hip Circumference (Inches)		Waist-Hip Ratio	
	n	n	Mean	Mean	Mean	Mean	Mean	Mean
15 or Under	34	-	26.66	-	29.06	-	0.920	-
16 – 20	65	6	31.19	28.50	34.25	34.50	0.913	0.825
21 – 30	115	41	33.05	33.78	36.11	39.65	0.915	0.850
31 – 40	127	72	34.65	33.35	37.87	39.49	0.915	0.844
41 – 50	89	115	35.93	36.53	38.76	40.90	0.926	0.892
51 – 60	49	127	37.48	39.15	39.95	42.53	0.939	0.923
61 - 70	19	115	36.15	40.19	39.50	42.81	0.913	0.939
71 or Over	14	61	38.33	42.51	40.42	45.14	0.948	0.947

Sources: Morris & Son 'Measure Book 1', Henry Poole & Co. 'Measure Book A' and England and Wales Census Records.

Chapter 7. Morris & Son's Customers and Barker's Hypothesis

Assessed collectively, the cross-sectional analyses of Morris & Son's and Henry Poole & Co.'s customers' anthropometric variables provide convincing historical evidence of the applicability of Barker's hypothesis to Morris & Son's customers in the second half of the nineteenth century. The smaller hip circumference and inside leg measurements of Morris & Son's customers compared to Henry Poole & Co.'s customers points to a degree of nutritional deprivation during development. Throughout adulthood Morris & Son's customers experienced a small increase in waist circumference and hip circumference, highlighting that their nutritional status improved, although they were never as large as those of Henry Poole & Co.'s customers. Yet despite smaller overall girths, Morris & Son's customers had a much greater tendency to accumulate fat centrally. All the pieces of the Barker hypothesis are in place.

Although nothing about the fetal experience of Morris & Son's customers is directly known, it seems reasonable to infer, in concurrence with Barker, that Morris & Son's period of deprivation began in utero. The anthropometric evidence justifies positing that it was nutritional deprivation as a fetus that prevented Morris & Son's customers from achieving longer legs or larger hips. This fetal deprivation also affected the metabolism of Morris & Son's customers, encouraging them to adapt to a more 'thrifty phenotype' which optimised metabolic performance at lower levels of nutritional status. After birth the nutritional status of Morris & Son's customers steadily improved as evidenced by their waists and hips. Their net nutritional status quickly exceeded the competence level determined as a fetus. In response to the over-

stimulation of the hypothalamic-pituitary-adrenal axis, excess energy was disproportionately distributed centrally, around the waist.

Although speculative, this does not seem an improbable scenario for Morris & Son's customers. Three additional strands of evidence discussed below justify this statement. These are: 1. The economic context of Barmouth in the second half of the nineteenth century. 2. The social mobility of customers of Morris & Son. 3. The infant mortality rate in North Wales.

7.1. The Economic Context of Barmouth

Chapter 4 highlighted that during the nineteenth century, when Morris & Son's customers were born, Barmouth was experiencing a period of economic transition. In the eighteenth century Barmouth established itself as an exporter of wool from the cottage industry, but this industry had completely collapsed by the end of the eighteenth century after facing intense competition from mechanised wool production in the Midlands. Although Barmouth's harbour remained busy during the nineteenth century exporting slate and stone from the Blaenau Ffestiniog mines, tourism also became an increasingly important industry, especially after 1867 when the construction of the Barmouth viaduct made the town accessible by rail¹. As noted in Chapter 4, by 1902 lodging houses provided room for over 5,000 visitors to Barmouth².

Morris & Son's customers reflect the economic transition that Barmouth experienced. 'Measure Book 1' largely represents individuals of a middling social status working within a range of skilled professions. The measurement book contains customers reflective of the rural, coastal town's strong tradition of primary and maritime industry as well as those benefitting from having risen to a more prestigious status as professionals, public servants and successful dealers.

¹ Wyn-Jones, O. and Jones, J., *Discover Barmouth: Today and Yesterday*, (Barmouth: Select All, 2002), pp. 6-15.

² Hughes, J., *Hughes' New Guide to Barmouth*, 2nd edn., (Barmouth: n.p., 1902), p. 8.

It is presumed that as tourism bolstered Barmouth's economy, this led to the creation of more stationary occupations of higher social status, higher relative incomes, higher standards of living and thereby higher net nutritional status. Furthermore the speed of the transition justifies maintaining that these improvements occurred generationally. The process represents part of what Fogel and Costa have termed 'technophysio evolution'³. Floud *et. al.* observed how :

...the health and nutrition of one generation contributes, through mothers and through the infant and childhood experience, to the strength, health and longevity of the next generation; at the same time, increased health and longevity enable the members of that next generation to work harder and longer and to create the resources which can then, in their turn, be used to assist the next, and succeeding generations to prosper⁴

Thus, there is a contextual basis to assume that Morris & Son's customers grew up in an environment that gave them access to a higher net nutritional status than the one that their mothers had experienced and they themselves developed in as a fetus,

In the anthropometric analyses above it was highlighted that based on trends in inside leg measurement it does not appear as though Morris & Son's customers experienced an extended period of catch up growth and yet they were stunted, implying fetal programming had set them on a different, lower growth trajectory. The definition of Morris & Son's customers in Chapter 4 explains why this is not surprising. Morris & Son's customers were not poor. Unlike elsewhere in the country, where new urban-industrial complexes were being established, Barmouth evolved in a way that promoted the skilled middle-classes: as a small, picturesque tourist destination. The nutritional intake of Morris & Son's customers was likely to be constrained although not overly so, and their nutritional demands, mainly for labour productivity, were also high but not debilitating. Born a generation earlier, their mothers likely faced a less favourable economic climate.

³ Fogel, R. W. and Costa, D. L., 'A Theory of Technophysio Evolution, With Some Implications for Forecasting Population, Health Care Costs, and Pension Costs', *Demography*, vol. 34, 1 (1997), pp. 49-66.

⁴ Floud, R., Fogel, R. W., Harris, B., and Hong, S. C., *The Changing Body: Health, Nutrition, and Human Development in the Western World Since 1700*, (Cambridge: Cambridge University Press, 2011), pp. 1-2.

Thus the fact that Morris & Son's customers display signs of Barker's hypothesis indicates that the effects of fetal deprivation could be felt in later life, even at moderate levels. This, again, conforms with the findings of the Barker group that:

...infants who later died of cardiovascular disease, or who had a higher incidence of risk factors, had birth weights which were a little low rather than extremely so⁵

Hales and Barker note that although the factors captured by fetal deprivation, '...may operate most intensely in low birth weight babies, they also operate in...babies who fall within what we consider to be the 'normal' birth weight range'⁶. Morris & Son's customers suggest that this was also the case historically. Individuals did not have to be severely deprived to display later life signs that fetal deprivation predisposed them to more centralised fat deposits. This is important because it casts a wider net over the people at increased risk of chronic diseases due to their fetal origins.

7.2. The Social Mobility of Morris & Son's Customers

In Chapter 4 the social mobility of Morris & Son's customers was considered by comparing their occupational skill ranking to that of their fathers. It was identified that 32.3% of Morris & Son's customers had a higher skill level of occupation than their father. This provides more contextual evidence that a large proportion of Morris & Son's customers attained a higher standard of living in adulthood than their parents achieved and thus that their mother was able to impart during pregnancy.

The statistical impact of this social mobility on Morris & Son's customers' anthropometric variables can also be examined. The range between a customers' occupational skill ranking and their father's occupational skill ranking was calculated. All Morris & Son customers who were at least one skill ranking higher than their fathers (labelled 'upwardly mobile') were compared to those who were either the same skill ranking or of a lower social status than their father (labelled 'other'). No

⁵ Robinson, R. J., 'Introduction', in Barker, D. J. P. (ed.), *Fetal and Infant Origins of Adult Disease*, (London: British Medical Journal, 1992), p. 15.

⁶ Hales, C. N. and Barker, D. J. P., 'The Thrifty Phenotype Hypothesis', *British Medical Bulletin*, vol. 60, 1 (2001), p. 10.

differentiation was made between the range in skill rankings or their start and end level. For example, an 'intermediate' level son of a 'partly skilled' father was labelled as 'upwardly mobile' in the same way as a 'professional' son of an 'intermediate' level father.

Table 12 shows that the waist-hip ratio of upwardly mobile customers of Morris & Son was very slightly greater than that of those who were static or downwardly mobile, but not statistically significantly so. The waist circumference and hip circumference of upwardly mobile customers was also greater than that of other customers but, again, without statistical significance.

Table 12: Comparison of Waist-Hip Ratio of 'Upwardly Mobile' and 'Other' Morris & Son Customers

	Morris & Son Group Statistics						T-Test Results			
	Upwardly Mobile			Other			95% Confidence Intervals for Mean Difference			
	M	SD	N	M	SD	N	Lower	Upper	t	df
WC	34.4	4.07	43	33.7	3.73	83	-0.733	2.13	0.966	124
HC	37.5	3.83	43	36.9	3.63	83	-0.760	1.99	0.886	124
WHR	0.917	0.033	43	0.914	0.035	83	-0.010	0.016	0.441	124

*** = significant at 1% level

** = significant at 5% level

* = significant at 10% level

Sources: Morris & Son 'Measure Book 1' and England and Wales Census Records.

These results provide inadequate evidence on which to conclude that upward mobility increased the likelihood of centralised obesity, although they hint in this direction. It is believed that the definition of social mobility that is being used here endangers the statistical relationship for two reasons:

Firstly, the range between a customers' occupational skill ranking and their father's is a poor proxy of generational differences in standard of living. It would be

feasible for a customer and their father to be ranked at the same skill level but to have had very contrasting incomes, household responsibilities, health and many other mitigating factors impacting their standard of living and nutritional status.

Furthermore, each customer and their father were labelled with one occupational skill ranking, despite it being likely that this changed throughout their lives, concurrently affecting their standard of living. Finally, capturing the extent of generational differences in standard of living is also jeopardised by calculating a range which ignores the start and end level of skill ranking.

The second issue is that even if generational differences in social status were captured effectively, the difference in the social status of an individual and their father is a poor proxy for the contrast between their nutritional status in utero and after birth. This is because a father's occupational skill level is being used as a proxy for a mother's nutritional status during pregnancy and again there are a vast array of confounding variables which threaten this assumption.

Taking these severe limitations into account, it is remarkable that Table 12 shows any sign at all that upward mobility increased the likelihood of centralised obesity. The main conclusion should be that the impact of social mobility on centralised adiposity is a topic deserving of more attention. In the future, sophisticated definitions of upward mobility should be used which take into consideration an assortment of different variables and these should aim to directly account for a mother's social status as well as her husband's.

7.3. The Infant Mortality Rate in North Wales

Key to Barker's initial decision to analyse the fetal origin of body composition and health was the identification of a correlation between infant mortality rates in 1901-10 and rates of coronary heart disease in 1968-78⁷. Whereas inside leg length and hip circumference have been used as a proxy for development conditions in utero

⁷ Barker, D. J. P., *Mothers, Babies and Health in Later Life*, 2nd edn., (Edinburgh: Churchill Livingstone, 1998), pp. 4-5.

in the anthropometric analyses above, Barker used infant mortality rates, inferring that poorer fetal conditions would result in higher infant mortality. Assessing infant mortality rates therefore provides another route to build a case for the applicability of Barker's hypothesis to Morris & Son's customers.

In his early work, Barker specifically identified that North Wales displayed moderately high infant mortality rates in 1901-10, in the region of 120-140 deaths aged under one year per 1,000 births and he showed that this mapped to moderately high rates of coronary heart disease in North Wales in 1968-78⁸. After the highly industrial regions of the North West, North East, and South Wales, North Wales had amongst the highest infant mortality rates of Britain in the first decade of the twentieth century⁹.

These levels were similar to those pertaining half a century earlier. Morris & Son's customers were measured in the early 1890's and born between 1805 and 1882. The central portion of the distribution was born between 1844 and 1868. Therefore the *Thirty-Eighth Annual Report of the Registrar General* for 1875 provides a more accurate indication of the level of infant mortality experienced by Morris & Son's customers¹⁰. Calculations based on the figures in this report suggest that the rate of infant mortality in North Wales around the time Morris & Son's customers were born was about 129 per 1,000 births; rising to 144 per 1,000 births for males alone and 152 per 1,000 births for males in Merionethshire specifically¹¹. William Farr outlined that the average infant mortality rate for England and Wales at the time was 158 per 1,000 births, with a high in Leicester of 245¹². Fifty years later, the rest of Britain had moved on, but not North Wales.

⁸ Barker, D. J. P., *Mothers, Babies and Health in Later Life*, 2nd edn., (Edinburgh: Churchill Livingstone, 1998), pp. 4-5; Barker, D. J. P., 'Review: Childhood Causes of Adult Diseases', in Barker, D. J. P. (ed.), *Fetal and Infant Origins of Adult Disease*, (London: British Medical Journal, 1992), p. 103.

⁹ Barker, D. J. P., *Mothers, Babies and Health in Later Life*, 2nd edn., (Edinburgh: Churchill Livingstone, 1998), p. 4.

¹⁰ *Thirty-Eighth Annual Report of the Registrar General*, 1875, xxv.

¹¹ *Thirty-Eighth Annual Report of the Registrar General*, 1875, xxv, pp. 142-3.

¹² *Thirty-Eighth Annual Report of the Registrar General*, 1875, xxv, p. xl.

Once again, the reasons for this can only be speculated. Residents of North Wales were rural and isolated and therefore unlikely to have good access to healthcare during pregnancy, although they may have also enjoyed a healthier disease environment than urban areas. As a region primarily focused on agriculture and primary industry it might also be hypothesised that women were obliged to work late into their pregnancy and utilise energy in labour that could otherwise have gone to the fetus. Furthermore, in general, the region was poor and locals were likely to have experienced constant nutritional constraint. Using infant mortality as a proxy for fetal conditions instead of anthropometric markers points to a similar early life health jeopardy for Morris & Son's customers.

7.4. Fetal Deprivation, Morbidity and Mortality: Comparing Morris & Son's Customers to the American Military

So far plenty of evidence has been amalgamated to support the applicability of Barker's hypothesis to the Morris & Son's data, however one critical aspect of Barker's theory has yet to be discussed – the implications of fetal deprivation and a 'thrifty phenotype' for morbidity and mortality. This was ultimately what generated Barker's theory: the attempt to explain the distribution and thereby causes of high rates of cardiovascular disease in Britain¹⁴.

The importance of identifying the pathway between fetal deprivation and later life metabolic complications and centralised adiposity lies in the relationship between glucose intolerance, abdominal fat and health risks. In a historical context, the relationship is important in order to better understand the ways in which industrialisation processes can impact population health and mortality.

To examine the implications of high levels of centralised adiposity amongst Morris & Son customers, ideally their morbidity would be assessed. Analyses would

¹⁴ Robinson, R. J., 'Introduction', in Barker, D. J. P. (ed.), *Fetal and Infant Origins of Adult Disease*, (London: British Medical Journal, 1992), p. 1.

identify whether there was a relationship between a high waist-hip ratio and the incidence of chronic disease. Unfortunately it has not been economically feasible to link the tailors' customers to their cause of death, however this is something that Steckel and Costa have managed to achieve for their Union Army soldiers. By combining their anthropometric data with morbidity and mortality results for the same population groups, Costa and Steckel concluded:

A high waist-hip ratio is associated with an increased risk of heart disease and diabetes and is related to markers of maternal and fetal malnutrition¹⁵

More recently, Costa has confirmed that amongst the Union Army sample, '...waist-hip ratio is a good predictor of subsequent mortality'¹⁶.

The fact that Costa and Steckel have managed to identify the morbidity and mortality outcomes associated with waist-hip ratios in a historical population makes it useful to compare the measurements of Morris & Son and Henry Poole & Co. to their anthropometric data from American military recruits.

In general terms, the anthropometric data from the tailor's records, combined with the above evidence from primary contextual sources, highlights that Morris & Son's customers do provide a British population group which ratify the historical applicability of Barker's theory identified by Steckel and Costa¹⁷. Just as they found that Union Army soldiers had a larger waist-hip ratio than the more affluent World War Two soldiers of a century later, similarly, the above anthropometric analyses have identified that the lower social status Morris & Son customers had a bigger waist-hip ratio than the affluent elites attending Henry Poole & Co. For Costa and Steckel, these differences were identified despite the BMI of twentieth century soldiers being

¹⁵ Costa, D. L. and Steckel, R. H., 'Long-Term Trends in Health, Welfare, and Economic Growth in the United States', in Steckel, R. H. and Floud, R. (eds.), *Health and Welfare During Industrialisation*, (Chicago & London: University of Chicago Press, 1997), p. 78. Chronic disease data from Fogel, R. W., Costa, D. L. and Kim, J. M., 'Secular Trends in the Distribution of Chronic Conditions and Disabilities at Young Adult and Late Ages, 1860-1988: Some Preliminary Findings', unpublished manuscript, (1994).

¹⁶ Costa, D. L., 'The Measure of Man and Older Age Mortality: Evidence from the Gould Sample', *Journal of Economic History*, vol. 64, 1 (2004), p. 15.

¹⁷ Costa, D. L. and Steckel, R. H., 'Long-Term Trends in Health, Welfare, and Economic Growth in the United States', in Steckel, R. H. and Floud, R. (eds.), *Health and Welfare During Industrialisation*, (Chicago & London: University of Chicago Press, 1997), pp. 57-8; Costa, D. L., 'The Measure of Man and Older Age Mortality: Evidence from the Gould Sample', *Journal of Economic History*, vol. 64, 1 (2004), pp. 1-23.

greater than that of Union Army recruits. Within this research, it is the trends in waist circumference, hip circumference and inside leg measurements that contrast with those of waist-hip ratio.

If the results in Table 13 were to be believed, it would suggest that Morris & Son's customers had a waist-hip ratio that was roughly five to eight percent bigger than Union Army recruits, six to eleven percent bigger than World War Two soldiers and 1950 Air Force personnel, and five to ten percent bigger than members of the US Army in 1988. The sample sizes of Henry Poole & Co. customers aged under thirty-five are very small but they display a mean waist-hip ratio somewhere between that of the Union Army recruits and World War Two soldiers.

Table 13: Mean Waist-Hip Ratio of Morris & Son Customers Compared to American Military Recruits

	Morris & Son		Henry Poole & Co.		Union Army		World War II		1950 Flying Personnel	1988 U.S. Army
Age	WHR	n	WHR	n	WHR	n	WHR	n	WHR	WHR
16 - 20	0.913	36	0.826	1	0.849	992	0.820	33,305		0.830
21 - 25	0.920	35	0.843	14	0.855	1,540	0.833	20,869	0.825	0.847
26 - 30	0.909	25	0.860	9	0.863	709	0.850	21,121	0.848	0.860
31 - 35	0.912	31	0.821	17	0.865	347	0.862	8,053	0.861	0.873

Sources: Morris & Son 'Measure Book 1'; Henry Poole & Co 'Measure Book A'; England and Wales Census Records; Union Army data, 1950 Survey of Flying Personnel data and 1988 Anthropometric Survey of the US Army data for 'whites' in Costa, D. L., 'The Measure of Man and Older Age Mortality: Evidence from the Gould Sample', *Journal of Economic History*, vol. 64, 1 (2004), pp. 8-9; World War II data from Terry, R. B., Page, W. F. and Haskell, W. L., 'Waist/Hip Ratio, Body Mass Index and Premature Cardiovascular Disease Mortality in U.S. Army Veterans During a Twenty-Three Year Follow-Up Study', *International Journal of Obesity*, vol. 16, 6 (1992), p. 419.

There are grounds to expect Morris & Son's customers to have had a higher waist-hip ratio and lower health status than the Union Army recruits. Galton identified that the average height of white, native born, US conscripts in 1863-4 was 67.67 inches and this is relatively consistent with the mean height of Union Soldiers in

Costa's sample of 67.04 inches¹⁸. Alternative calculations of the height of Union Army recruits have placed them as tall as 68.54 inches¹⁹. During the second half of the nineteenth century Americans men were seemingly the tallest in the Western world²⁰.

In comparison, Galton calculated the mean height of the Welsh in the 1880s to have been 66.66 inches, the shortest in Britain²¹. The shorter heights achieved by the Welsh, despite being measured two decades later, suggests that their net nutritional status was consistently lower than that of Americans throughout the second half of the nineteenth century. This would explain why any postnatal improvement in the nutritional conditions of Morris & Son's customers may have had a greater metabolic impact than amongst the Union Army soldiers, giving them a greater tendency towards centralised adiposity.

Furthermore, Table 13 shows that the gap between Morris & Son and Union Army recruits' waist-hip ratios reduced with age. This implies that Morris & Son's customers had a greater degree of early life health jeopardy, but a steady net nutritional status after age sixteen, whereas Union Army soldiers experienced an improvement in their nutritional status from adolescence onwards.

The lower waist-hip ratios of Henry Poole & Co.'s customers, more akin to mid-twentieth century levels than their mid-nineteenth century contemporaries, also aligns with expectations. Henry Poole & Co.'s customers maintained a consistently adequate nutritional status throughout their development, as a fetus and after birth.

They were wealthier than either Morris & Son's customers or Union Army recruits and

¹⁸ Galton, F., 'Final Report of the Anthropometric Committee', *Report of the British Association for the Advancement of Science*, (1883), p. 268; Costa, D. L., 'The Measure of Man and Older Age Mortality: Evidence from the Gould Sample', *Journal of Economic History*, vol. 64, 1 (2004), p. 8.

¹⁹ A'Hearn, B., 'The Antebellum Puzzle Revisited: A New Look at the Physical Stature of Union Army Recruits During the Civil War', in Komlos, J. and Baten, J. (eds.), *The Biological Standard of Living in Comparative Perspective*, (Stuttgart: Franz Steiner Verlag, 1998), p. 263, as cited in Komlos, J. and Baur, M., 'From the Tallest to (One of) the Fattest: The Enigmatic Fate of the American Population in the 20th Century', *Economics and Human Biology*, vol. 2, 1 (2004), p. 59.

²⁰ Komlos, J. and Baur, M., 'From the Tallest to (One of) the Fattest: The Enigmatic Fate of the American Population in the 20th Century', *Economics and Human Biology*, vol. 2, 1 (2004), p. 59.

²¹ Galton, F., 'Final Report of the Anthropometric Committee', *Report of the British Association for the Advancement of Science*, (1883), p. 268.

were therefore capable of achieving a high standard of living which did not dispose them to centralised body fat in early adulthood.

However, the degree of contrast between Morris & Son's customers' waist-hip ratios and those of Union Army recruits does generate some skepticism concerning the validity of the direct comparisons in Table 13. It is not possible to be confident that the waists and hip circumferences taken by tailors were measured in the same place as by medical professionals. Morris & Son's customers' waist measurements appear to have been taken high, providing a smaller numerator and downward bias on their waist-hip ratio. However, tailors' hip measurements also seem likely to have been measured higher than the medical measurement of a hip around the widest circumference of the buttocks, upwardly biasing the waist-hip ratio. The precise overall effect of these countervailing forces is impossible to determine, however an upward bias may be more likely given the enormous contrast with other waist-hip ratio values for the second half of the nineteenth century.

To account for this, sensitivity analysis was conducted. After analysing the typical difference between a tailors' hip and seat measurement, the hip measurement of each of Morris & Son's customers was increased by two inches but their waist circumference was left unchanged and a new waist-hip ratio calculated. The results of this process are shown in Table 14.

The mean 'minimised' waist-hip ratios of Morris & Son's customers suggest that until the age of twenty-five, Morris & Son's customers' waist-hip ratios remain higher than those of the Union Army but by a smaller degree. By the age of twenty-six the waist-hip ratio of Morris & Son's customers and Union Army recruits become very similar. Morris & Son's customers' waist-hip ratio also remains higher than those of twentieth century American military recruits, except for US Army members aged 31 to 35 in 1988.

However, minimising Henry Poole & Co.'s customers' waist-hip ratios reduces them to an unrealistically small level, on a par with healthy to moderate risk levels for

modern women. There is little reason to believe that tailors measured the hip in different places and that the waist-hip ratio of Morris & Son and Henry Poole & Co. customers is not directly comparable. Therefore it may be that the original data in Table 13 provides a more accurate comparison of the waist-hip ratio of nineteenth century British and Americans – Morris & Son’s customers genuinely were much more disposed to central adiposity than even Union Army recruits.

Table 14: Minimised Mean Waist-Hip Ratio of Morris & Son Customers Compared to American Military Recruits

	Morris & Son		Henry Poole & Co.		Union Army		World War II		1950 Flying Personnel	1988 U.S. Army
Age	WHR	n	WHR	n	WHR	n	WHR	n	WHR	WHR
16 - 20	0.862	36	0.781	1	0.849	992	0.820	33,305		0.830
21 - 25	0.871	35	0.802	14	0.855	1,540	0.833	20,869	0.825	0.847
26 - 30	0.861	25	0.819	9	0.863	709	0.850	21,121	0.848	0.860
31 - 35	0.866	31	0.781	17	0.865	347	0.862	8,053	0.861	0.873

Sources: Morris & Son ‘Measure Book 1’; Henry Poole & Co ‘Measure Book A’; England and Wales Census Records; Union Army data, 1950 Survey of Flying Personnel data and 1988 Anthropometric Survey of the U.S. Army data for ‘whites’ in Costa, D. L., ‘The Measure of Man and Older Age Mortality: Evidence from the Gould Sample’, *Journal of Economic History*, vol. 64, 1 (2004), pp. 8-9; World War II data from Terry, R. B., Page, W. F. and Haskell, W. L., ‘Waist/Hip Ratio, Body Mass Index and Premature Cardiovascular Disease Mortality in U.S. Army Veterans During a Twenty-Three Year Follow-Up Study’, *International Journal of Obesity*, vol. 16, 6 (1992), p. 419.

The waist-hip ratios of Morris & Son’s customers align with the trends identified by Costa and Steckel that although men may have become taller and heavier since the second half of the nineteenth century, they now have less abdominal fat²². Given that central obesity measured by waist-hip ratio has been convincingly shown to be associated with: cardiovascular disease; cardiovascular

²² Costa, D. L. and Steckel, R. H., ‘Long-Term Trends in Health, Welfare, and Economic Growth in the United States’, in Steckel, R. H. and Floud, R. (eds.), *Health and Welfare During Industrialisation*, (Chicago & London: University of Chicago Press, 1997), p. 78; Costa, D. L., ‘The Measure of Man and Older Age Mortality: Evidence from the Gould Sample’, *Journal of Economic History*, vol. 64, 1 (2004), p. 18.

disease risk factors; type 2 diabetes; hypertension; cancer of the colorectum, pancreas, endometrium, kidney, breast (post-menopause) and gallbladder; and overall mortality²³, this suggests that the risk of death from chronic disease was higher for Morris & Son's customers than it is now. Inferring from the research of Fogel *et al.* also suggests that Morris & Son's customers may have begun to suffer from chronic diseases at much earlier ages than men today. Amongst Union Army recruits aged between 30 and 35, seven percent had circulatory diseases and another five percent had incapacitating musculoskeletal diseases²⁴.

Morris & Son's customers appear to have had similar waist-hip ratios to Union Army recruits, if not higher. This implies that they were likely to have experienced a similar rate of chronic disease. Costa has identified that:

Among Union Army veterans age 60 to 74 in 1910, more than one-third had difficulty walking, almost one-third had valvular heart disease, over half of them had arthritis, and more than one-third of them had adventitious sounds and decreased breath²⁵

She also found that heart disease accounted for thirty-eight percent of all deaths among Union Army veterans observed at ages 50 to 64 and followed over a seventeen-year period²⁶.

The strong likelihood that Morris & Son's customers experienced high levels of chronic disease, akin to those of Union Army veterans, completes the impression that, in accordance with Barker's hypothesis, Morris & Son's customers' fetal origins predestined them to debilitating adult diseases and greater mortality.

²³ World Health Organization (WHO), *Waist Circumference and Waist-Hip Ratio*, Report of a WHO Expert Consultation, Geneva 8-11 December 2008, (Geneva: World Health Organization, 2011), Table 4.1: Summary of the associations of body mass index, waist circumference, waist-hip ratio and waist-height ratio with disease risk, pp. 17-18.

²⁴ Fogel, R. W., Costa, D. L. and Kim, J. M., 'Secular Trends in the Distribution of Chronic Conditions and Disabilities at Young Adult and Late Ages, 1860-1988: Some Preliminary Findings', unpublished manuscript, (1994), as cited in Costa, D. L. and Steckel, R. H., 'Long-Term Trends in Health, Welfare, and Economic Growth in the United States', in Steckel, R. H. and Floud, R. (eds.), *Health and Welfare During Industrialisation*, (Chicago & London: University of Chicago Press, 1997), p. 59.

²⁵ Costa, D. L., 'Understanding the Twentieth Century Decline in Chronic Conditions Among Older Men', *Demography*, vol. 37, 1 (2000), pp. 53-71 and Costa, D. L., 'Changing Chronic Disease Rates and Long-Term Declines in Functional Limitation Among Older Men', *Demography*, vol. 39, 1 (2002), pp. 119-38, as cited in Costa, D. L., 'The Measure of Man and Older Age Mortality: Evidence from the Gould Sample', *Journal of Economic History*, vol. 64, 1 (2004), p. 1.

²⁶ Costa, D. L., 'Understanding Mid-Life and Older Age Mortality Declines: Evidence from Union Army Veterans', *Journal of Econometrics*, vol. 112, 1 (2003), pp. 175-92, as cited in Costa, D. L., 'The Measure of Man and Older Age Mortality: Evidence from the Gould Sample', *Journal of Economic History*, vol. 64, 1 (2004), p. 1.

7.5. Fetal Deprivation and Longevity

Although the cause of death of the tailors' customers is unknown, longevity data is available to assess the relationship between fetal deprivation and later life health jeopardy. Individuals at high risk of chronic diseases would be assumed to die at younger ages than those at lesser risk. There are many confounding factors that affect the age at which someone dies; however, investigating whether a relationship existed between centralised adiposity and longevity amongst Morris & Son's and Henry Poole & Co.'s customers helps to bolster the inferences made in the previous section that Morris & Son's customers fetal deprivation exacerbated later life health jeopardy.

The previous cross-sectional analyses identified that over the life span the cumulative effect of higher standards of living enjoyed by the wealthier Henry Poole & Co. customers enabled them to eventually gain larger waist-hip ratios than Morris & Son customers. To test whether waist-hip ratios determined by fetal conditions impacted longevity, rather than the cumulative effects of later life wealth, the sample was restricted to those measured aged under thirty-five.

The correlation results of Table 15 provide strong justification to argue that fetal deprivation, predisposing individuals to higher waist-hip ratios in early adult life, decreased longevity. Although no statistically significant relationship was found between any other anthropometric marker and longevity, amongst Morris & Son's customers increased waist-hip ratio was statistically, significantly, and negatively correlated with longevity: it shortened life. Furthermore, when the sample is restricted to those aged 21-35, removing the impact of juveniles, the strength of the negative correlation rises. This negative trend was not apparent for Henry Poole & Co. customers, amongst whom it has already been suggested that waist-hip ratio was not determined by fetal conditions (as these fully met nutritional needs) but rather later

lifestyle factors. And so the tailors' records illuminate how conditions at the start of life influence the timing of its end.

Table 15: Correlation Between Longevity and Central Adiposity Amongst Morris & Son and Henry Poole & Co. Customers Aged Under 35 and 21-35.

		Under 35			21-35
		WC	HC	WHR	WHR
Morris & Son	Age at Death	-0.008 (77)	0.106 (76)	-0.260** (76)	-0.350** (47)
Henry Poole & Co.		0.155 (39)	0.136 (37)	0.187 (37)	0.17 (30)

*** = significant at 1% level

** = significant at 5% level

* = significant at 10% level

n value in parentheses

Sources: Morris & Son 'Measure Book 1', Henry Poole & Co. 'Measure Book A', England and Wales Census Records; National Death Index; and National Probate Calendar.

7.6. Conclusion

Combining all the anthropometric and contextual evidence, it has been identified that Morris & Son's customers: had a high propensity towards central adiposity despite a small waist and hip circumference; they experienced an economic transition in Barmouth that was likely to have created a better nutritional environment after birth than in utero; the waist-hip ratio of Morris & Son's customers was similar to that of Union Army recruits who themselves experienced a high rate and early-onset of chronic disease; and greater central adiposity in early adulthood amongst Morris & Son's customers decreased their longevity.

From the above findings, the applicability of Barker's hypothesis can be justifiably inferred. Overall, there is reason to believe that fetal deprivation, evidenced by small hip circumferences amongst Morris & Son's customers, encouraged a 'thrifty phenotype'. After birth, nutritional conditions for Morris & Son's customers improved and their waist and hips grew but their thrifty metabolism was placed under stress. In

response to the overactivity of their pituitary-adrenal axis, the excess energy of Morris & Son's customers was located disproportionately centrally, around their waists. This glucose intolerance and central adiposity increased Morris & Son's customers' risk of chronic diseases, in particular cardiovascular disease, stroke and diabetes. Morris & Son's customers who had high levels of central adiposity in early adulthood had a shorter longevity. Fetal deprivation, combined with postnatal relative prosperity, likely jeopardised adult health. It certainly compromised life expectancy.

Despite the mass of evidence accumulated in support of Barker's hypothesis it should still be acknowledged that the leap from the results summarised in the first paragraph of this conclusion, to the theory outlined in the second paragraph does rely on an element of conjecture. There is the chance that confounding factors during the lifetime create a spurious relationship between the fetal origins of disease and later life morbidity and mortality.

However, Barker's theory has been tested in various ways using different population groups from different geographical areas and the results are all relative consistent²⁷. As already identified, the results of this historical research are also consistent with those of Costa and Steckel²⁸. The weight of aligned evidence, both in this research and beyond it, is sufficient to believe that Barker's hypothesis is a valid conjecture. Ultimately the hypothesis will always be difficult to test, especially historically, because the nature of individual fetal development cannot be fully known. However, the implications of the hypothesis are so important that it is worth trying to find more evidence to test its veracity.

By identifying that the economic transition in Barmouth created a disjuncture between fetal and postnatal nutritional conditions which increased Morris & Son's

²⁷ Robinson, R. J., 'Introduction', in Barker, D. J. P. (ed.), *Fetal and Infant Origins of Adult Disease*, (London: British Medical Journal, 1992), p. 17.

²⁸ Costa, D. L. and Steckel, R. H., 'Long-Term Trends in Health, Welfare, and Economic Growth in the United States', in Steckel, R. H. and Floud, R. (eds.), *Health and Welfare During Industrialisation*, (Chicago & London: University of Chicago Press, 1997), pp. 57-8; Costa, D. L., 'The Measure of Man and Older Age Mortality: Evidence from the Gould Sample', *Journal of Economic History*, vol. 64, 1 (2004), pp. 1-23.

customers' risk of central adiposity and chronic diseases, this emphasises that it is important to re-think commonly held notions that economic growth automatically benefits health. Rather, in agreement with Costa and Steckel, these findings establish:

...the importance of including health in our conceptual apparatus for the standard of living and suggests that the course of welfare in the middle of the nineteenth century diverged importantly from that indicated by per capita income alone²⁹

Wealth may well be a prerequisite of health, but the process of becoming wealthy was not unequivocally a healthy one. It could exacerbate unfavourable beginnings. Increasing standards of living and nutritional status reduced individuals' susceptibility to infectious disease and increased their ability to overcome infectious disease but it left them at increased risk of chronic disease.

This is why it is important to pursue a more nuanced assessment of the 'epidemiological transition', giving equal weight to explanations for increasing trends in chronic diseases and declining trends in infectious disease. To repeat an important conclusion of Costa:

Although infectious and parasitic diseases were highly visible in the past, the burden of "modern" chronic diseases was still there³⁰

As Costa criticises:

The study of the epidemiological transition is still dominated by Abdel Omran's classic essay in which he postulated that there are three successive stages to the epidemiological transition: the age of pestilence and famine, the age of receding pandemics, and the age of degenerative and man-made diseases³¹

Anthropometric evidence from Morris & Son and Henry Poole & Co. suggests that it is not appropriate to think of the process of epidemiological transition as any number of distinct stages. The relationship between disease environments was intertwined.

Degenerative chronic diseases have been present throughout history; they simply

²⁹ Costa, D. L. and Steckel, R. H., 'Long-Term Trends in Health, Welfare, and Economic Growth in the United States', in Steckel, R. H. and Floud, R. (eds.), *Health and Welfare During Industrialisation*, (Chicago & London: University of Chicago Press, 1997), p. 68.

³⁰ Costa, D. L., 'The Measure of Man and Older Age Mortality: Evidence from the Gould Sample', *Journal of Economic History*, vol. 64, 1 (2004), p. 18.

³¹ Omran, A. R., 'The Epidemiological Transition: A Theory of the Epidemiology of Population Change', *Milbank Memorial Fund Quarterly*, vol. 49, 4 (1971), pp. 509-38, as cited in Costa, D. L., 'The Measure of Man and Older Age Mortality: Evidence from the Gould Sample', *Journal of Economic History*, vol. 64, 1 (2004), p. 2.

became more apparent as the threat of infectious diseases waned, partly because individuals lived long enough to be afflicted with chronic diseases and partly because improvements in nutritional status, which helped to reduce infectious diseases mortality, simultaneously created an excessive metabolic burden.

The importance of this research lies in the persistence of ‘overlapping health transitions’ today³². As rates of chronic diseases have declined during the twentieth century in the Western world³³, they have increased in the developing world³⁴. In many of the currently industrialising ‘BRICS’ economies (an acronym for Brazil, Russia, India, China and South Africa) a ‘double-jeopardy’ has emerged with simultaneous threats from ‘old-world’ infectious diseases and ‘new-world’ chronic conditions imposing an enormous burden³⁵. In 2011, the Director-General of the World Health Organisation addressed the first meeting of BRICS health ministers and declared that she believed:

...the economic costs of [chronic] diseases [could] become so great that they cancel out the so-called benefits of modernization and economic growth³⁶

Analysing the health implications of industrialisation in Britain during the second half of the nineteenth century can impart lessons for these currently industrialising nations and help them to predict their future population and economic health burden. The evidence of the fetal origins of adult disease amongst Morris & Son’s customers highlights the importance of investing in maternal nutrition during industrialisation. By improving maternal health and reducing the contrast between fetal and postnatal nutritional environments it would appear that metabolic

³² Costa, D. L., ‘The Measure of Man and Older Age Mortality: Evidence from the Gould Sample’, *Journal of Economic History*, vol. 64, 1 (2004), p. 18. 05-21.

³³ Costa, D. L., ‘Understanding the Twentieth-Century Decline in Chronic Conditions among Older Men’, *Demography*, vol. 37, 1 (2000), pp. 53-72.

³⁴ Nugent, R., ‘Chronic Diseases in Developing Countries: Health and Economic Burdens’, *Annals of the New York Academy of Sciences*, vol. 1136 (2008), pp. 70-9.

³⁵ Osmani, S. and Sen, A., ‘The Hidden Penalties of Gender Inequality: Fetal Origins of Ill-Health’, *Economics and Human Biology*, vol. 1, 1 (2003), pp. 105-21.

³⁶ ‘WHO Director-General Addresses First Meeting of BRICS Health Minister’, *World Health Organisation*, accessed 24 February 2014, www.healthinternetwork.com/dg/speeches/2011/BRICS_20110711/en/

complications can be reduced and with it the long-term threat of obesity and chronic diseases.

It is appropriate that the 'fetal origins of adult disease' label has been replaced with the concept of the 'developmental origins of health and disease' because the future of currently industrialising countries depends not just on disease prevention but also on health promotion³⁷. Early health jeopardy does not mean that individuals are irresponsible to preventative measures in later life³⁸. Equally, later life factors can impose a greater health burden than fetal conditions.

It is this latter problem which forms the basis of Part III to follow. In his original work, Barker noted:

Ischaemic heart disease may...have two groups of causes: one acting through the mother or in infancy, which is associated with poor living standards; the other acting in adult life, which is associated with affluence³⁹

In Part II of this thesis the impact of poor in utero conditions of Morris & Son's customers have come under scrutiny; in the next, the effects of the affluence of Henry Poole & Co.'s customers is explored.

³⁷ Gluckman, P. D. and Hanson, M. A., 'The Developmental Origins of Health and Disease: An Overview', in Gluckman, P. and Hanson, M. (eds.), *Developmental Origins of Health and Disease*, (Cambridge: Cambridge University Press, 2006), p. 1.

³⁸ Robinson, R. J., 'Introduction', in Barker, D. J. P. (ed.), *Fetal and Infant Origins of Adult Disease*, (London: British Medical Journal, 1992), p. 17.

³⁹ Barker, D. J. P., 'Review: Childhood Causes of Adult Diseases', in Barker, D. J. P. (ed.), *Fetal and Infant Origins of Adult Disease*, (London: British Medical Journal, 1992), p. 105.

Part III: Waists, Hips and Later Life Health Risks

Part II of this thesis argued that high waist-hip ratios, especially in early adulthood, arose from a mismatch between fetal and early-life deprivation and subsequent improvements in nutritional access. Under-nutrition in utero had the capacity to compromise the body's development, stunting terminal height, narrowing hip width, reducing the quality and longevity of organs, and over-activating the adrenal reflex such that disadvantaged bodies were more prone to weight gain around the middle, especially if later exposed to conditions of greater abundance. In particular, waist-hip ratio *in childhood and early adulthood* served as a proxy for early-life health jeopardy.

In Part III this thesis moves to consider the impact of later-life nutritional status on health. Hips change little over adult lifetimes. Waists are considerably more flexible. Here, waists and waist-hip ratios are examined as measures of cumulative nutrition that in itself had the capacity to impact upon health risk: protecting against the threat of infection, but also posing an overweight, and moreover, obesity danger. The middle class customers of Morris & Son are juxtaposed with the upper class clients of Henry Poole & Co. in order to estimate their comparative risk of obesity-related morbidity and mortality. Thus we move from inherited risks to those obtained through opportunity and lifestyle choices.

As originally identified by Waaler and confirmed by analyses within both modern and historical populations since, weight has a curvilinear, U-shaped relationship with mortality risk¹. Health and longevity is jeopardised by both

¹ Waaler, H. T., *Height, Weight and Mortality: The Norwegian Experience*, (Oslo: Gruppe for Hestetjenesteforskning, 1984); Fogel, R., 'New Sources and New Techniques for the Study of Secular Trends in Nutritional Status, Health, Mortality, and the Process of Ageing', *Historical Methods*, vol. 26, 1

underweight and overweight nutritional status, either side of a wide, healthy range represented by a BMI between roughly 21 and 25. In accordance with the predominant modern public health concern, the analyses of this section are focused on the right-side of this distribution – the health repercussions of overweight and obesity.

In particular, the following analysis adopts the modern preference towards the use of epidemiological cut-off markers for obesity; that is, the identification of specific body measurements above which health risks are deemed to be substantially exacerbated. These cut-offs can be applied to our historical populations using waist and hip measurements, even though height and weight data are lacking.

In young adulthood Morris & Son's customers' deprived fetal origins predisposed them to a higher degree of central adiposity than Henry Poole & Co.'s customers, however the waist-hip ratio of Morris & Son's customers changed very little over the course of their lifetime. In contrast, Henry Poole & Co.'s customers began with a similar waist and a smaller waist-hip ratio but both of these increased over their lives, reaching a point in excess of those of Morris & Son's customers.

In light of these results the association between later life nutritional status, measured by girths, and the risk of morbidity and mortality has been examined amongst these contrasting samples of nineteenth century individuals. Questions are asked such as: what was the prevalence of overweight and obesity in the past? How did trends in overweight and obesity vary? Why did some people get fatter in nineteenth century Britain, whilst others did not? What impact did waists and weight gain have on health and longevity? What do these relationships tell us about optimum body shape in the past? And how does this affect our conceptualisation of the epidemiological transition?

(1993), pp. 5-43; Costa, D. L., 'Height, Weight, Wartime Stress, and Older Age Mortality: Evidence from the Union Army Records', *Explorations in Economic History*, vol. 30, 4 (1993), pp. 424-49; Linares, C. and Su, D., 'Body Mass Index and Health Among Union Army Veterans: 1891-1905', *Economics and Human Biology*, vol. 3, 3 (2005), pp. 367-87.

To answer these questions, Part III is divided into three chapters: Chapter 8 outlines the modern epidemiological cut-off markers used to define overweight and obesity and explains their rationale. The applicability of modern markers of disease risk to historical populations is then discussed within the framework of the existing debate surrounding historical body mass and height optima. With this contextual backdrop in mind, the proportion of Morris & Son and Henry Poole & Co. customers that may have been at risk of obesity-related chronic diseases is outlined. Trends in waist circumference and waist-hip ratio by age are revealed and longitudinal trends in girths are displayed. Chapter 9 discusses the causes of larger waists and waist-hip ratios in nineteenth century Britain, using multivariate regression analysis to elucidate lifestyle factors correlated to centralised adiposity. In particular the impact of wealth, occupation, occupational status and address are examined. Lastly, Chapter 10 reveals the impact of later-life obesity on longevity and provides new data from girths to contribute to existing debates surrounding historical body size optima. The ability of cumulative excess nutrition to simultaneously protect against infectious disease and pose chronic disease risk is assessed in relation to our conceptualisation of the epidemiological transition.

Chapter 8. Prevalence and Trends in Adult Obesity in Nineteenth Century Britain

8.1. Defining Overweight and Obesity

The ability to store excess energy as body fat has been a fundamental component of human evolution¹. As Wells explains, 'energy reserves have played a key role in buffering biological functions from fluctuations in energy supply' and 'they contribute to the regulation of these functions'². Modern cultural stigmatisms of fat as inherently bad, which have been found to develop from childhood³, ignore the role of adiposity as a 'critical dynamic component of biology', especially important for the function of the energy-demanding human brain⁴.

The problem of overweight and obesity only emerges because, 'energy is stored to be used, and humans experience high metabolic costs when they maintain large adipose tissue depots for long time periods'⁵. Thus obesity is defined in its simplest form as a condition of abnormal or excessive fat accumulation in adipose tissue, to the extent that health may be impaired⁶. As previously outlined, the health consequences of obesity are many and varied, ranging from an increased risk of

¹ Wells, J. C. K., *The Evolutionary Biology of Human Body Fatness: Thrift and Control*, (Cambridge: Cambridge University Press, 2010), p. 270.

² Wells, J. C. K., *The Evolutionary Biology of Human Body Fatness: Thrift and Control*, (Cambridge: Cambridge University Press, 2010), p. 270.

³ Cramer, P. and Steinwert, T., 'Thin is Good, Fat is Bad: How Early Does it Begin?', *Journal of Applied Developmental Psychology*, vol. 19, 3 (1998), pp. 429-51.

⁴ Wells, J. C. K., *The Evolutionary Biology of Human Body Fatness: Thrift and Control*, (Cambridge: Cambridge University Press, 2010), p. 270.

⁵ Wells, J. C. K., *The Evolutionary Biology of Human Body Fatness: Thrift and Control*, (Cambridge: Cambridge University Press, 2010), p. 271.

⁶ Garrow, J. S., *Obesity and Related Diseases*, (London: Churchill Livingstone, 1988), pp. 1-16, as cited in World Health Organisation, *Obesity: Preventing and Managing the Global Epidemic: Report of a WHO Consultation*, (Geneva: World Health Organisation, 2000), p. 6.

premature death to several non-fatal but debilitating complaints that have an adverse effect on quality of life⁷.

The relationship between overweight and associated co-morbidities is continuous and exponentially graded above a BMI of roughly 25 kg/m², with some risks from increasing BMI felt before this⁸. Epidemiologists and policy makers have determined relatively arbitrary cut-off points on this relationship axis to define overweight, obesity and morbid obesity for the sake of: making meaningful comparisons of weight status within and between populations; identifying individuals and groups at increased risk of morbidity and mortality; prioritising intervention at individual and community levels; and evaluating the success of intervention strategies⁹.

Due to the continuous nature of the relationship between weight and health risk, the basis and method for selecting cut-off points is contested and has generated a large epidemiological literature to inform policy. BMI, as a simple index of weight-for-height which is widely available in clinical and population health surveys, is the most commonly used means to classify adult weight status. Action levels for 'overweight' and 'obese' are defined as 25 and 30 kg/m² respectively, whilst levels in excess of 40 kg/m² carry the label 'morbidly obese'¹⁰.

However, action levels based on BMI have been criticised because the index fails to distinguish between weight associated with muscle and that associated with fat. This can lead to body-builders appearing to be morbidly obese. Furthermore, abdominal fat can vary greatly within a narrow range of BMI and intra-abdominal fat depots place individuals at particular risk of the adverse health consequences

⁷ World Health Organisation, *Obesity: Preventing and Managing the Global Epidemic: Report of a WHO Consultation*, (Geneva: World Health Organisation, 2000), p. 39.

⁸ World Health Organisation, *Obesity: Preventing and Managing the Global Epidemic: Report of a WHO Consultation*, (Geneva: World Health Organisation, 2000), p. 9.

⁹ World Health Organisation, *Obesity: Preventing and Managing the Global Epidemic: Report of a WHO Consultation*, (Geneva: World Health Organisation, 2000), p. 7.

¹⁰ World Health Organisation, *Waist Circumference and Waist-Hip Ratio: Report of a WHO Expert Consultation*, (Geneva: World Health Organisation, 2008), p. 20.

associated with obesity¹¹. The distribution of fat is an important factor, not just its overall extent. These concerns generated a 'WHO Expert Consultation on Waist Circumference and Waist-Hip Ratio' in December 2008, which concluded that waist circumference and waist-hip ratio are predictive of chronic disease risk and cut-off points based on waist circumference and waist-hip ratio are valuable as an alternative or supplement to BMI action levels¹².

The NHS has adopted the WHO recommendations that metabolic complications are 'increased' amongst men with WC $\geq$ 94 centimetres (37 inches) and women with WC $\geq$ 80 centimetres (31.5 inches) but 'substantially increased' amongst men with WC $\geq$ 102 centimetres and women with WC $\geq$ 88 centimetres¹³. These guidelines formed the basis of a Diabetes UK campaign initiated in 2006, which persuaded more than 150,000 people at risk of diabetes to get tested for the condition¹⁴. WHO has also highlighted that a WHR $>$ 0.9 in men or WHR $>$ 0.85 in women is also indicative of abdominal fat¹⁵.

These institutional waist circumference and waist-hip ratio cut-off makers should be interpreted as crude, population-level measures of obesity. Although they help to estimate the prevalence of obesity within a population and to identify individuals at increased risk of morbidity and mortality due to abdominal fat accumulation, they do not account for the wide variation in obesity between different individuals and populations. For example, although the relationship between waist

¹¹ World Health Organisation, *Obesity: Preventing and Managing the Global Epidemic: Report of a WHO Consultation*, (Geneva: World Health Organisation, 2000), p. 7; World Health Organisation, *Waist Circumference and Waist-Hip Ratio: Report of a WHO Expert Consultation*, (Geneva: World Health Organisation, 2008), p. 1.

¹² World Health Organization (WHO), *Waist Circumference and Waist-Hip Ratio*, Report of a WHO Expert Consultation, Geneva 8-11 December 2008, (Geneva: World Health Organization, 2011), p. 24.

¹³ World Health Organization (WHO), *Obesity: Preventing and Managing the Global Epidemic*, Report of a WHO Consultation, Geneva 3-5 June 1997, (Geneva: World Health Organization, 2000), pp. 10-11; 'Why is my Waist Size Important?', *NHS Choices*, accessed 31 January 2014, <http://www.nhs.uk/chq/pages/849.aspx?categoryid=51&subcategoryId=165>

¹⁴ Diabetes UK, *Measure Up Campaign Evaluation: Executive Summary, 11 September – 2 October 2006*, (London: Diabetes UK, 2006), p. 2.

¹⁵ World Health Organisation, *Definition, Diagnosis and Classification of Diabetes Mellitus and its Complications*, Report of a WHO Consultation, Part 1: Diagnosis and Classification of Diabetes Mellitus, (Geneva: World Health Organisation, 1999), p. 33; World Health Organisation, *Waist Circumference and Waist-Hip Ratio: Report of a WHO Expert Consultation*, (Geneva: World Health Organisation, 2008), p. 27.

circumference or waist-hip ratio and disease outcomes is thought to be currently similar within all Caucasian populations there are some systematic differences between population groups, particularly based on ethnicity¹⁶.

Specifically, Asian populations and those of Asian ancestry appear to have elevated health risks at lower measurements of BMI or waist circumference; conversely, Pacific Islanders require higher cut-off markers to define overweight and obesity¹⁷. Compared with Caucasian populations, Asians appear to have more centralised and total adipose tissue at equivalent measurements of BMI, whereas Pacific Islanders carry a higher degree of muscle mass¹⁸. Social policy makers and epidemiologists have not examined whether differences in height mediate these ethnically distinct relationships but they have proposed ethnically specific cut-off markers¹⁹.

Differences in fat composition and distribution also occur with age, resulting in an increase in both waist circumference and waist-hip ratio as men and women get

¹⁶ Qiao, Q. and Nyamdorj, R., 'The Optimal Cutoff Values and Their Performance of Waist Circumference and Waist-to-Hip Ratio for Diagnosing Type II Diabetes', *European Journal of Clinical Nutrition*, vol. 64, 1, (2010), pp. 23-9; and World Health Organization (WHO), *Waist Circumference and Waist-Hip Ratio*, Report of a WHO Expert Consultation, Geneva 8-11 December 2008, (Geneva: World Health Organization, 2011), pp. 14-15.

¹⁷ World Health Organization (WHO) Western Pacific Region, *The Asia-Pacific Perspective: Redefining Obesity and its Treatment*, (Sydney: Health Communications, 2000), p. 18, accessed 6 January 2013, www.wpro.who.int/nutrition/documents/Redefining_obesity/en/index.html; Seidell, J. C., Kahn, H. S., Williamson, D. F., Lissner, L., and Valdez, R., 'Report from a Centers for Disease Control and Prevention Workshop on Use of Adult Anthropometry for Public Health and Primary Health Care', *American Journal of Clinical Nutrition*, vol. 73 (2001), p. 126; Stevens, J., Katz, E. G., and Huxley, R. R., 'Review: Associations Between Gender, Age and Waist Circumference', *European Journal of Clinical Nutrition*, vol. 64 (2010), p. 10; World Health Organization (WHO), *Waist Circumference and Waist-Hip Ratio*, Report of a WHO Expert Consultation, Geneva 8-11 December 2008, (Geneva: World Health Organization, 2011), p. 10; and Huxley, R., James, W. P. T., Barzi, F., Patel, J. V., Lear, S. A., Suriyawongpaisal, P., Janus, E., Caterson, I., Zimmet, P., Prabhakaran, D., Reddy, S., and Woodward, M., Obesity in Asia Collaboration, 'Ethnic Comparisons of the Cross-Sectional Relationships Between Measures of Body Size with Diabetes and Hypertension', *Obesity Review*, vol. 9, Suppl. 1 (2008), pp. 53-61.

¹⁸ World Health Organization (WHO) Western Pacific Region, *The Asia-Pacific Perspective: Redefining Obesity and its Treatment*, (Sydney: Health Communications, 2000), p. 18, accessed 6 January 2013, www.wpro.who.int/nutrition/documents/Redefining_obesity/en/index.html; Lear, S. A., Humphries, K. H., Kohli, S., and Laird Birmingham, C., 'The Use of BMI and Waist Circumference as Surrogates of Body Fat Differs by Ethnicity', *Obesity*, vol. 15, 11 (2007), pp. 2817-24; Huxley, R., Mendis, S., Zheleznyakov, E., Reddy, S., and Chan, J., 'Body Mass Index, Waist Circumference and Waist:Hip Ratio as Predictors of Cardiovascular Risk – A Review of the Literature', *European Journal of Clinical Nutrition*, vol. 64, 1 (2010), p. 21; Kagawa, M., Binns, C. W., and Hills, A. P., 'Body Composition and Anthropometry in Japanese and Australian Caucasian Males and Japanese Females', *Asia Pacific Journal of Clinical Nutrition*, vol. 16, Suppl. 1 (2007), pp. 31-6.

¹⁹ World Health Organization (WHO) Western Pacific Region, *The Asia-Pacific Perspective: Redefining Obesity and its Treatment*, (Sydney: Health Communications, 2000), p. 20, accessed 6 January 2013, www.wpro.who.int/nutrition/documents/Redefining_obesity/en/index.html

older²⁰. This is a biological process, related to dysfunction in preadipocyte cell dynamics with ageing²¹. However, the redistribution of fat from subcutaneous to visceral depots, which occurs from late middle age until the early 80s, does not require age-specific cut-off markers because it is associated with a correlate increased risk of metabolic complications and chronic disease. In other words, excess centralised adiposity poses a health threat at whatever age it occurs and by whatever means, whether biologically or as a function of lifestyle factors.

In this chapter WHO cut off markers for waist circumference and waist-hip ratio are used to assess the proportion of Morris & Son and Henry Poole & Co. customers that could be labelled as overweight and obese. Age and longitudinal data are used to examine the trends in these proportions. All of the customers of Morris & Son and Henry Poole & Co. that have been sampled from 'Measure Book 1' and 'Measure Book A' respectively, are assumed to be Caucasian and known to be male. Amongst men the cut-off used for 'overweight' and at increased health risk is a waist measurement of 37-40 inches ($94 \leq WC < 102$ centimetres), and over 40 inches ($WC \geq 102$ centimetres) is defined as 'obese' with substantially increased health risk. A $WHR > 0.9$ in men is indicative of abdominal fat in excess of safe levels.

8.2. Historical Body Size Optima

The acknowledgement that crude cut-off markers defining overweight and obesity fail to account for population differences in the relative risk of disease raises concern regarding the applicability of modern cut-off markers to historical populations. The use of modern WHO cut-off points within historical research relies on the assumption that the relationships between waist circumference, waist-hip ratio and

²⁰ Ford, E. S., Mokdad, A. H., and Giles, W. H., 'Trends in Waist Circumference among U.S. Adults', *Obesity Research*, vol. 11, 10 (2003), pp. 1223-31.

²¹ Cartwright, M. J., Tchkonina, T., and Kirkland, J. L., 'Aging in Adipocytes: Potential Impact of Inherent Depot-Specific Mechanisms', *Experimental Gerontology*, vol. 42, 6 (2007), pp. 463-71.

disease outcomes have remained consistent over time. This is a concern that WHO themselves have raised, stating:

The question of how to cope with transitions in disease risk also needs to be addressed. Associations of waist circumference or waist-hip ratio with risk factors and diseases may change over time in populations in which incidence of obesity-related diseases is increasing in association with social and economic transitions²²

The relationship between body mass and health risk is necessarily tempered by the causes of death in any given society. Body mass and associated indicators are only relevant when the causes of morbidity and mortality are related to under- or over-nutrition: if everyone dies in car crashes, body size is irrelevant. Arguably, the more that other causes of death are tamed, the greater the proportion of deaths caused by factors relating to body size will be. It is important to recognise that in the past, the role of body size – especially at the top end, of being overweight or obese – is likely to have been proportionally less than today.

However, there is a contrary argument. The evidence of the previous chapter, and that of Costa and Steckel and Su, suggest that as standards of living and net nutritional status have improved, metabolic imbalance between fetal and postnatal conditions has reduced, resulting in larger individuals with less tendency towards central adiposity²³. Su acknowledges that this may explain why longitudinal data from recent cohorts has identified that although early life is important in explaining health or mortality differentials in later life, adjusting for adult or current socioeconomic status substantially mitigates or even eliminates the effects of risk exposure in early life²⁴.

²² World Health Organization (WHO), *Waist Circumference and Waist-Hip Ratio*, Report of a WHO Expert Consultation, Geneva 8-11 December 2008, (Geneva: World Health Organization, 2011), p. 25.

²³ Costa, D. L. and Steckel, R. H., 'Long-Term Trends in Health, Welfare, and Economic Growth in the United States', in Steckel, R. H. and Floud, R. (eds.), *Health and Welfare During Industrialisation*, (Chicago & London: University of Chicago Press, 1997), pp. 57-9; Costa, D. L., 'The Measure of Man and Older Age Mortality: Evidence from the Gould Sample', *Journal of Economic History*, vol. 64, 1 (2004), pp. 1-23; Su, D., 'Risk Exposure in Early Life and Mortality at Older Ages: Evidence from Union Army Veterans', *Population and Development Review*, vol. 33, 2 (2009), pp. 275-95.

²⁴ Su, D., 'Risk Exposure in Early Life and Mortality at Older Ages: Evidence from Union Army Veterans', *Population and Development Review*, vol. 33, 2 (2009), p. 287.

The importance of early-life exposure to mortality disparity in later life has declined over time²⁵.

Earlier historical populations were smaller with greater potential central adiposity: they were at risk because they were short²⁶, and they were at risk when conditions improved enough that they gained weight around their middles. There may therefore be an association between short stature, higher waist-hip ratio, and greater health risk that complicates the simple equation between waistlines and lifelines.

The question of whether there are height and body mass optima, relative to lifespan, which do not vary across time or space, has occupied anthropometric historians since Waaler first published his data displaying a curvilinear relationship between height, BMI and mortality²⁷. Waaler's data from 1.7 million Norwegians screened between 1963 and 1975 displayed a backward-J relationship between height and mortality, with shorter individuals much more likely to die than taller ones, with the exception of the very tall, (above 185 cm in men and 170 cm in women)²⁸. A U-shaped relationship was more apparent between BMI and mortality risk, with a BMI within the range of 22-28 carrying a low relative risk of mortality in comparison to high rates of mortality either side of this range²⁹.

As one of the first historians to examine the historical applicability of Waaler's curves, Fogel identified that the relative risk of rejection from the Union Army during 1861-65 due to chronic diseases showed a remarkably similar relationship to height as that which Waaler had identified for overall mortality. He concluded that the

²⁵ Su, D., 'Risk Exposure in Early Life and Mortality at Older Ages: Evidence from Union Army Veterans', *Population and Development Review*, vol. 33, 2 (2009), p. 288.

²⁶ Waaler, H. T., *Height, Weight and Mortality: The Norwegian Experience*, (Oslo: Gruppe for Hestetjenesteforskning, 1984); Fogel, R., 'New Sources and New Techniques for the Study of Secular Trends in Nutritional Status, Health, Mortality, and the Process of Ageing', *Historical Methods*, vol. 26, 1 (1993), pp. 5-43.

²⁷ Waaler, H. T., *Height, Weight and Mortality: The Norwegian Experience*, (Oslo: Gruppe for Hestetjenesteforskning, 1984).

²⁸ Waaler, H. T., *Height, Weight and Mortality: The Norwegian Experience*, (Oslo: Gruppe for Hestetjenesteforskning, 1984), as cited in Cuff, T., 'The Body Mass Index Values of Mid-Nineteenth-Century West Point Cadets: A Theoretical Application of Waaler's Curves to a Historical Population', *Historical Methods*, vol. 26, 4 (1993), p. 172.

²⁹ Waaler, H. T., *Height, Weight and Mortality: The Norwegian Experience*, (Oslo: Gruppe for Hestetjenesteforskning, 1984), as cited in Fogel, R., 'New Sources and New Techniques for the Study of Secular Trends in Nutritional Status, Health, Mortality, and the Process of Ageing', *Historical Methods*, vol. 26, 1 (1993), p. 14.

similarity of the two risk curves, despite differences in socioeconomic circumstances, suggested, 'that the relative risk of morbidity and mortality depends not on the deviation of height from the current mean but from an ideal mean'³⁰.

In the same year, Costa highlighted the similarity of the relationship of BMI to mortality amongst a small sample of 377 Union Army veterans linked to their pension records and Waaler's data³¹. Although her data revealed more of a V-shaped relationship, rather than the broad-based U-shaped relationship of Waaler's data, she used its rough similarity to argue that, 'height and weight standards based on the experience of the industrial countries can be applied both to past populations and to the developing countries'³². In later work co-authored with Steckel, a larger sample of Union Army veterans provided the more typical U-shaped relationship between BMI and relative risk of mortality with a relatively low risk level between a BMI of 22 and 28³³.

Since these early explorations into the applicability of Waaler's curves to historical populations, Linares and Su have utilised a much larger sample of Union Army veterans, linked to their morbidity and mortality outcomes by surgeon's certificates for pensions. Their results show that the historical relationship between BMI and disability, specific disease morbidity, and overall mortality all display a U-shaped relationship akin to that originally identified by Waaler³⁴.

The results of these studies imply that overweight was a health threat to historical populations at similar levels of body size as amongst modern cohorts. In particular, evidence consistently shows an upward risk of mortality above a BMI of 25, which becomes much steeper above a BMI of 30, and these points align with modern

³⁰ Fogel, R., 'New Sources and New Techniques for the Study of Secular Trends in Nutritional Status, Health, Mortality, and the Process of Ageing', *Historical Methods*, vol. 26, 1 (1993), p. 14.

³¹ Costa, D. L., 'Height, Weight, Wartime Stress, and Older Age Mortality: Evidence from the Union Army Records', *Explorations in Economic History*, vol. 30, 4 (1993), p. 442.

³² Costa, D. L., 'Height, Weight, Wartime Stress, and Older Age Mortality: Evidence from the Union Army Records', *Explorations in Economic History*, vol. 30, 4 (1993), p. 444.

³³ Costa, D. L. and Steckel, R. H., 'Long-Term Trends in Health, Welfare, and Economic Growth in the United States', in Steckel, R. H. and Floud, R. (eds.), *Health and Welfare During Industrialization*, (Chicago & London: University of Chicago Press, 1997), p. 54.

³⁴ Linares, C. and Su, D., 'Body Mass Index and Health Among Union Army Veterans: 1891-1905', *Economics and Human Biology*, vol. 3, 3 (2005), pp. 367-87.

WHO cut-off markers for 'overweight' and 'obesity' risk, respectively. Specifically, Linares and Su show that the odds of acquiring cardiovascular disease rose exponentially from a BMI of 25 amongst their Union Army veterans, highlighting a similar threat from obesity-related disease as occurs currently. Furthermore, they identify that rheumatism and musculoskeletal conditions maintained a linear relationship with BMI in the past, which accords with the emphasis of WHO that some threats from increasing BMI begin below their recommended cut-offs³⁵.

However, Linares and Su also show that the sum of Union Army veterans' disabilities listed by physicians for the Pension Bureau and providing a proxy for overall health, were minimised at a BMI of 27³⁶. This suggests an optimal BMI in the past at a level that would now be labelled as 'overweight'. Fogel introduced the idea that larger body masses may have been healthier in the past during his early examination of Waaler's data. To identify whether individuals could be short but healthy, Fogel related the risk of death to both height and weight simultaneously creating two-dimensional iso-mortality curves which can be presented in a three-dimensional diagram known as a 'Waaler surface'³⁷. This revealed that shorter people required a higher BMI than taller people in order to minimise their mortality risk. Ideal body mass is height dependent. Shorter historical populations appear likely to have required a larger BMI in adulthood to compensate for their weakened biological function determined during development and evidenced by stunting³⁸.

³⁵ Linares, C. and Su, D., 'Body Mass Index and Health Among Union Army Veterans: 1891-1905', *Economics and Human Biology*, vol. 3, 3 (2005), pp. 367-87; World Health Organization (WHO), *Obesity: Preventing and Managing the Global Epidemic*, Report of a WHO Consultation, Geneva 3-5 June 1997, (Geneva: World Health Organization, 2000), p. 9.

³⁶ Linares, C. and Su, D., 'Body Mass Index and Health Among Union Army Veterans: 1891-1905', *Economics and Human Biology*, vol. 3, 3 (2005), p. 376.

³⁷ Fogel, R., 'New Sources and New Techniques for the Study of Secular Trends in Nutritional Status, Health, Mortality, and the Process of Ageing', *Historical Methods*, vol. 26, 1 (1993), p. 17; Fogel, R. W., *The Escape from Hunger and Premature Death, 1700-2100*, (Cambridge: Cambridge University Press, 2004), p. viii.

³⁸ Some alternative theories have been proffered that as mean BMI at population level increases, the optimal BMI for survival chances also increases, however the evidence is based on marginal differences amidst remarkably similar relative trends: Henderson, R. M., 'The Bigger the Healthier: Are the Limits of BMI Risk Changing Over Time?', *Economics and Human Biology*, vol. 3, 3, (2005), pp. 339-366; Su, D., 'Body Mass Index and Old-Age Survival: A Comparative Study Between the Union Army Records and the

Contradictory analyses have been proffered which suggest that optimal BMI for old-age survival has shifted upward between the late nineteenth century and the last quarter of the twentieth century³⁹. These propose that as average BMI levels in a population have increased, so has optimal BMI. However, these analyses ignore the disparate nutritional and disease environment between historical and modern populations, which explain contrasting levels of absolute mortality. The differences in optimal BMI that are highlighted are based on pinpointing very specific optimal BMI levels, rather than a broad healthy range. Furthermore, they acknowledge that in relative terms optimal BMI has remained remarkably stable.

As Cuff emphasised when evaluating this literature early-on:

...contemporary nutritionists in the industrialized nations make their recommendations within the context of a public health and sanitation climate much improved over the one prevalent in mid-to-late nineteenth-century Britain...It may not be justified to assume that current dietary standards were optimal for an era in which the ability to fight off infection, outlasting it because the body was sufficiently well nourished to do so, was critical to survival⁴⁰

It is possible that the modern WHO cut-off points used in the following analysis identify the proportion of Morris & Son & Henry Poole & Co. customers at threat of metabolic complications and chronic disease, based on their central adiposity, but may also identify those with some degree of health protection, with a waistline that compensated for historical short stature and perilous infectious disease regimes.

This will be examined further in Chapter 10 when the relationship between tailors' customers' girths and their longevity will be explored. Currently, research using height and BMI data has represented all sides of the debate, suggesting that in the past body size optima were: the same as they are currently, that bigger was better, or that smaller was optimal. In Chapter 10 the tailors' records will be used to

NHANES-I Epidemiological Follow-Up Sample', *American Journal of Human Biology*, vol. 17, 3 (2005), pp. 341-54.

³⁹ Henderson, R. M., 'The Bigger the Healthier: Are the Limits of BMI Risk Changing Over Time?', *Economics and Human Biology*, vol. 3, 3, (2005), pp. 339-366; Su, D., 'Body Mass Index and Old-Age Survival: A Comparative Study Between the Union Army Records and the NHANES-I Epidemiological Follow-Up Sample', *American Journal of Human Biology*, vol. 17, 3 (2005), pp. 341-54.

⁴⁰ Cuff, T., 'The Body Mass Index Values of Mid-Nineteenth-Century West Point Cadets: A Theoretical Application of Waaler's Curves to a Historical Population', *Historical Methods*, vol. 26, 4 (1993), p. 175.

contribute to this debate and re-examine optimal body shape in the past based on new anthropometric evidence from waists and hips.

For now, as in the work of WHO and other institutions, it remains useful to determine markers of overweight and obesity, whilst acknowledging concerns regarding their applicability to different populations. Again, the comparability of historical tailors' measurements and modern epidemiological results is confounded by the inconsistency of their measurement technique.

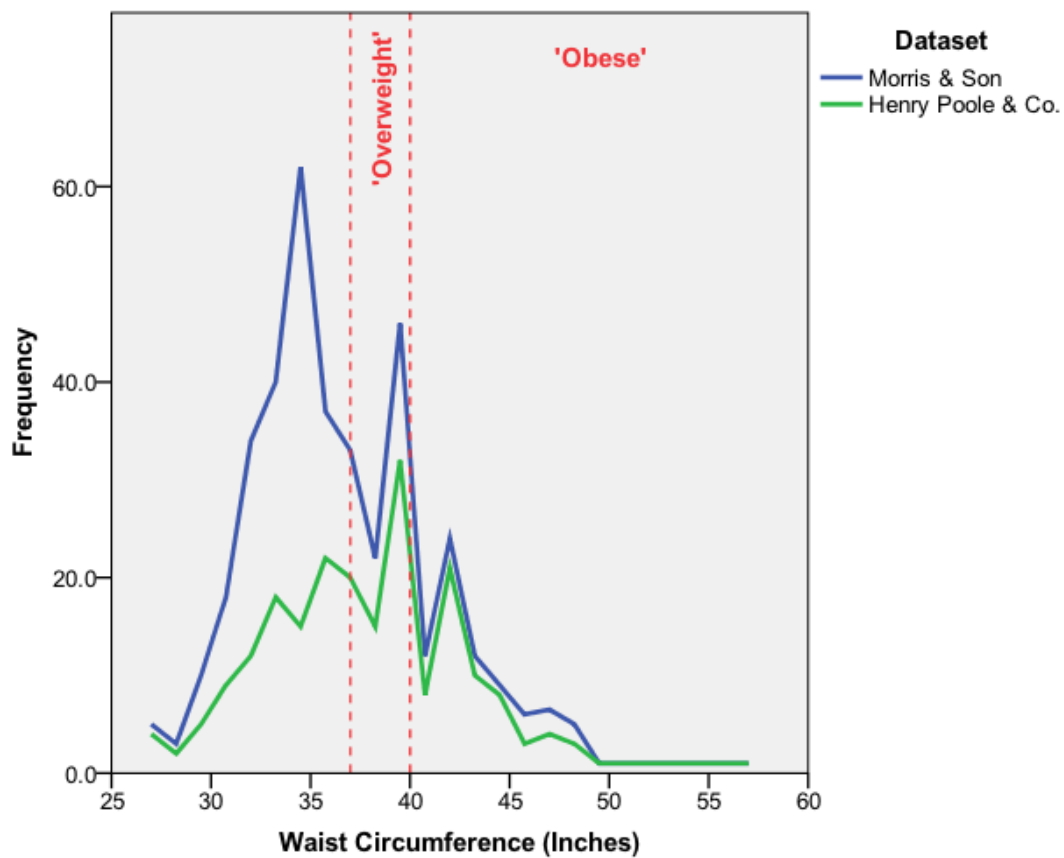
As discussed at length in Chapter 5, there can be no certainty regarding the position of the tailors' measurements. It seems likely, however, that whilst trouser waist measurements were taken at a similar position to modern health research, trouser hip measurements were positioned higher and were therefore smaller. On this basis, it would seem that tailors' waist circumference measurements were relatively comparable to modern markers, whilst waist-hip ratio calculations perhaps overstate the central adiposity of the tailors' customers. Again, to allow for this, sensitivity analysis has been conducted whereby the hip circumference measurements of the tailors' customers have been increased by two inches and used to calculate new 'minimised' waist-hip ratios to compare with WHO guidelines. Tailors' measurements were also taken over clothing. Although some modern epidemiological measurements are also taken over clothing and tailors' trouser measurements do not appear to have been taken over coats or vests, nonetheless, to account for this the impact of reducing tailors' waist circumference measurements by an inch has also been examined in separate sensitivity analyses.

8.3. Obesity in Nineteenth Century Britain

A cross-sectional analysis of the waist circumferences of adult male customers of Morris & Son and Henry Poole & Co. placing orders between 1840 and 1904 identifies at first glance that obesity and overweight were nineteenth century issues. Figure 29 shows that the distribution of adult waist circumference measurements

amongst the tailor’s customers was roughly bell-shaped, ranging from 27.5 inches to 48.5 inches for Morris & Son’s customers and between 27 inches and 57 inches amongst Henry Poole & Co.’s customers. Morris & Son’s customers had a mean waist circumference of 35.2 inches (SD = 3.67), whereas Henry Poole & Co.’s customers had a mean waist circumference of 37.8 inches (SD = 5.10).

Figure 29: Frequency Diagram Displaying Waist Circumference Measurements of Morris & Son and Henry Poole & Co. Customers Aged Over 25.



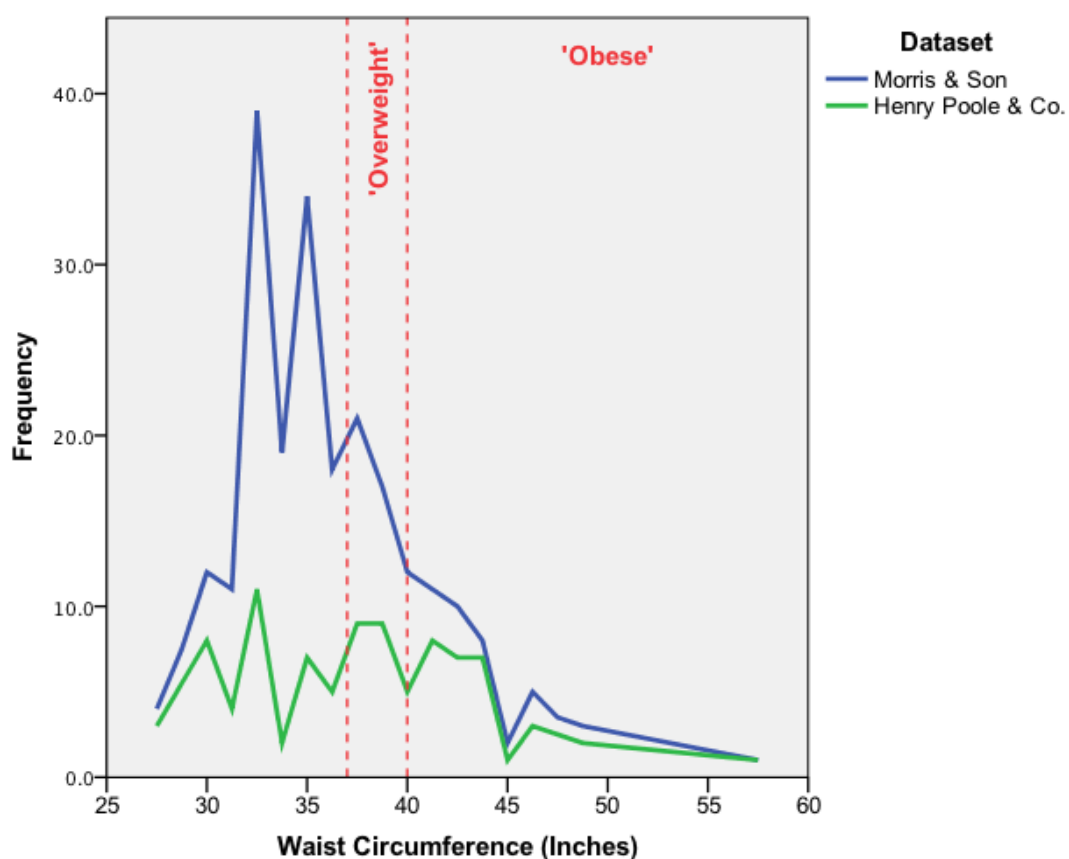
	Proportion of Distribution	
	Morris & Son	Henry Poole & Co.
WC ≥ 40	11.7%	32.1%
37 ≤ WC < 40	15.2%	26.0%

Sources: Morris & Son, ‘Measure Book 1’ and Henry Poole & Co., ‘Measure Book A’
n = 171 (Morris & Son), n = 215 (Henry Poole & Co.)

The red reference lines to the x-axis on Figure 29 demarcate the WHO waist circumference cut-off markers for obesity above 40 inches and overweight between 37 and 40 inches. As summarised in the table below the graph, these markers would suggest that 32.1% of Henry Poole & Co. and 11.7% of Morris & Son measurements were within obese levels and placed them at ‘substantially increased’ risk of metabolic complications. A further 26.0% of Henry Poole & Co. measurements and 15.2% of Morris & Son measurements were overweight and at ‘increased’ risk of metabolic complications. This highlights that nearly sixty percent of Henry Poole & Co.’s elite customers were measured when they were overweight or obese and over twenty-five percent of Morris & Son’s measurements from more ‘middling’ clientele also displayed worrying levels of central adiposity.

It is possible that these cross-sectional analyses are biased by the repeat visit of particularly fat customers compared to the infrequent visit of slim customers. To examine this, the frequency distribution of each of the customers’ largest recorded waist circumference measurement is displayed in Figure 30. This identifies that the repeat visit of customers is not a source of bias to the overall trends. It remains the case that over fifty-five percent of Henry Poole & Co.’s customers and over twenty-five percent of Morris & Son’s customers were measured at some stage when they were either overweight or obese.

Figure 30: Frequency Diagram Displaying Largest Recorded Waist Circumference measurement of Morris & Son and Henry Poole & Co. Customers Aged Over 25



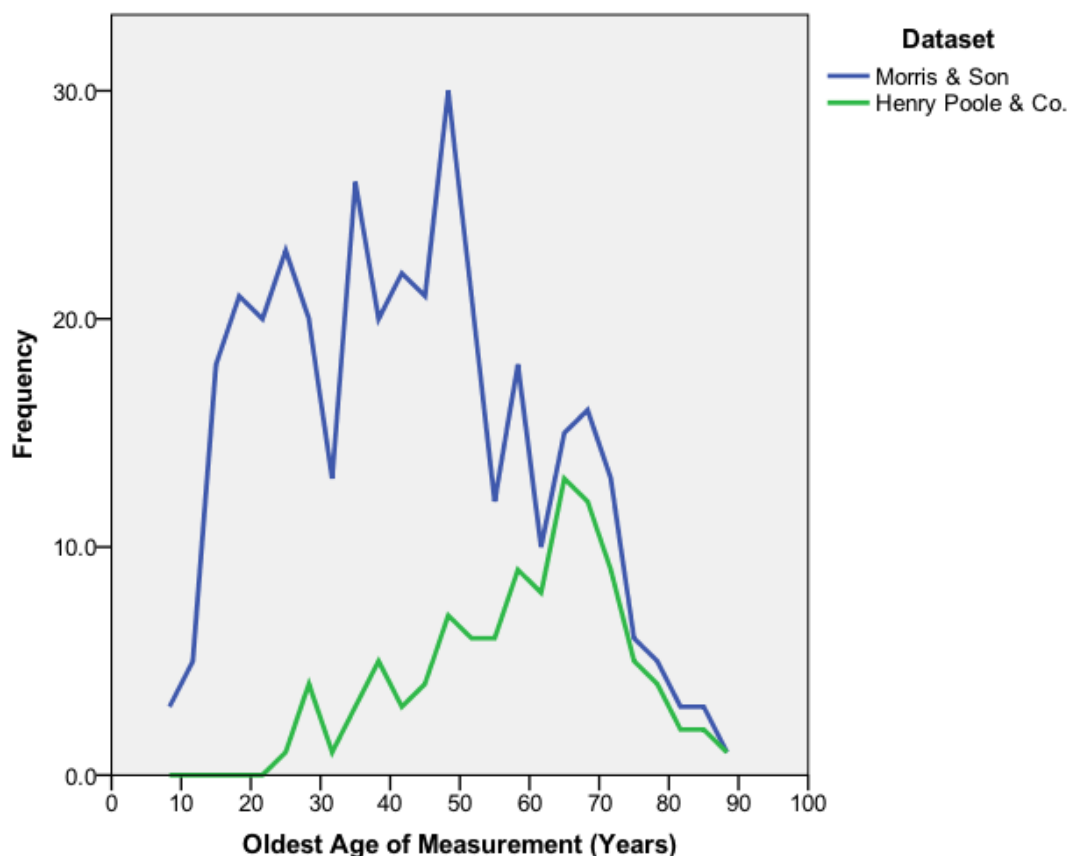
	Proportion of Distribution	
	Morris & Son	Henry Poole & Co.
WC ≥ 40	13.0%	35.9%
37 ≤ WC < 40	15.2%	20.7%

Sources: Morris & Son, 'Measure Book 1' and Henry Poole & Co., 'Measure Book A'
n = 138 (Morris & Son), n = 92 (Henry Poole & Co.)

Furthermore, these waist circumference measurements only reveal the body size of customers at the time of their clothing order. The 'largest waist circumference' measurements shown in Figure 30 are not equivalent to the maximum waist circumference of each customer and therefore the true proportion of customers who became overweight or obese during their lifetime cannot be identified. Henry Poole &

Co.'s customers were measured at older ages than Morris & Son's customers, as evident in Figure 31 and confirmed by an independent samples t-test, $t = 13.340$, $p = 0.000$. The mean oldest age of measurement of Morris & Son's customers was 36.0 years, compared to 59.7 years amongst Henry Poole & Co.'s customers. This means that the waist circumference measurements taken by Henry Poole & Co. are likely to be a closer representation of their customers' maximum than those of Morris & Son. The proportion of both sets of customers that became overweight within their lifetime may be higher than identified by the tailors' measure books, especially Morris & Son's customers.

Figure 31: Frequency Distribution of Oldest Age of Measurement of Morris & Son and Henry Poole & Co. Customers



Sources: Morris & Son 'Measure Book 1', Henry Poole & Co. 'Measure Book A' and England and Wales Census Records.

$n = 260$ (Morris & Son), $n = 102$ (Henry Poole & Co.)

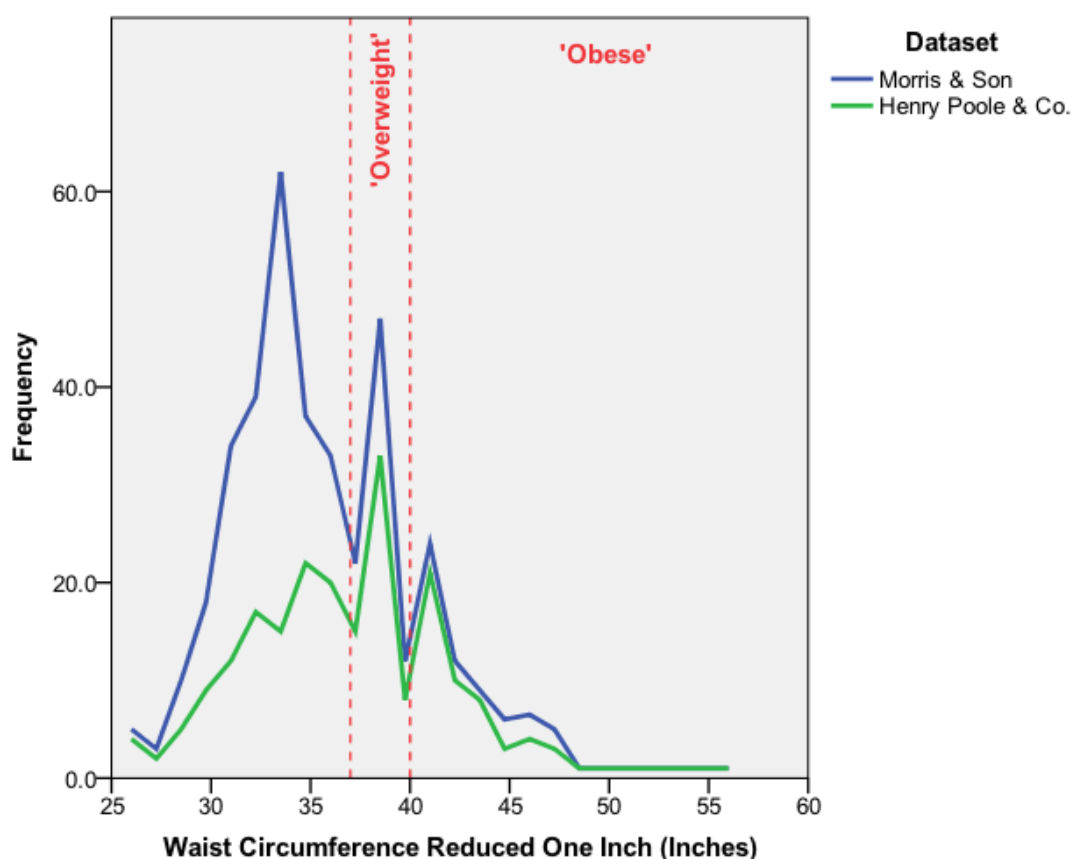
As a direct comparison, the most recent Health Survey for England in 2012 found that 34% of all men aged over sixteen had a waist circumference over 40 inches⁴¹, up from 20% of all men in England in 1993⁴². Remarkably, a higher proportion of Henry Poole & Co. customers were measured with an obese waist circumference than is identified currently. Given that modern men are, on average, taller and larger scale, this result is perhaps surprising and points towards this elite historical population being rather heavy.

Even if the customers' waist circumference measurements are reduced by an inch to account for measurements taken over clothing, as Figure 32 and the associated table of percentages below it identifies, this would still allocate over fifty percent of Henry Poole & Co.'s customers' measurements and over twenty percent of Morris & Son's customers' measurements as either overweight or obese.

⁴¹ 'Health Survey for England - 2010, Trend Tables: Adult Trend Tables', *Health and Social Care Information Centre*, accessed 2 February 2014, www.hscic.gov.uk/pubs/hse10trends

⁴² 'Health Survey for England - 2010, Trend Tables: Adult Trend Tables', *Health and Social Care Information Centre*, accessed 2 February 2014, www.hscic.gov.uk/pubs/hse10trends

Figure 32: Frequency Diagram Displaying Waist Circumference Measurements of Morris & Son and Henry Poole & Co. Customers Aged Over 25, Reduced by One Inch



	Proportion of Distribution	
	Morris & Son	Henry Poole & Co.
WC ≥ 40	7.6%	27.0%
37 ≤ WC < 40	13.5%	23.3%

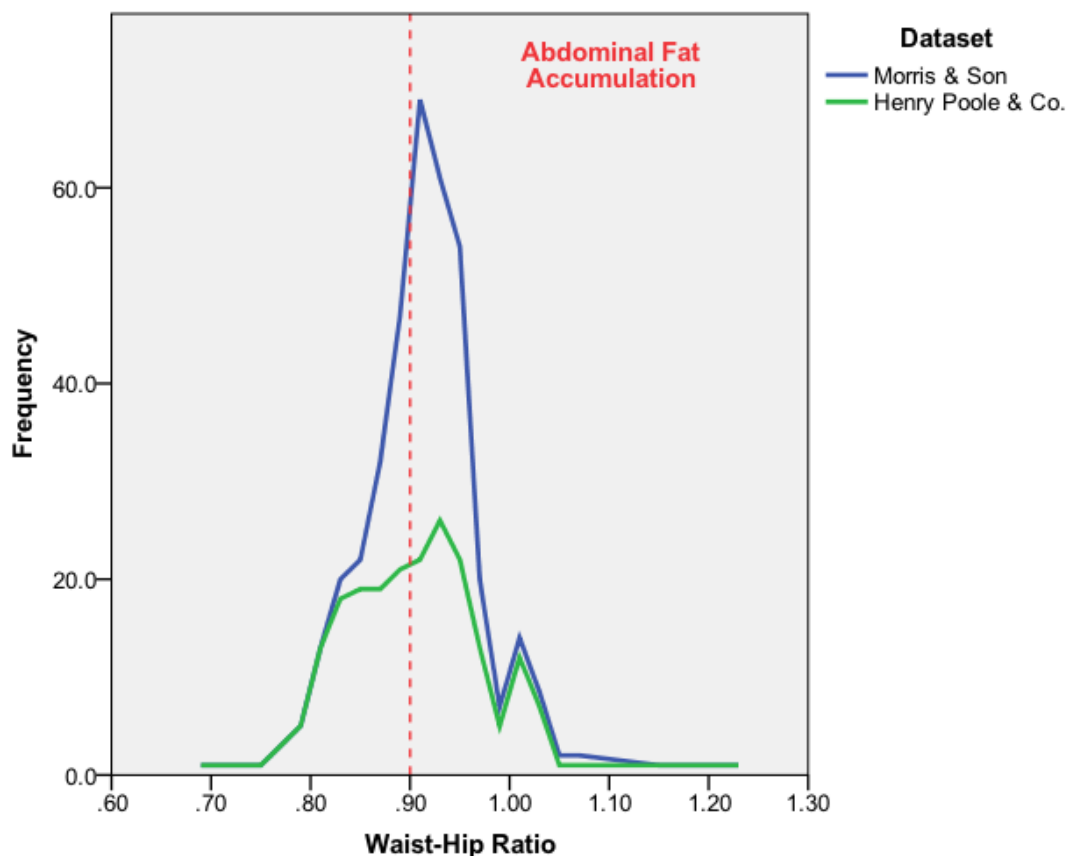
Sources: Morris & Son, 'Measure Book 1' and Henry Poole & Co., 'Measure Book A'

n = 171 (Morris & Son), n = 215 (Henry Poole & Co.)

Using an alternative gage of centralised adiposity, Figure 33 shows that over seventy percent of Morris & Son's customers' measurements and over fifty percent of Henry Poole & Co.'s measurements fell above the WHO waist-hip ratio marker of 0.9, suggesting widespread increased risk of metabolic complications. However, estimates of the proportion of Morris & Son and Henry Poole & Co.'s customers at risk

of metabolic complication due to central adiposity as delineated by waist-hip ratio are more complicated because of concern regarding the comparability of hip measurements to modern cut-off points. In Figure 34 allowance is made for measurement error, and the customers' hip circumference measurements have been increased by two inches and used to calculate a 'minimised waist-hip ratio' (discussed earlier in Chapter 7). This reduces the portion of Morris & Son's customers at risk of obesity-related diseases based on their waist-hip to 18.1% and Henry Poole & Co. customers to 30.5%. Modern comparative statistics are unavailable for waist-hip ratio.

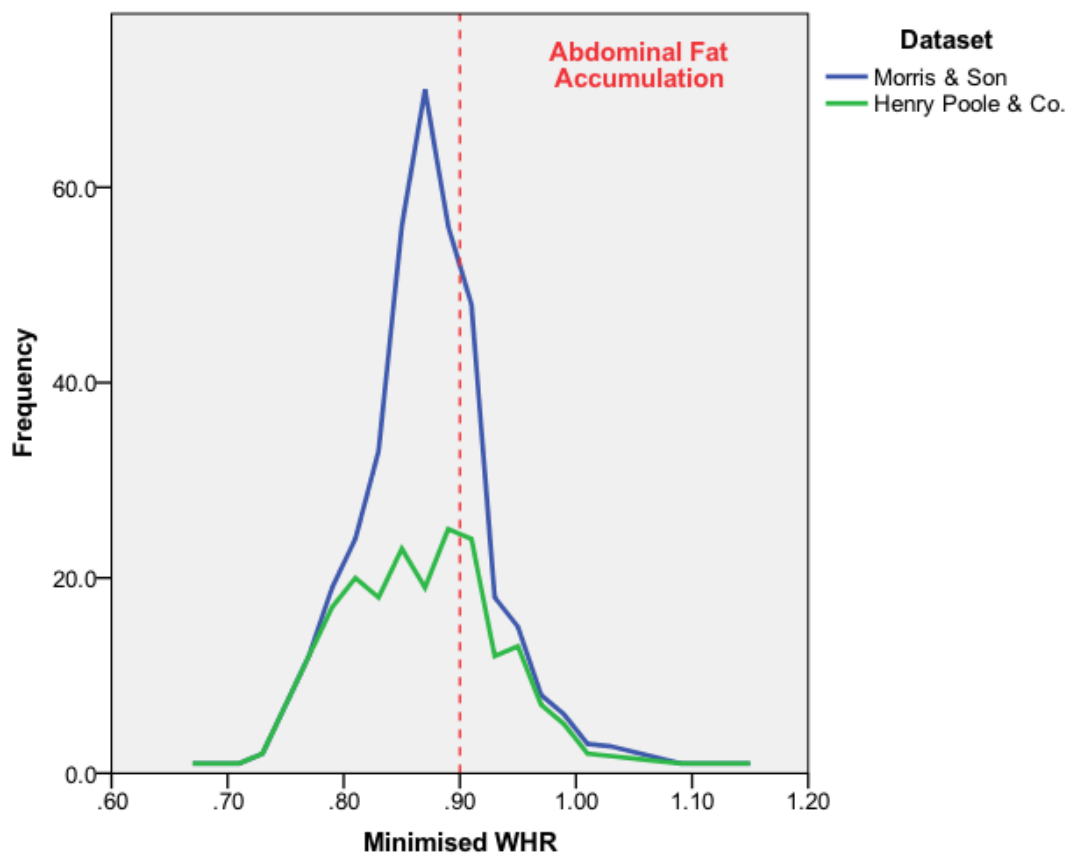
Figure 33: Frequency Diagram Displaying Waist-Hip Ratio of Morris & Son and Henry Poole & Co. Customers Aged Over 25



	Proportion of Distribution	
	Morris & Son	Henry Poole & Co.
WHR > 0.9	73.7%	50.7%

Sources: Morris & Son, 'Measure Book 1' and Henry Poole & Co., 'Measure Book A'
n = 171 (Morris & Son), n = 211 (Henry Poole & Co.)

Figure 34: Frequency Diagram Displaying Minimised Waist-Hip Ratio of Morris & Son and Henry Poole & Co. Customers Aged Over 25



	Proportion of Distribution	
	Morris & Son	Henry Poole & Co.
WHR > 0.9	18.1%	30.5%

Sources: Morris & Son, 'Measure Book 1' and Henry Poole & Co., 'Measure Book A'
n = 171 (Morris & Son), n = 210 (Henry Poole & Co.)

Does waist circumference or waist-hip ratio provide a better gauge of the risk of metabolic complications caused by centralised obesity? Amongst Morris & Son and Henry Poole & Co.'s customers the cut-off markers for waist circumference and waist-hip ratio create quite strikingly different results: a higher proportion of Henry Poole & Co. customers than Morris & Son's customers are placed at risk based on their waist circumference, but a high proportion of Morris & Son's customers than Henry Poole & Co.'s customers appear at health jeopardy using an unadjusted waist-hip ratio. This conundrum is explored in Chapter 10, when waist measurements are linked to age at death.

8.4. Ageing and Longitudinal Trends in Obesity

Ages and waists moved together in both these samples, though by different degrees. Morris & Son customers advanced at a modest rate; Henry Poole & Co customers at pace. This is evident both in cross-section, and from the complex longitudinal figures which capture the lifetime development of individuals who were measured repeatedly (see Figure 35 through to Figure 38).

Table 16 shows that age alone explained a third of the movement in Henry Poole & Co.'s customers' waist circumferences and a quarter of the movement in their waist-hip ratio. For every year of age, Henry Poole & Co.'s customers' waist circumferences grew by over one-fifth of an inch (in metric terms, over half a centimeter) and waist-hip ratio grew by three thousandths. Amongst Morris & Son's customers the effect of age was half as strong on waist circumference and a third as strong on waist-hip ratio.

Table 16: Effect of Age on Waist Circumference and Waist-Hip Ratio Amongst Morris & Son and Henry Poole & Co. Customers Aged Over 25.

	Morris & Son		Henry Poole & Co.	
	Coefficient		Coefficient	
	WC	WHR	WC	WHR
(Constant)	30.746*** (34.488)	0.891*** (102.530)	26.548*** (23.454)	0.768*** (44.207)
Age	0.105*** (5.275)	0.001*** (3.511)	0.214*** (10.287)	0.003*** (8.123)
R²	0.141	0.068	0.332	0.240
N	171	171	215	211

*** = significant at 1% level

** = significant at 5% level

* = significant at 10% level

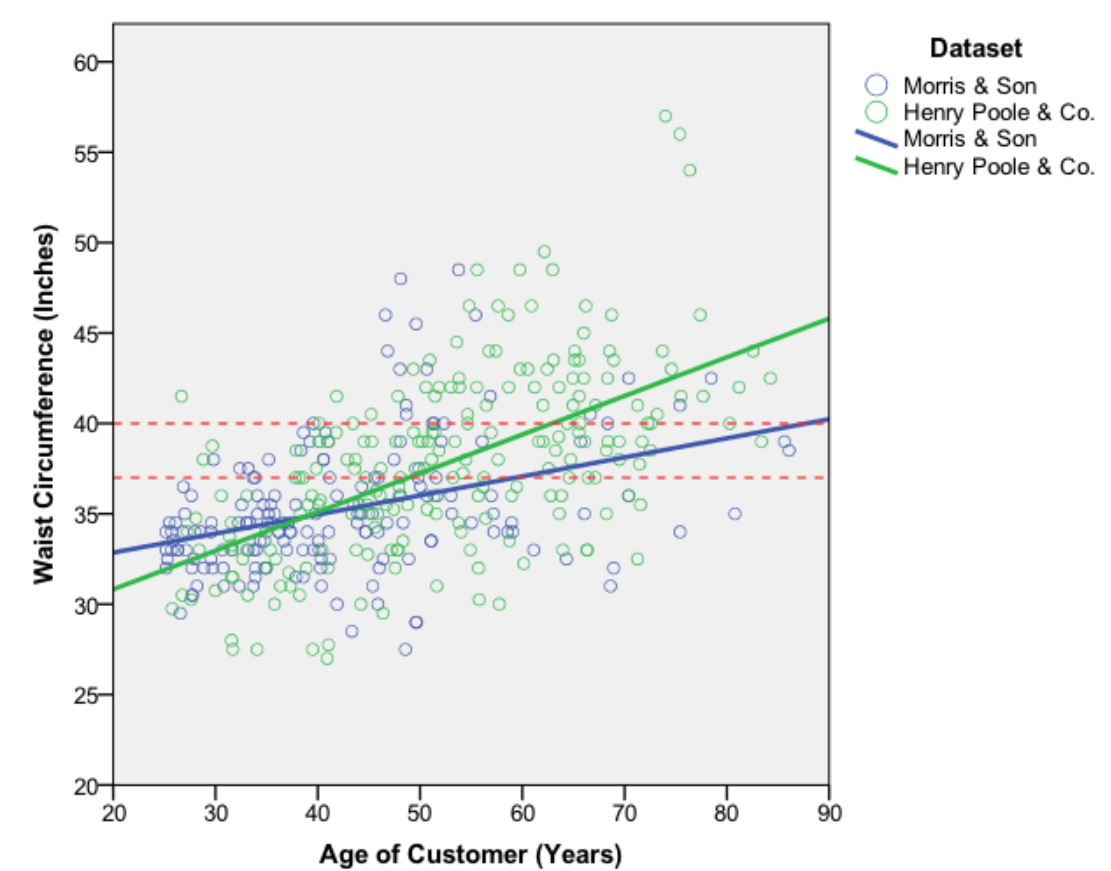
t-value in parentheses

Constant = Age 25

Sources: Morris & Son 'Measure Book 1', Henry Poole & Co. 'Measure Book A' and England and Wales Census Records.

Figure 35 displays the correlation between customers' age and their waist circumference as a scatterplot with lines of linear correlation and red WHO cut-off markers for 'overweight' and 'obese' on the y-axis. The intersection between the lines of correlation and cut-off markers highlights that although Morris & Son's and Henry Poole & Co.'s customers gained a waist circumference of 35 inches at around the same age of forty, Henry Poole & Co.'s customers became overweight over ten years earlier than Morris & Son's customers and were obese by their early sixties whereas Morris & Son's customers rarely became obese within their lifetimes. The exact ages the linear equation predicts each marker was reached are shown in the table below the graph. Figure 35 also indicates that being overweight was much more common after the age of thirty-nine and that almost no-one became obese before the age of forty-seven.

Figure 35: Correlation Between Age and Waist Circumference of Morris & Son and Henry Poole & Co. Customers Aged Over 25



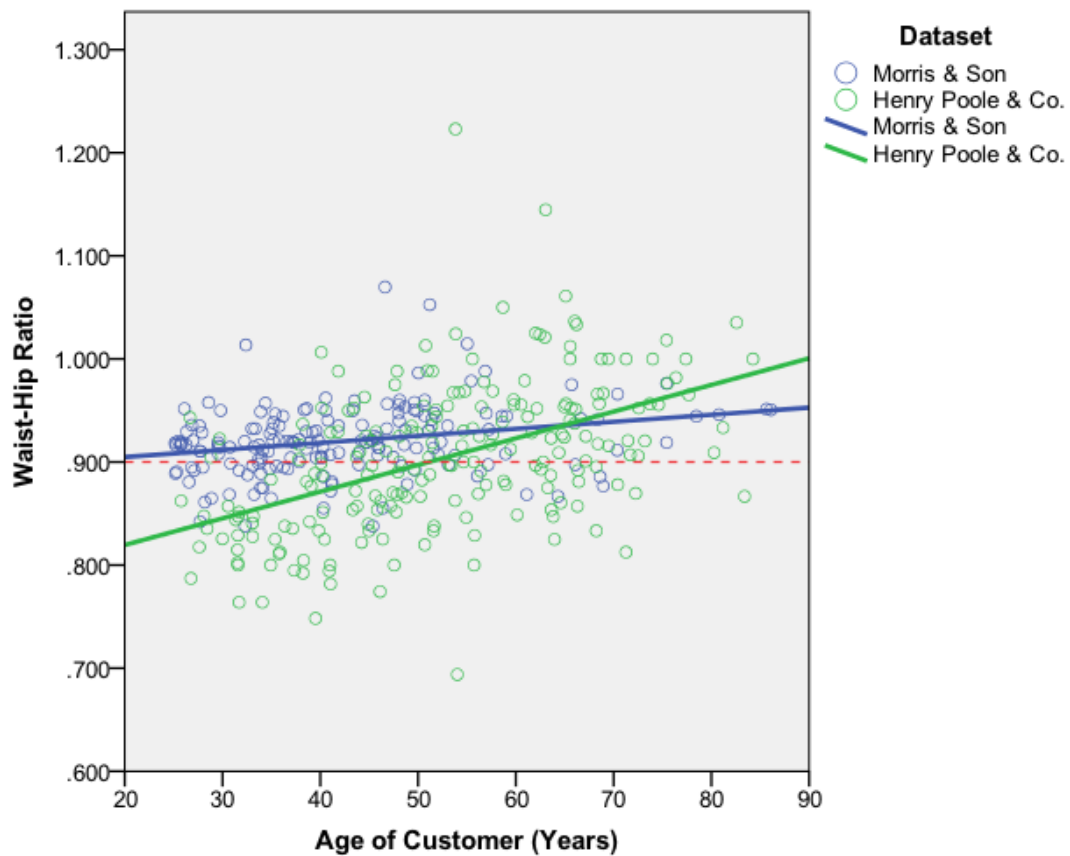
	Age	
	Morris & Son	Henry Poole & Co.
WC = 40	88.1	62.9
WC = 37	59.6	48.8

Sources: Morris & Son ‘Measure Book 1’, Henry Poole & Co. ‘Measure Book A’ and England and Wales Census Records.

n = 171 (Morris & Son), n = 275 (Henry Poole & Co.)

The linear correlation between age and waist-hip ratio shown in Figure 36 reveals that by their early adulthood Morris & Son’s customers already maintained a waist-hip ratio placing them at health jeopardy, but Henry Poole & Co.’s customers reached this by their early-fifties.

Figure 36: Correlation Between Age and Waist-Hip Ratio of Morris & Son and Henry Poole & Co. Customers Aged Over 25



Sources: Morris & Son 'Measure Book 1', Henry Poole & Co. 'Measure Book A' and England and Wales Census Records.

n = 171 (Morris & Son), n = 211 (Henry Poole & Co.)

The middle age timing of Henry Poole & Co.'s customers becoming overweight justifies assessing whether middle age had a distinct impact on waist circumferences and waist-hip ratios. Perhaps a linear correlation between customers' age and central adiposity is inappropriate - were the tailors' customers afflicted by what we would now term 'middle age spread'? To test for this non-linearity, the age of the tailors' customers were categorised into dummy variables. A dummy variable for customers aged 40 – 60 has been created labelled 'Middle Age' and a second for customer aged over 60 labelled 'Old Age'. The constant is customers aged 25 – 40.

Table 17 shows that there while waists grew in middle age, it was not a distinct period of ‘middle age spread’ in that they continued at an even greater rate for those over 60, especially for Henry Poole & Co clients. Both samples display signs of an accumulation of excess nutrition throughout life. Compared to Henry Poole & Co.’s customers aged 25 – 40, those aged over 60 had a waist circumference over seven inches larger. Furthermore, not only did Henry Poole & Co.’s customers’ waists increase with each period of age, they did so disproportionately to their hips, resulting in a waist-hip ratio that was twelve percent greater in old age compared to young adulthood.

Table 17: Effect of Age Period on Waist Circumference and Waist-Hip Ratio for Morris & Son and Henry Poole & Co. Customers Aged Over 25

	Morris & Son		Henry Poole & Co.	
	Coefficient		Coefficient	
	WC	WHR	WC	WHR
(Constant)	34.006*** (88.985)	0.913*** (246.821)	33.221*** (50.396)	0.840*** (85.386)
Middle Age	2.279*** (4.064)	0.016*** (2.860)	4.368*** (5.550)	0.065*** (5.549)
Old Age	2.963*** (3.117)	0.013 (1.466)	7.705*** (9.224)	0.100*** (8.091)
R²	0.110	0.049	0.288	0.239
N	171	171	215	210

*** = significant at 1% level

** = significant at 5% level

* = significant at 10% level

t-value in parentheses

Constant = Age 25 – 40

Sources: Morris & Son ‘Measure Book 1’, Henry Poole & Co. ‘Measure Book A’ and England and Wales Census Records.

The concept of ‘middle age spread’ is something of a modern misnomer as well. Fat mass increases throughout adulthood, peaking at middle age and declining substantially from thence; however, the impression of ‘middle-age spread’ occurs because from late middle age onwards deposits of fat are redistributed. Ageing

causes hormonal deficiencies, resulting in a loss of subcutaneous fat and an accumulation of centralised visceral fat⁴³. These biological processes occur independent of nutritional status – even if individuals waste with age and their total fat mass decreases, any fat mass that they do have becomes more centrally distributed. Consequently, increases in waist circumference with age can be driven by increases in body weight, but also reflect biological effects of ageing⁴⁴.

The positive correlation between age and waist circumference and waist-hip ratio amongst both Morris & Son's and Henry Poole & Co.'s customers implies that both sets of tailors' customers experienced hormonal and distributional ageing effects on body fat. This proves that both sets of customers had sufficient stores of energy for the effects of hormonal deficiencies to act on – there can be no redistribution of body fat if none exists. The implication is that both Morris & Son's and Henry Poole & Co.'s customers had a nutritional intake which was in excess of their nutritional output throughout most of their life. The difference between the strength of the correlation between age and waist circumference and waist-hip ratio between the two samples emphasises that this nutritional excess was far greater for Henry Poole & Co.'s customers than Morris & Son's customers. Not only were the waistlines of Henry Poole & Co.'s customers enlarged by the redistribution of their energy reserves, it would appear that they gained a substantial degree of weight as they aged.

Longitudinal trends confirm this as Figure 37 and Figure 38 show.

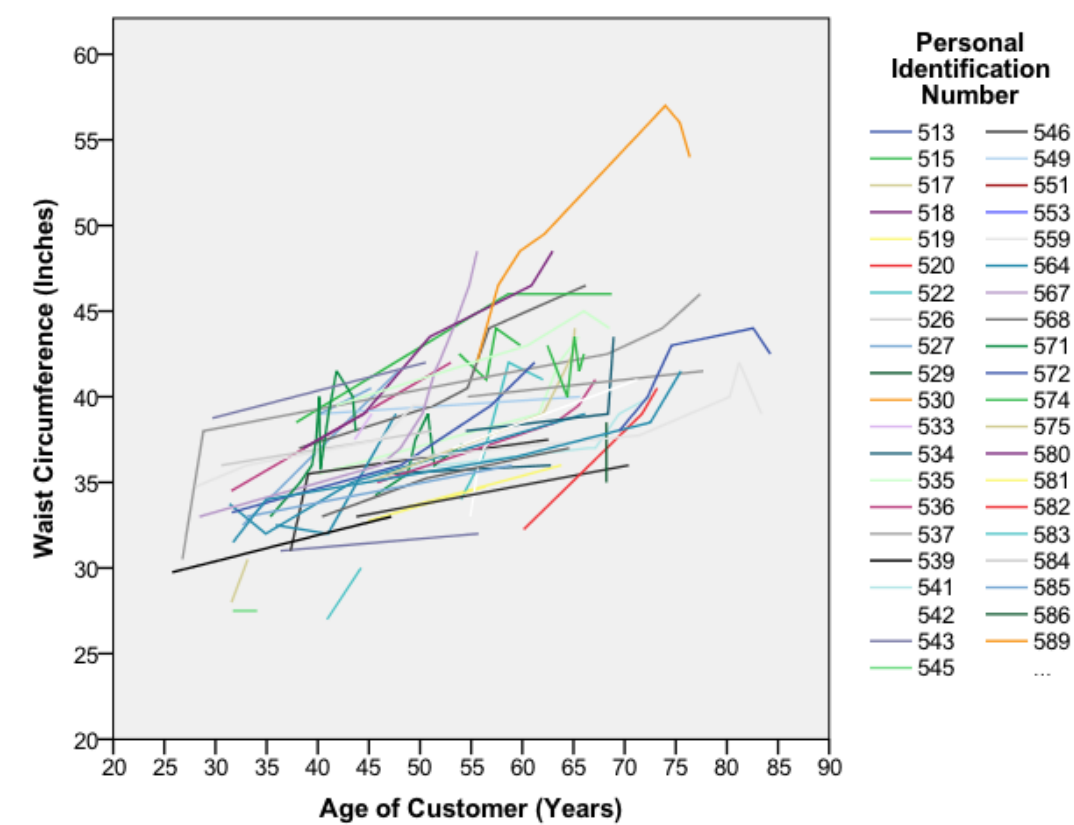
Longitudinal data is unavailable for Morris & Son's customers because 'Measure Book 1' only includes measurements taken between 1890 and 1891. Figure 37 shows that the waist circumference of almost all Henry Poole & Co. customers rose over the course of their lives – it is hard to find a customer whose final waist circumference measurement was lower than their first. Furthermore, Figure 38 highlights that Henry

⁴³ Cartwright, M. J., Tchkonina, T., and Kirkland, J. L., 'Aging in Adipocytes: Potential Impact of Inherent, Depot-Specific Mechanisms', *Experimental Gerontology*, vol. 42, 6 (2007), pp. 463-71, as cited in Stevens, J., Katz, E. G., and Huxley, R. R., 'Reviews: Associations Between Gender, Age and Waist Circumference', *European Journal of Clinical Nutrition*, vol. 64, 1 (2009), p. 9.

⁴⁴ Stevens, J., Katz, E. G., and Huxley, R. R., 'Reviews: Associations Between Gender, Age and Waist Circumference', *European Journal of Clinical Nutrition*, vol. 64, 1 (2009), pp. 6-15.

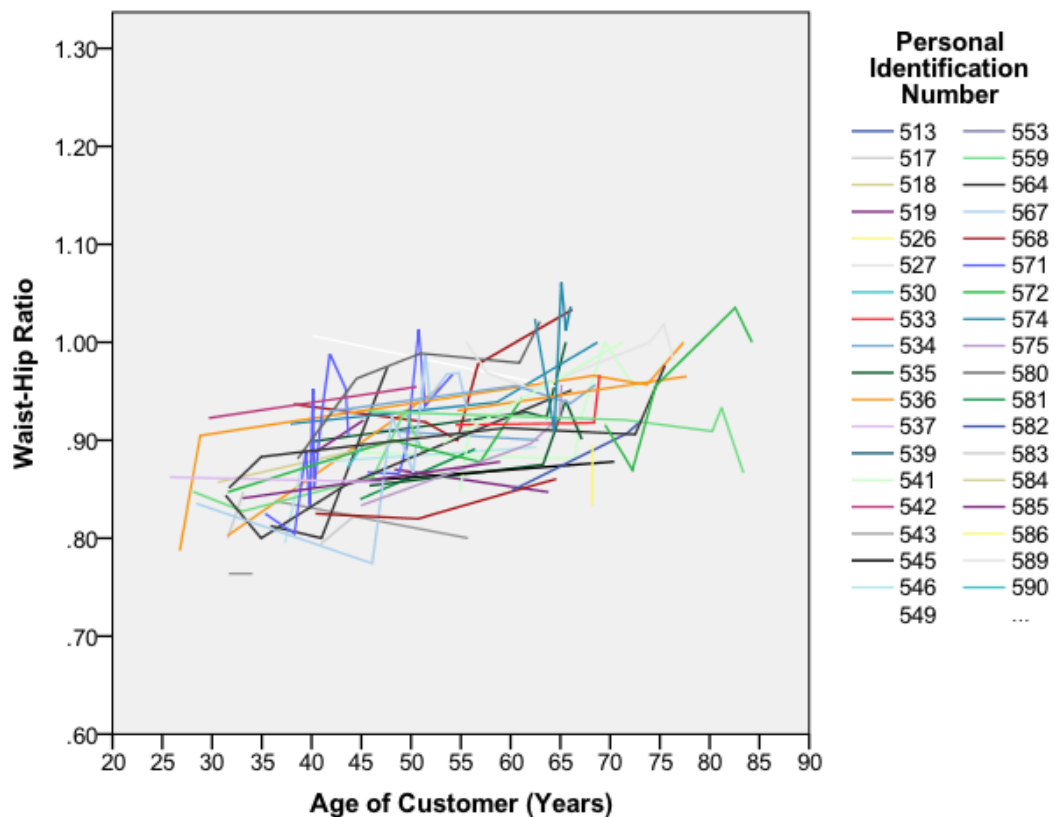
Poole & Co.'s customers' waists grew disproportionately to their hips, resulting in a larger waist-hip ratio across the life-course.

Figure 37: Longitudinal Trends in Waist Circumference for Henry Poole & Co. Customers Aged Over 25



Sources: Henry Poole & Co. 'Measure Book A' and England and Wales Census Records.

Figure 38: Longitudinal Trends in Waist-Hip Ratio for Henry Poole & Co. Customers Aged Over 25



Sources: Henry Poole & Co. 'Measure Book A' and England and Wales Census Records.

The complicated net balance that dictates nutritional status makes it difficult to speculate on the causes of Henry Poole & Co.'s customers' weight gain. However, Chapter 4 highlighted that Henry Poole & Co.'s customers were wealthier than Morris & Son's customers, engaged in more professional, relatively sedentary occupations, and stemmed from the upper- and upper-middle classes amongst whom consumption (in general, but also of calories) was an important visible display. The wealth of Henry Poole & Co.'s customers may have also enabled them to achieve more salubrious living conditions and better access to health care, potentially reducing their threat from infectious disease. Overall, the impact of these preferable socioeconomic conditions appears to have enabled Henry Poole & Co.'s customers to maintain a nutritional status in excess of their needs throughout life. This led to a steady accumulation of

excess energy as fat, particularly that located centrally from the middle stage of life onwards.

8.5. Conclusion

The prevalence and trends in overweight and obesity amongst Morris & Son and Henry Poole & Co. customers highlight that overweight and obesity must be recognised as nineteenth century concerns. Although overweight and obese status was more prevalent amongst the upper classes, it transcended the super-wealthy, featuring to a high degree amongst Henry Poole & Co.'s professional clientele but also Morris & Son's more middle class patrons who were measured at younger ages. Waist circumference and waist-hip ratio measurements point to roughly a third to sixty percent of Henry Poole & Co's customers' facing chronic disease health jeopardy whilst between eighteen and as much as seventy percent of Morris & Son's measurements displayed worrying signs of central adiposity. Using the lowest estimates provided by Figure 29 to Figure 34, it can be said that *at least* thirty percent of Henry Poole & Co.'s customers and eighteen percent of Morris & Son's customers became either overweight or obese during their lifetime. There are signs that the true proportion at increased risk of metabolic complications and obesity related diseases was in fact much higher. What remains to be established are the causes of these patterns, and their connection with health outcomes, in particular, length of life. It is these two issues that provide the focus for the next two chapters.

Chapter 9. The Causes of Nineteenth Century Adult Obesity

For a small but not insignificant section of the nineteenth century population, Graves' dangers were very real indeed. Over indulgence led to burgeoning waists with implications for health and longevity, to be explored in the following chapter. However, before this it is important to question: why did some people grow fat, whilst others did not?

Part II of this thesis identified that one explanation, particularly relevant to Morris & Son's customers, is that fetal deprivation led to a metabolic imbalance between in utero and postnatal nutritional conditions, which increased individuals' propensity to carry their weight centrally if conditions improved in later life. But what about weight gain accumulated across lives? What were the socioeconomic correlates of girth? The following offers further evidence of the fetal origins theory, although this chapter is more concerned with the reasons for gaining fat in later life. As such, analyses have been restricted to customers aged over twenty-five.

9.1. Wealth

Arguments for the increase in waist circumference and waist-hip ratio with age immediately turn to social status and wealth as explanatory factors. The influence of these socioeconomic variables can be examined by assessing the relationships between waist circumference and waist-hip ratio, wealth in probate, occupational skill level and occupational industry.

As discussed in more detail in Chapter 3, the National Probate Calendar provides a register of the value of every individual's estate upon death. Although it

does not provide evidence of an individual's peak wealth, it can be used as an indicator of the degree of wealth that they achieved over their lifetime. Each estate is listed according to its value at the time of death, however all of the tailors' customers' estates have been calculated relative to their value in 1880 using the 'Historic Standard of Living' value on *MeasuringWorth.com*¹.

Table 18 confirms that age exerted a significant influence on waists, especially for Henry Poole & Co. customers. The regression also indicates that for Henry Poole & Co. customers, wealth and waists moved in the same direction even when controlling for age. Age and wealth explain 32.9% of the movement in Henry Poole & Co.'s waist circumferences and 22.5% of the movement in their waist-hip ratio. Age and wealth explained much less of the movement in waist circumference and waist-hip ratio amongst Morris & Son customers – less than ten and five percent, respectively.

Table 18: Effect of Age and Wealth in Probate on Waist Circumference and Waist-Hip Ratio Amongst Morris & Son and Henry Poole & Co. Customers Aged Over 25

	Morris & Son		Henry Poole & Co.	
	Coefficient		Coefficient	
	WC	WHR	WC	WHR
(Constant)	31.616*** (19.103)	0.895*** (56.047)	26.154*** (21.659)	0.769*** (40.602)
Age	0.093*** (2.731)	0.001 (1.553)	0.217*** (10.016)	0.003 (7.577)
Wealth in Probate (£'0,000)	0.105 (0.229)	0.000 (0.096)	0.033** (2.479)	0.000 (0.770)
R²	0.090	0.031	0.329	0.225
N	79	79	205	201

*** = significant at 1% level

** = significant at 5% level

* = significant at 10% level

t-value in parentheses

Constant = Age 25

Sources: Morris & Son 'Measure Book 1', Henry Poole & Co. 'Measure Book A' and the National Probate Calendar

¹ 'Five Ways to Compute the Relative Value of a UK Pound Amount, 1270 to Present', *MeasuringWorth.com*, accessed 21 January 2014, www.measuringworth.com/ukcompare/

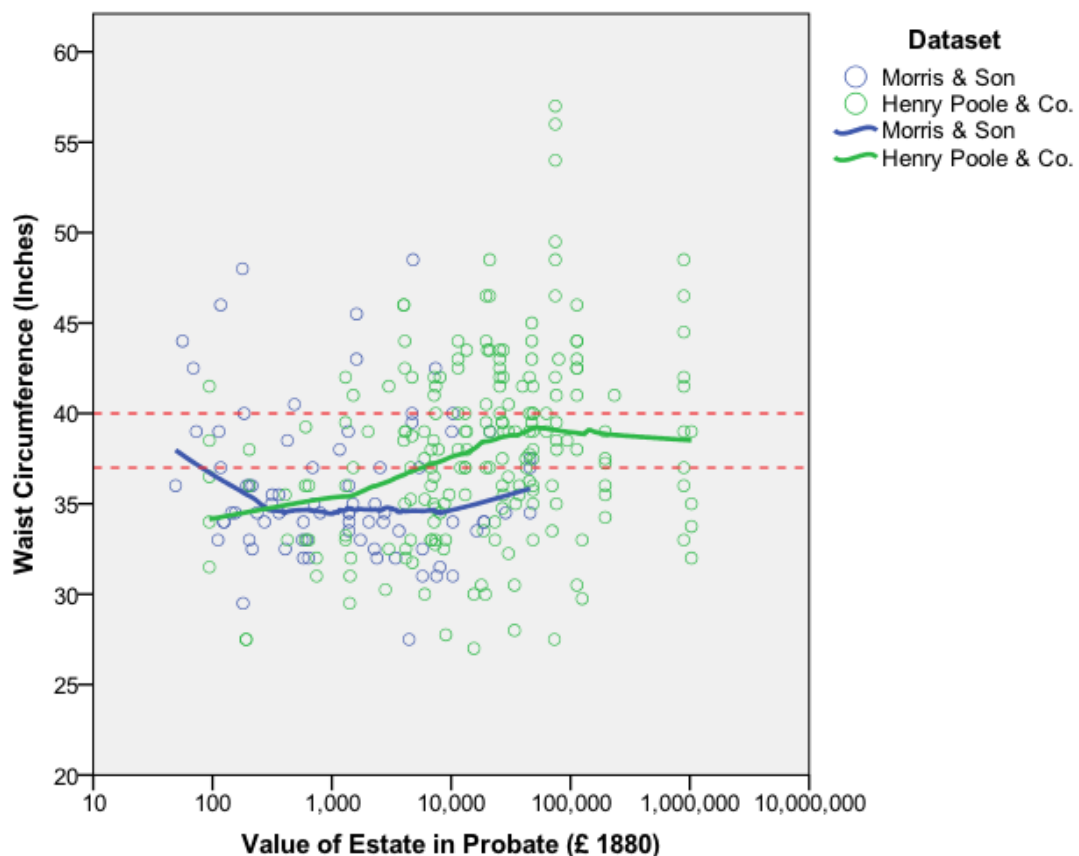
However, the loess trend lines displayed in Figure 39 highlight that the relationship between customers' waist circumference and their value of estate in probate was non-linear. It should be noted that in Figure 39 the value of estate in probate is placed on a logarithmic x-axis to account for the much higher tendency towards small values of estates, rather than larger ones. WHO cut-off markers for overweight and obesity are again demarcated by red reference lines to the y-axis at 37 and 40 inches respectively.

The trend line for Henry Poole & Co.'s customers displays a positive, fairly linear, relationship between levels of wealth in probate and waist circumference, up to an estate value of about £80,000. The effect on waists of acquiring an estate worth £2,000 – £80,000 was stronger than that achieved by an estate worth £100 – £2,000. An estate valued over £80,000 had little, or perhaps even a negative effect on waist circumference, although the sample size of Henry Poole & Co. customers with an estate above this amount was fairly small. More data for extremely wealthy individuals would be useful to determine with certainty that the positive relationship between wealth and waistlines did indeed plateau. Customers that managed to achieve an estate valued over £8,000 were particularly likely to gain a waist circumference that could be labelled as overweight.

These results speculatively imply that amongst Henry Poole & Co. customers, higher wealth brought with it an increasingly obesogenic lifestyle until extreme levels of wealth were reached and the impact of wealth on waist circumference was seemingly maximised. Along with higher levels of wealth, Henry Poole & Co.'s customers are likely to have enjoyed more sedentary lifestyles and ever fewer financial restraints on their consumption. With increasing wealth came not only the ability but also the obligation to consume more, in the form of societal pressure to attend fashionable events at which consumption was conspicuous. In addition, wealth enabled individuals to live in larger houses in less densely populated areas, reducing the threat of infectious disease contagion and the associated energy demand. At

extreme levels of wealth, both a 'town' and 'country' residence could be maintained, with the latter providing a more salubrious environment. The wealthy customers of Henry Poole & Co. are also likely to have been able to afford a cook and thus disconnected the process of cooking with that of eating, making consumption more convenient. It is likely that in the nineteenth century, as in the twenty-first century, overweight did not have one cause or one solution. It was (and is) a product of a lifestyle within an environment that promoted weight gain in a multifaceted and relatively unconscious way.

Figure 39: Waist Circumference Measurement of Morris & Son and Henry Poole & Co. Customers Aged Over 25 by Value of Estate in Probate



Sources: Morris & Son 'Measure Book 1', Henry Poole & Co. 'Measure Book A' and the National Probate Calendar.

n = 79 (Morris & Son), n = 205 (Henry Poole & Co.)

The smaller positive correlation coefficient with waists between Henry Poole & Co.'s customers' value of estate in probate up to £2,000, compared to those who achieved an estate worth £2,000 – £80,000, suggests that Henry Poole & Co.'s customers' waist circumferences were less elastic at moderate levels of wealth compared to higher ones. This contradicts the experience that would be expected if the poor were compared to the very wealthy - in such a circumstance, it would be likely that the waistlines of the poor would be much more responsive to the addition of equivalent amounts of wealth because this would loosen their financial constraints by a larger degree. However, none of Henry Poole & Co.'s customers were poor. The least wealthy patrons of Henry Poole & Co. featured from amongst the upper-middle classes and additional wealth did not necessarily loosen their financial constraints.

Breward and Ugolini point to a 'troubled cohort' upon whom there was a high expectation of appropriate attire and thus sartorial expense, without necessarily a correlate level of income to make this easily affordable². The societal expectations on this vulnerable group were likely to have extended beyond fashion and created many other difficult economic demands, such as in the attendance at expensive events, the purchase of luxury gifts and the membership of premium clubs. It is possible that Henry Poole & Co. customers with an estate worth less than £2,000 attended the expensive tailoring firm due to societal and occupational obligations but were forced to make economic savings elsewhere, such as in the number of calories that they consumed. As the wealth of the upper-middle classes rose, so too did the number of social and professional obligations on their income. The financial constraint of Henry Poole & Co.'s more lowly customers fell as their wealth rose, but by a smaller degree than amongst those who achieved a level of wealth which removed financial limitations, seemingly experienced by those who achieved a level of wealth in probate above £2,000.

² Breward, C., *The Hidden Consumer: Masculinities, Fashion and City Life 1860-1914*, (Manchester & New York: Manchester University Press, 1999), pp. 82-7; and Ugolini, L., *Men and Menswear: Sartorial Consumption in Britain 1880-1939*, (Aldershot: Ashgate, 2007), pp. 53-4.

In contrast, Figure 39 shows that wealth had a very different effect on waists amongst Morris & Son's customers. Until a value of estate in probate worth around £600 increasing wealth had a negative impact on waistlines. This could speculatively be suggested to provide more evidence of the impact of the Barker hypothesis. Morris & Son's wealthiest customers were least likely to have experienced a stark contrast between their nutritional status in utero and after birth. It is assumed that customers who attained a high level of wealth were also given adequate nutrition as a fetus and therefore had less metabolic imbalance and a reduced propensity towards central adiposity. Those Morris & Son customers who were deprived as a fetus but improved their standard of living in adulthood were likely to have improved it a little, sufficient to experience metabolic stress, but not enormously. As such, they were likely to have featured amongst those customers with an estate worth less than £600 who had larger waist circumferences than those with greater wealth.

Between an estate worth £600 - £10,000 wealth appears to have had no effect on Morris & Son's customers' waists. This suggests that either the large age gap between Morris & Son's customers final measurement and their death ignores too many confounding variables which affected their value of estate in probate; or Morris & Son's customers did not invest their wealth in a higher nutritional status via calories; or their wealth was generated with a simultaneous higher expense of calories, inhibiting their net nutritional status overall.

All three hypotheses probably had a role to play. Barmouth's isolated, rural location did not provide a naturally obesogenic environment. Although greater wealth may have increased purchasing power, the market of goods and services within Barmouth remained limited and is unlikely to have promoted excess calorie consumption. In addition, Chapter 4 identified that Morris & Son's customers were mainly individuals in 'skilled' occupations that profited from the economic transition and influx of tourism wealth into Barmouth. It seems likely that on the whole, Morris & Son's customers earned their wealth by working harder to supply an increasing

demand for their services, rather than by engaging in more prestigious, sedentary occupations. It could therefore be presumed that Morris & Son's customers' wealth was correlated to their work-output in energy and that this placed a high demand on their net nutritional status, preventing their waist circumferences from increasing at the same rate as their wealth.

Amongst Morris & Son customers who managed to achieve an estate valued over £10,000 there are some signs that wealth began to be positively correlated with waist circumference, although again the sample size of Morris & Son customers with levels of wealth beyond this amount is too few to state this trend with certainty. It would make sense, however, if above this high level of wealth Morris & Son customers were able to access the obesogenic lifestyle that Henry Poole & Co. customers experienced from much lower levels.

Figure 39 reveals that ultimately individuals of any level of wealth could get fat. There were customers who became obese whose estate in probate was worth less than £100. This proves that wealth, defined by its levels in probate, did not dictate whether someone could become overweight; although a minimum threshold of wealth would have been necessary, this was achieved even by those unable to leave any estate in probate at all. The contrasting impact of similar levels of wealth on waists, between Morris & Son and Henry Poole & Co. customers, indicates that although wealth may have provided the opportunity for an obesogenic lifestyle, whether this was realised depended upon the environment within which wealth was gained. Thus, historically, as now, abdominal adiposity was not solely a matter of personal responsibility; it also depended on the influence of external, environmental forces.

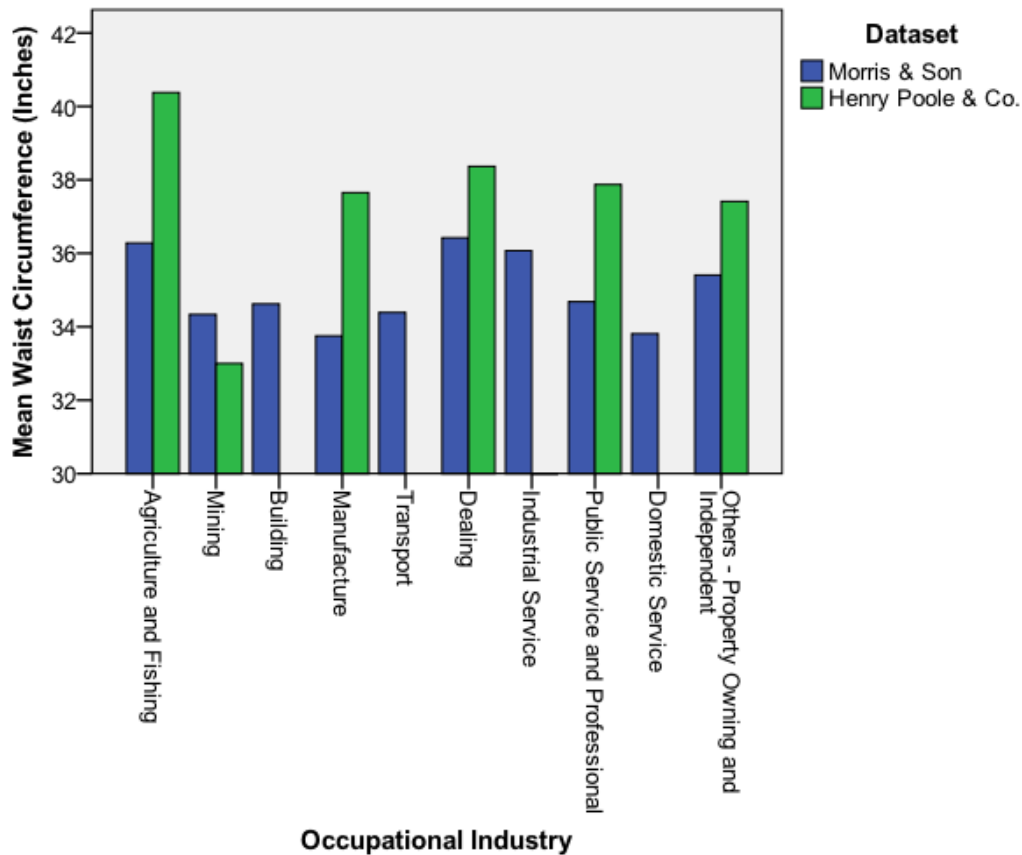
9.2. Occupation

The arguments traced above for the difference in correlation between Morris & Son's and Henry Poole & Co.'s customers' wealth in probate and central adiposity partly rest on the basis that work output was a mitigating factor affecting the nutritional

status achieved with wealth. The relationship between occupations and central adiposity is something that can be examined statistically using the results obtained from census linkage.

Figure 40 and the corresponding descriptive statistics in Table 19 illustrate, as introduced in Chapter 4, that Henry Poole & Co.’s customers were predominantly either of independent means or occupied in the profitable industries of manufacture, dealing, and professional and public service. Morris & Son’s customers were more broadly distributed between all industry sectors, although particularly located in ‘traditional’ industries such as agriculture, fishing and building, as well as those catering to the tourist industry via dealing, public service and as professionals.

Figure 40: Mean Waist Circumference by Occupational Industry Amongst Morris & Son and Henry Poole & Co. Customers Aged Over 25



Sources: Morris & Son ‘Measure Book 1’, Henry Poole & Co. ‘Measure Book A’ and England and Wales Census Records.

n = 166 (Morris & Son), n = 209 (Henry Poole & Co.)

Table 19: Descriptive Statistics of the Occupational Industries of Morris & Son and Henry Poole & Co. Customers Aged Over 25

	Occupational Industry	Waist Circumference (Inches)		
		Mean	n	Standard Deviation
Morris & Son	Agriculture and Fishing	36.28	34	2.92
	Mining	34.44	6	2.62
	Building	34.62	21	4.29
	Manufacture	33.75	6	1.29
	Transport	34.39	9	2.85
	Dealing	36.42	31	4.26
	Industrial Service	36.07	7	5.91
	Public Service and Professional	34.68	28	4.13
	Domestic Service	33.81	13	2.34
	Property Owning and Independent	35.41	11	2.65
Henry Poole & Co.	Agriculture and Fishing	40.38	2	2.30
	Mining	33.00	1	
	Manufacture	37.65	33	4.98
	Dealing	38.37	28	3.78
	Industrial Service	27.50	1	
	Public Service and Professional	37.41	121	5.02
	Property Owning and Independent	37.41	23	5.04

Sources: Morris & Son 'Measure Book 1', Henry Poole & Co. 'Measure Book A' and England and Wales Census Records.

n = 166 (Morris & Son), n = 209 (Henry Poole & Co.)

Unfortunately, the disaggregated sample sizes become too small for occupational industry to make any truly significant contribution to the discussion. It seems that Henry Poole & Co.'s customers achieved a larger waist circumference than Morris & Son's customers in almost every industry. However, there was little variation in the central adiposity of Henry Poole & Co.'s customers according to their occupational industry – the higher mean of those in agriculture and fishing is generated by just two measurements. Morris & Son's customers' mean waist circumference by occupational industry could be cautiously said to show that

industries with high energy demands were detrimental to waist circumferences, in particular mining, building, manufacture, transport and domestic service. Dealing may have benefitted Morris & Son's customers' waist circumferences because a high demand from the recent influx of tourists improved profits. Morris & Son's customers engaged in agriculture and fishing had the highest mean waist circumferences perhaps because they had direct access to nutrients.

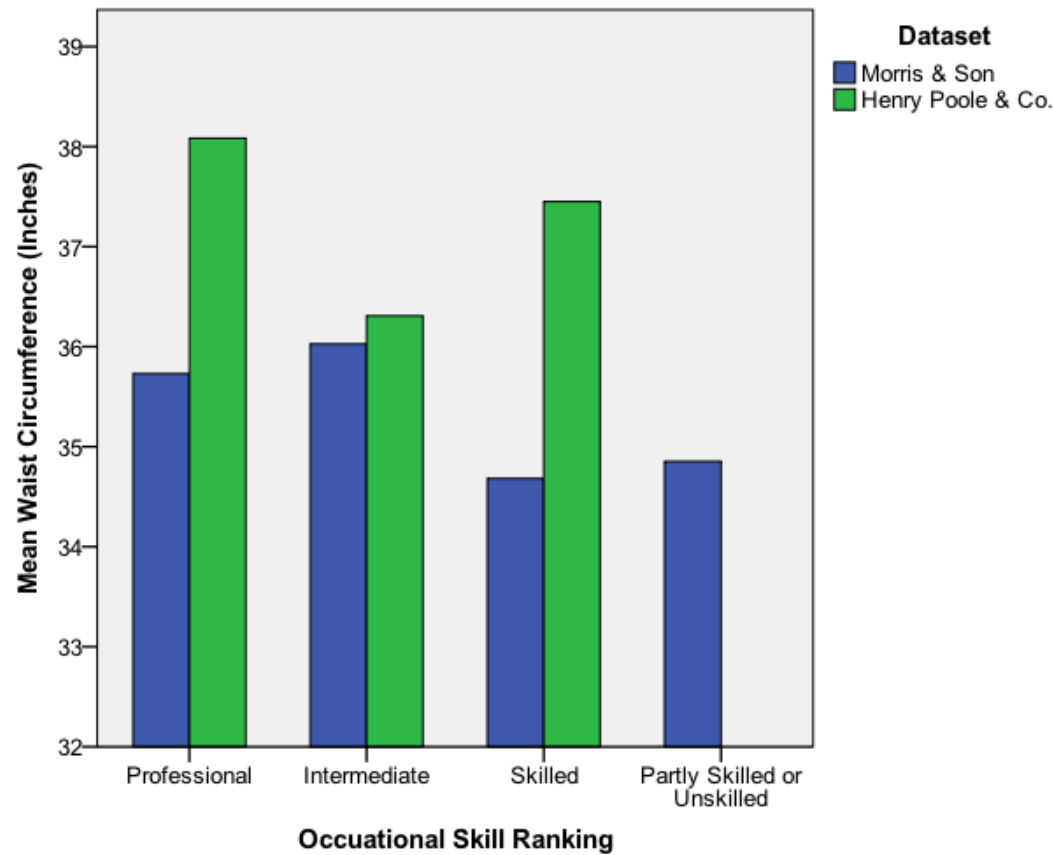
It is more helpful to categorise the tailors' customers by their occupational skill level. These were determined using the Registrar-General's *Classification of Occupations, 1950*, revised by Armstrong³. This scheme places all occupations into a five-tiered hierarchical system ranging from 'Class I: Professional occupations' to 'Class V: Unskilled occupations' via 'intermediate', 'skilled' and 'partly skilled'. Due to small sample sizes at the bottom end of the social structure, in the following analyses those in 'partly skilled' and 'unskilled' occupations have been combined.

Figure 41 and the corresponding descriptive statistics below it in Table 20, highlight that central adiposity did vary between customers of different occupation skill rankings within both Morris & Son and Henry Poole & Co. customers. Amongst Morris & Son's customers those at a professional or intermediate occupational level had larger waist circumferences than those who were skilled, partly skilled or unskilled, $t = 2.102$, $p = 0.037$. Although those of an intermediate occupational level had a higher mean waist circumference than those at a professional occupational level, the difference was not statistically significant, $t = 0.297$, $p = 0.767$. The fact that intermediate and professional occupations fostered higher levels of central adiposity amongst Morris & Son's customers gives some credence to the hypothesis that highly skilled, sedentary occupations had more impact on the waistline of Morris & Son's customers than wealth alone. Once at an intermediate or professional level it is likely

³ *Classification of Occupations, 1950*, (London: Her Majesty's Stationary Office, 1951), as cited and revised in Armstrong, W. A., 'The Use of Information about Occupation', in E. A. Wrigley (ed.), *Nineteenth-Century Society: Essays in the Use of Quantitative Methods for the Study of Social Data*, (Cambridge: Cambridge University Press, 1972), pp. 198-225.

that Morris & Son’s customers’ energy output for work was reduced. Combined with the previous analyses it would appear that wealthy ‘skilled’ customers were unable to match the nutritional status of professionals.

Figure 41: Mean Waist Circumference of Morris & Son and Henry Poole & Co. Customers Aged Over 25 of Different Occupational Skill Levels



Sources: Morris & Son ‘Measure Book 1’, Henry Poole & Co. ‘Measure Book A’ and England and Wales Census Records.

n = 166 (Morris & Son), n = 209 (Henry Poole & Co.)

Table 20: Descriptive Statistics of the Occupational Skill Level of Morris & Son and Henry Poole & Co. Customers Aged Over 25

		Mean	n	Standard Deviation
Morris & Son	Professional	35.73	26	4.55
	Intermediate	36.03	53	3.98
	Skilled	34.68	63	3.36
	Partly Skilled or Unskilled	34.85	24	2.59
Henry Poole & Co.	Professional	38.08	163	5.28
	Intermediate	36.31	26	4.00
	Skilled	37.45	20	4.00

Sources: Morris & Son ‘Measure Book 1’, Henry Poole & Co. ‘Measure Book A’ and England and Wales Census Records.

n = 166 (Morris & Son), n = 209 (Henry Poole & Co.)

The mean waist circumference of Henry Poole & Co. customers was always higher than that of Morris & Son’s customers, even at the same occupational skill level. This points to the weakness in the ability of occupational skill level to reflect nutritional status – a large range of nutritional statuses could be achieved within the same occupational category. Professional occupational skill levels appear to have promoted a lifestyle which enabled waistlines to expand, but the extent of this was dependent on numerous other environmental factors as well.

Amongst Henry Poole & Co.’s customers, the anomalous status of the intermediate category is particularly interesting. This difference was significant around the ten percent level. It bolsters the notion that there may have been a ‘troubled cohort’ of middle class customers attending Henry Poole & Co. whose cost of living was disproportionately higher than their income, jeopardising their calorific intake. In contrast, the lesser status ‘skilled’ customers of Henry Poole & Co. perhaps made one-off luxury purchases but overall had fewer societal expectations upon them and therefore managed to achieve a higher nutritional status.

Examining the nature of those Henry Poole & Co. customers classified as 'intermediate' and 'skilled' according to Armstrong's skill ranking system reinforces the applicability of this hypothesis. 'Intermediate' level customers of Henry Poole & Co. were often clerks, such as: Nathaniel Richard Brassey, a judge's clerk; Jeremy Jepson Ripley, a clerk of customs; Charles J. Knowles, an articled clerk; and William Raven Robinson, a solicitor's clerk. Other Henry Poole & Co. customers of an intermediate occupational skill level included printers, publishers and business agents. On the whole, these were individuals who were not their own boss but whose prospects, both socially and professionally, depended on a respectable image. On the other hand, 'skilled' attendees of Henry Poole & Co. included a chemist, a saddler and ironmonger, and numerous textile merchants and manufacturers of moderate success. Engaged outside of the professional sectors in more active occupations, their expensive Henry Poole & Co. outfits were unlikely to have been required on a daily basis but kept instead for special occasions.

The multiple regression reported in Table 21 is revealing. The excluded category is 'skilled' professions. Bearing in mind that these results apply to men aged over 25 years, it is clear that age remains the main driver of increasing adult waist size. When age is controlled for, it is evident that occupational skill levels fail to exert a significant effect on waist circumference for Morris & Son customers, although the deficit for those Henry Poole & Co customers designated as 'intermediate' remains pronounced. The other notable, significant result is that Morris & Son professionals, and Henry Poole & Co professionals and intermediates, all had waist-hip ratios below that of their skilled or partially skilled counterparts. This affirms a class bias in nutritional adequacy, with larger waist-hip ratios indicative of early-life deprivation and relative later-life abundance. Lesser skilled customers were the most likely to have experienced a degree of fetal deprivation but then managed to improve their lot, albeit not enormously, in adulthood. They are therefore prime suspects for having endured a contrasting fetal and postnatal nutritional status jeopardising their metabolic

competency and increasing the likelihood of centralised adiposity. If the Barker hypothesis is relevant here it implies that even Henry Poole & Co.'s lowest status customers experienced some degree of health jeopardy during their development in utero, which was at odds with their later life high standard of living.

Table 21: Effect of Age and Occupational Skill Level on Waist Circumference and Waist-Hip Ratio of Morris & Son and Henry Poole & Co. Customers Aged Over 25

	Morris & Son		Henry Poole & Co.	
	Coefficient		Coefficient	
	WC	WHR	WC	WHR
(Constant)	30.463*** (31.415)	0.893*** (96.919)	27.551*** (20.346)	0.796*** (37.657)
Age	0.101*** (4.867)	0.001*** (3.544)	0.212*** (10.007)	0.003*** (8.164)
Professional	0.883 (1.097)	-0.015** (1.997)	-0.756 (0.764)	-0.034** (2.187)
Intermediate	0.854 (1.313)	0.000 (0.065)	-2.825** (2.277)	-0.051*** (2.670)
Partly Skilled or Unskilled	0.556 (0.669)	0.002 (0.251)		
R²	0.152	0.098	0.338	0.258
N	166	166	209	205

*** = significant at 1% level

** = significant at 5% level

* = significant at 10% level

t-value in parentheses

Constant = Age 25; Skilled

Sources: Morris & Son 'Measure Book 1', Henry Poole & Co. 'Measure Book A' and England and Wales Census Records.

9.3. Address

Individuals' occupations are not conducted in a vacuum. Occupational status, industry and to some extent wealth, are mutually dependent on address – those working in agriculture were highly unlikely to live in a city, and those living in Britain's industrial North West were more likely to engage in manufacturing. It is therefore useful to examine whether the tailors' customers' address had an impact on their central adiposity. It is not viable to assess the way in which addresses affected Morris

& Son's customers' waist and hips because sample sizes from outside North Wales are too small. The following analyses are therefore based on the data from Henry Poole & Co alone.

Model 1 of the regression analysis in Table 22 shows that after controlling for the effect of age, nineteenth century urban disamenities impeded Henry Poole & Co.'s customers' waist circumferences by over an inch. Urban living inflicted a penalty on net nutritional status. Despite Henry Poole & Co.'s customers ranking amongst the elite in the second half of the nineteenth century, they were not able to avoid the perils of the city. This aligns with previous findings that elite West Point military cadets experienced a rural net nutritional advantage⁴. It would appear that the wealthy were justified in their, '...ever-present fear...that the disease and sickness which inevitably infested the slums...might spill over', because the 'slums...stood on the doorstep...'⁵. However, it cannot be determined with certainty that it was the higher disease burden of the city that jeopardised nutritional status; other factors such as a more limited access to fresh nutrients may have also played their part.

⁴ Cuff, T., 'The Body Mass Index of Mid-Nineteenth Century West Point Cadets: A Theoretical Application of Waaler's Curves to a Historical Population', *Historical Methods*, vol. 26, 4 (1993), p. 177; Komlos, J., 'The Height and Weight of West Point Cadets: Dietary Change in Antebellum America', *The Journal of Economic History*, vol. 47, 4, p. 906.

⁵ Thorold, P., *The London Rich: The Creation of a Great City from 1666 to the Present*, (London: Viking, 1999), p. 249 and p. 248 respectively.

Table 22: Effect of Urban Address on the Waist Circumference and Waist-Hip Ratio of Morris & Son and Henry Poole & Co. Customers Aged Over 25.

	Henry Poole & Co.			
	Coefficient		Coefficient	
	Waist Circumference		Waist-Hip Ratio	
	(1)	(2)	(1)	(2)
(Constant)	27.383*** (21.885)	27.227*** (21.706)	0.774*** (43.466)	0.767*** (41.761)
Age	0.209*** (9.800)	0.208*** (9.524)	0.003*** (8.375)	0.003*** (7.997)
Urban Address	-1.011* (1.663)		-0.012 (1.429)	
Urban Place of Birth		-0.505 (0.821)		0.004 (0.469)
R²	0.347	0.330	0.282	0.257
N	198	192	194	188

*** = significant at 1% level

** = significant at 5% level

* = significant at 10% level

t-value in parentheses

Constant = Age 25; Model 1: Rural address; Model 2: Rural place of birth.

Sources: Henry Poole & Co. 'Measure Book A' and England and Wales Census Records.

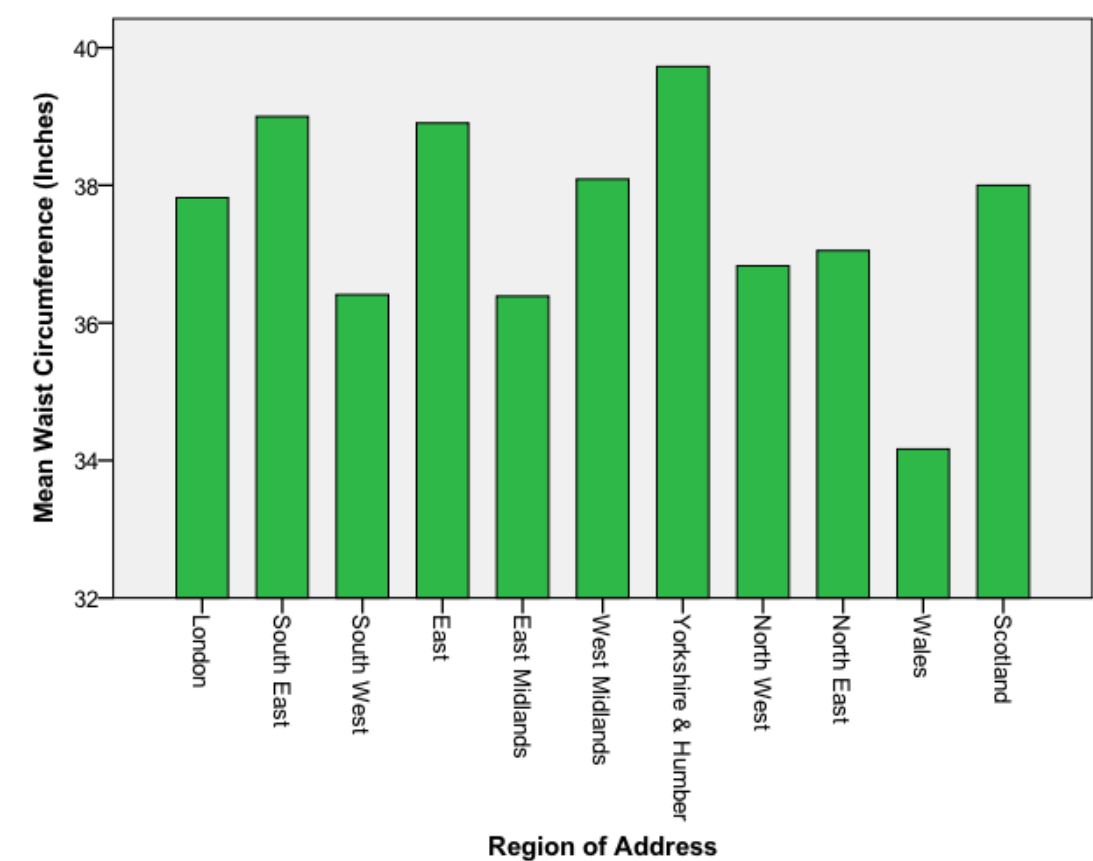
Although Model 2 of Table 22 reveals that no statistically significant long-term effect on central adiposity was exerted by urban disamenities at birth, it is worth remarking that an urban place of birth displayed a *positive* correlation with waist-hip ratio. The direction of this correlation conforms with the notion that early fetal and childhood disadvantage could jeopardise hip growth and exacerbate central adiposity in later life amidst improvement in standards of living and the accumulation of a large waist.

The evidence of an urban penalty in Table 22 justifies the assumption that waist circumferences and waist-hip ratios would have been jeopardised most severely living in the biggest and deadliest city of them all – London⁶. Figure 42 does not provide evidence of this, probably because of the way in which London has been

⁶ Landers, J., *Death and the Metropolis: Studies in the Demographic History of London 1670-1830*, (Cambridge: Cambridge University Press, 1993).

defined rather than as true indication of the health threat experienced within the capital. As explained in Chapter 3, in this thesis the region of ‘London’ has been defined by its modern sub-national boundary divisions used by the current government. This means that Henry Poole & Co.’s customers labeled as having an address in London stem from both the City of London and its surrounding (healthier) suburbs. This explains why addresses categorised in London do not display an impediment on waist circumferences or waist-hip ratio.

Figure 42: Mean Waist Circumference of Henry Poole & Co. Customers Aged Over 25 from Different Regions of Britain



Source: Henry Poole & Co. ‘Measure Book A’ and England and Wales Census Records.

Table 23: Descriptive Statistics of the Waist Circumference by Region of Address of Henry Poole & Co. Customers Aged Over 25

	Region of Address	Waist Circumference (Inches)		
		Mean	N	Standard Deviation
Henry Poole & Co.	London	37.82	55	4.68
	South East	39.00	30	6.85
	South West	36.41	11	4.50
	East	38.90	26	5.44
	East Midlands	36.39	9	4.48
	West Midlands	38.09	25	4.38
	Yorkshire & Humber	39.73	11	3.68
	North West	36.83	16	6.30
	North East	37.05	15	4.96
	Wales	34.17	3	2.75
	Scotland	38.00	3	3.12

Source: Henry Poole & Co. ‘Measure Book A’ and England and Wales Census Records.

Disaggregating Henry Poole & Co.’s customers by their region of address creates sample sizes a little too small to make a meaningful comment. However, overall in Figure 42 and the corresponding descriptive statistics in Table 23 there does not seem to be much discernible trend in the waist circumference of Henry Poole & Co.’s customers by their region of address. Heavily industrial areas of Britain such as the North West and the North East show some tendency towards smaller waist circumferences, however in the West Midlands, which also experienced intense industrialisation, mean waist circumferences were amongst the highest in the country. Mean waist circumferences were also particularly high in the South East, suggesting perhaps early signs of the ‘North-South’ divide in standards of living felt so keenly today.

9.4. Conclusion

Combining all the socioeconomic variables described above to explain the waist circumference and waist-hip ratio of Morris & Son and Henry Poole & Co. customers in Table 24, the conclusion emerges that later life factors provide weak explanations for the body shape of Morris & Son's customers. The only statistically significant coefficient is that of age on waist circumference and this is likely to reflect the biological affects of ageing and the redistribution of fat deposits. During adulthood, only about ten percent of the movement in Morris & Son's customers' waist circumference and five percent of the movement in their waist-hip ratio can be explained by their age, occupation, or wealth, confirming the hypothesis of the previous chapter, that early life socioeconomic conditions played the greatest role in determining Morris & Son's customers' waist circumferences and waist-hip ratios. Even when Morris & Son's customers achieved a degree of wealth or social status that made an obesogenic lifestyle feasible, it is apparent that Barmouth's environment was not conducive to weight gain. Morris & Son's customers' central adiposity was defined by their early life circumstances, after that, their adult standard of living appears to have had little effect.

Table 24: Effect of Age, Occupation, Wealth and Address on Waist Circumference and Waist-Hip Ratio Among Morris & Son and Henry Poole & Co. Customers Aged Over 25

	Morris & Son		Henry Poole & Co.	
	Coefficient		Coefficient	
	WC	WHR	WC	WHR
(Constant)	31.066*** (17.138)	0.895*** (51.280)	28.804*** (13.221)	0.784*** (23.131)
Age	0.088** (2.445)	0.001 (1.533)	0.212*** (8.788)	0.003*** (6.982)
Wealth in Probate (£0'000)	0.000 (0.048)	0.003 (0.634)	0.026* (1.801)	0.000 (0.594)
Professional	1.141 (0.889)	-0.014 (1.096)	-1.188 (0.684)	-0.012 (0.432)
Intermediate	1.431 (1.303)	0.003 (0.325)	-3.228* (1.651)	-0.029 (0.949)
Partly Skilled or Unskilled	0.893 (0.486)	0.001 (0.075)		
Urban Address			-1.430** (2.127)	-0.013 (1.283)
South East			-0.029 (0.027)	0.006 (0.370)
South West			-3.081** (2.115)	-0.020 (0.912)
East			1.278 (1.204)	0.024 (1.502)
East Midlands			-1.824 (0.976)	-0.007 (0.244)
West Midlands			-0.141 (0.128)	0.012 (0.754)
Yorkshire & Humber			-0.485 (0.282)	0.014 (0.561)
North West			-0.200 (0.156)	-0.009 (0.456)
North East			-0.029 (0.021)	0.009 (0.424)
Wales			-1.251 (0.483)	0.009 (0.248)
R²	0.112	0.059	0.383	0.285
N	79	79	183	179

*** = significant at 1% level

** = significant at 5% level

* = significant at 10% level

t-value in parentheses

Constant = Age 25; Wealth in probate = 0; Skilled; in addition, rural address and London address for Henry Poole & Co.

Sources: Morris & Son 'Measure Book 1', Henry Poole & Co. 'Measure Book A', England and Wales Census Records, and the National Probate Calendar.

On the other hand, nearly forty percent of the movement in Henry Poole & Co.'s customers' waist circumferences and over twenty-five percent of the movement

in their waist-hip ratios can be explained by their later life socioeconomic conditions. Henry Poole & Co.'s customers' waist circumferences increased with age and with wealth but were jeopardised by occupations amongst the economically constricted middle classes and by living within unhealthy urban locations. For Henry Poole & Co.'s customers, with wealth and social status came both the ability and the opportunity to gain central adiposity.

These results highlight that when assessing the causes and responses to our current obesity epidemic it should not be assumed that variables have a consistent impact on a macro level. As Morris & Son's customers prove, individuals with an economic ability to become overweight will not necessarily become so if their environment does not encourage an obesogenic lifestyle. Although few historical socioeconomic variables are available to examine, nonetheless the example of Morris & Son's customers suggests that perhaps in currently developing countries, the threat of obesity is mainly determined by fetal and early life conditions, on which later life circumstances can make little difference. This implies that policy makers should target their limited resources towards maternal health and early childhood development stages in order to stem the rising threat of obesity, alongside a persistent threat from infectious diseases.

In contrast, Henry Poole & Co.'s customers highlight the complicated, multi-faceted nature of lifestyles enabling abdominal adiposity amidst an environment that encouraged it. Within such circumstances a vast network of forces create a propensity towards larger girths. The problem is that once an obesogenic environment emerges, Henry Poole & Co.'s customers suggest that economic and social 'improvement' causes both wealth and waistlines to rise.

Chapter 10. Later Life Obesity and Longevity

Chapter 8 identified that overweight and obesity were a feature of nineteenth century Britain. Furthermore, Chapter 9 revealed that although central adiposity in later life was more prominent amongst the aged, upper classes, wealthy, and professional, it transcended simplistic socioeconomic boundaries.

Modern health literature emphasises that excessive central adiposity increases the risk of chronic diseases known collectively as the 'metabolic syndrome'. In addition, Chapter 3 highlighted that during the second half of the nineteenth century rates of mortality from chronic disease increased dramatically, eventually surpassing those of infectious disease by the early twentieth century. This raises the question: in the second half of the nineteenth century, was the increase in mortality from chronic diseases caused by an increase in levels of obesity?

To answer this question, the cause of death of each customer would have needed to be identified. This would then have enabled an analysis of the nineteenth century relationship between waist circumferences and their associated morbidities. Unfortunately, as outlined previously, such data is only provided on a death certificate and these are priced beyond the reach of an academic researcher with a large sample size. Instead, mortality can be assessed via longevity. In effect a new question emerges: did overweight and obese individuals in the second half of the nineteenth century face the health jeopardy that modern health research suggests that they should have done? What was a healthy waistline in nineteenth century Britain?

Responding to these questions contributes to the existing debate surrounding optimal body shape in the past. Historical height and body mass index (BMI) data has

provided evidence which has been interpreted to represent all three sides of the debate – body shape ideals have remained constant, bigger was better, smaller was safer. Tailors' records provide new anthropometric measures in the form of waist circumference and waist-hip ratio with which to re-assess the correlation between body shape and mortality in the past.

10.1. The Longevity of the Tailors' Customers

Longevity was measured by linking the tailors' data to the census and death index. The following section considers all customers who could be linked, and each customer appears just once in the dataset. It should be born in mind that Henry Poole & Co. customers were drawn from earlier in the nineteenth century than those of Morris & Son: a secular increase in longevity over the century should have favoured the latter, while the former had a class advantage.

World War One and World War Two occurred during the lifetime of some Morris & Son customers, however these external shocks do not appear to have had a strong statistical influence on the customers' longevity within the sample. Only six of Morris & Son's customers whose longevity has been identified, died during World War Two and all were aged over sixty-five. Sixteen of Morris & Son's customers died during World War One, but only six were aged under fifty, all others were over sixty and therefore it seems unlikely that their death was directly attributable to the war.

This provides a suitable moment to reflect, somewhat sentimentally, upon the 'real' and 'human' dimension of the nominal linkage process. Kenelm Julian Stevenson received three suits from Morris & Son purchased for him by his father when he was between twelve and thirteen years old attending Trafalgar House School in Winchester¹. On 26 August 1918, aged forty, Kenelm died of his wounds at the

¹ National Library of Wales, GB 0210 MORUTH, Morris & Son Tailoring/Dressmaking Books, 53, p. 33, p. 69, p. 92; 1891 Census Returns (PRO: RG12): RG12/936, f. 134, p. 25.

Battle of Amiens during the 'Hundred Days Offensive'². This Allied offensive led to the capture of 100,000 German prisoners and resulted in the German High Command acknowledging that the war was lost and entering into peace negotiations³. Buried in the Daours Communal Cemetery outside Amiens⁴, Kenelm could have no idea that nearly a hundred years later his childhood tailoring measurements would contribute to a doctoral thesis examining historical body shape in the context of a twenty-first century obesity epidemic.

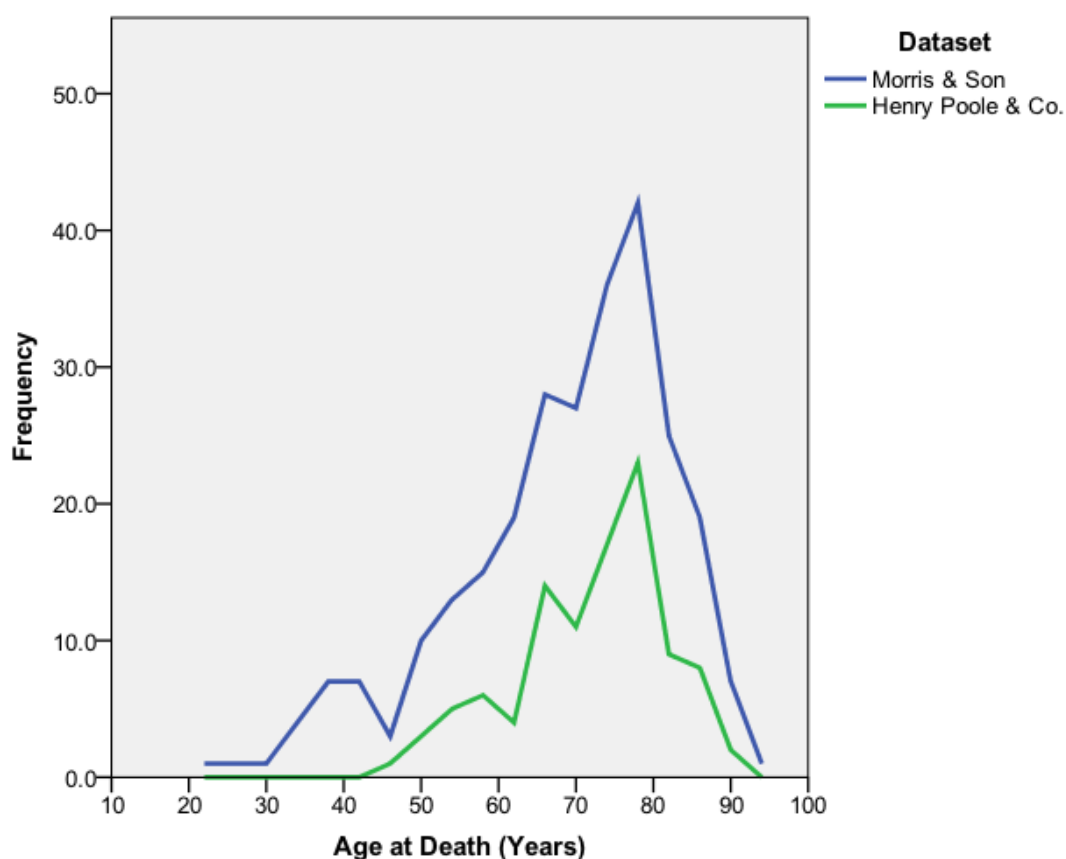
Kenelm is just one of the 158 customers of Morris & Son and 100 customers of Henry Poole & Co. whose longevity has been identified. Figure 43 shows that the longevity of Morris & Son customers ranged between around twenty and ninety-five years, that of Henry Poole & Co. customers between forty and ninety-five years, and amongst both sets of customers was moderately negatively skewed (skewness = -0.667 for Morris & Son and -0.408 for Henry Poole & Co.) with the modal longevity of both tailors' customers in the late seventies. In spite of their advantage of being born later in the century, Morris & Son's customers started dying off earlier, in their late 50s and early 60s. The mean longevity of Morris & Son's customers was 67.7 years, whereas it was a significant longer 72.8 years for Henry Poole & Co. customers ($t = 3.511$, $p = 0.001$).

² Soldiers Died in the Great War 1914-1919, 26 Aug 1918, France & Flanders, Private, Royal Welsh Fusiliers, 16th Battalion, No. 23258; Commonwealth War Graves 1914-1921 and 1939-1947, 26 Aug 1918, Daours Communal Cemetery, France, No. 23258; 'World War I', *Wikipedia*, accessed 28 March 2014, http://en.wikipedia.org/wiki/World_War_I#1917.E2.80.931918

³ 'World War I', *Wikipedia*, accessed 28 March 2014, http://en.wikipedia.org/wiki/World_War_I#1917.E2.80.931918

⁴ Commonwealth War Graves 1914-1921 and 1939-1947, 26 Aug 1918, Daours Communal Cemetery, France, No. 23258

Figure 43: Frequency Distribution of the Longevity of Morris & Son and Henry Poole & Co. Customers



Sources: Morris & Son 'Measure Book 1', Henry Poole & Co. 'Measure Book A', GRO Death Index, and the National Probate Calendar.

n = 158 (Morris & Son), n = 100 (Henry Poole & Co.)

There is a survivorship bias within the Henry Poole & Co. data because the customers were measured later in life than those that attended Morris & Son. The impact of this can be explored using a matched sample of all customers measured when aged 25-35 years of age: on average Morris & Son's customers lived to 65.2 years, and Henry Poole & Co.'s customers lived five years longer, to 70.7 years ($t = 1.996$, $p = 0.050$).

Almost all customers had a greater longevity than their contemporary life expectancy at birth (e_0) would have predicted. The customers within the sample were born between 1780 and 1866, when Wrigley and Schofield have calculated that e_0

ranged between 34.7 and 41.3 years⁵. However, by virtue of having survived infancy and turning up at the tailors, a comparison with contemporary life expectancy at age twenty-five (e_{25}) is more useful because of the downward bias on e_0 exerted by high rates of child mortality during the nineteenth century. Wrigley *et. al.* estimate e_{25} to have ranged between 37 and 39 years during the nineteenth century⁶. These e_{25} estimates, which outline an individual's number of years remaining at age 25, predict a longevity of 62 to 64 years, identifying that on average Morris & Son's customers lived a few years longer and Henry Poole & Co.'s customers lived nearly ten years longer, than the rest of the population that reached full growth maturity at the same time as them.

In fact, the longevity of Henry Poole & Co.'s customers shows signs of a tendency towards modern standards of life expectancy at birth, calculated most recently as 79.1 years for males⁷. Accounting for the survivorship bias within this dataset, the mean longevity of those who frequented Henry Poole & Co. aged 25-35 was very similar to life expectancy at birth between 1980-1982 when it was calculated as 71.0 years⁸. Within both datasets there were customers who reached their nineties, a feat accomplished by less than one percent of the population even today⁹.

This is further evidence that the sample of customers from Morris & Son and Henry Poole & Co.'s record books represent a portion of the population 'better-off' than their contemporaries. They lived nearly twice as long as the population as a whole and on average lived longer, for Henry Poole & Co.'s customers as much as ten years longer, than others who managed to reach adulthood. Henry Poole & Co.'s

⁵ Wrigley, E. A. and Schofield, R. S., *The Population History of England 1541-1871: A Reconstruction*, (London: Edward Arnold, 1981), 'Table 7.15: Changes in English Fertility and Mortality Rates 1541-1871', p. 230.

⁶ Wrigley, E. A., Davies, R. S., Oeppen, J. E., and Schofield, R. S., *English Population History from Family Reconstruction 1580-1837*, (Cambridge: Cambridge University Press, 1997), 'Figure 6.14: Expectation of Life at Age 25', p. 281, and 'Figure 6.15: A Comparison of Childhood and Adult Mortality', p. 283

⁷ Office for National Statistics, *Life Expectancy at Birth and at Age 65 for Local Areas of England and Wales, 2010-2012*, (Newport: Office for National Statistics, 2013), p. 3.

⁸ Office for National Statistics, *Interim Life Tables, England and Wales 2010-2012*, (Newport: Office for National Statistics, 2013), p. 3.

⁹ Office for National Statistics, *Estimates of the Very Old (Including Centenarians), 2002-2012, England and Wales*, (Newport: Office for National Statistics, 2013), p. 1.

customers even show signs of tending towards relatively modern mortality standards, although it is likely that the dispersion of the tailors' customers' longevity ($SD = 14.52$ for Morris & Son's customers and 9.18 for Henry Poole & Co.'s customers) was much greater than it is currently. The large standard deviation of the tailor's customers' longevity highlights their transitional mortality stage. Some customers still suffered from early-onset adult mortality whilst others succumbed to diseases associated with later life.

The following section of this chapter examines the correlation between customers' central adiposity and their longevity and explores the extent of the variance in their longevity that can be explained by waists, hips and other socioeconomic variables.

10.2. Later Life Central Adiposity and Longevity

Table 25 shows that the waist circumference and waist-hip ratio of Morris & Son's customers in their twenties, were significantly negatively correlated with their longevity. Until middle age, larger waist-hip ratios, signaling a disproportion between constrained hip growth during development and waist size in adulthood, were negatively correlated with longevity amongst Morris & Son's customers. This is consistent with the results of Chapter 7, which suggested that amongst Morris & Son's customers - who experienced a period of economic transition - high levels of central adiposity in early adulthood were indicative of a metabolic imbalance between fetal conditions and childhood or early adult nutritional status. This metabolic imbalance imperiled body function and later life health and longevity.

In contrast, Table 25 shows that Henry Poole & Co. customers who gained a larger waist circumference in their thirties benefited from a significant longer life. Amongst this elite clientele, waist circumference was consistently positively associated with longevity and waist-hip ratio was positively correlated until old age, although small sample sizes mar statistical significance. The causes of the positive

correlation between waists and longevity are unknown, however the relationship appears to imply that - contrary to the modern public health message - bigger waists and more central adiposity were advantageous to health and longevity in this past community.

Table 25: Age-Specific Correlations Between Waist Circumference and Waist-Hip Ratio and Longevity Amongst Morris & Son and Henry Poole & Co. Customers

	Morris & Son		Henry Poole & Co.	
	WC	WHR	WC	WHR
	Pearson <i>r</i>		Pearson <i>r</i>	
Under 20	0.237 (21)	-0.153 (21)	(1)	(1)
20 - 29	-0.419*** (37)	-0.338** (36)	0.126 (23)	0.046 (22)
30 - 39	0.032 (38)	-0.103 (38)	0.312* (32)	0.271 (31)
40 - 49	-0.021 (28)	0.059 (28)	0.008 (50)	0.112 (50)
50 - 59	-0.261 (15)	-0.055 (15)	0.195 (50)	0.089 (49)
60 - 69	0.045 (8)	0.198 (8)	0.153 (48)	-0.054 (48)
70+	-0.121 (8)	0.023 (8)	0.094 (23)	0.223 (22)

*** = significant at 1% level

** = significant at 5% level

* = significant at 10% level

n value in parentheses

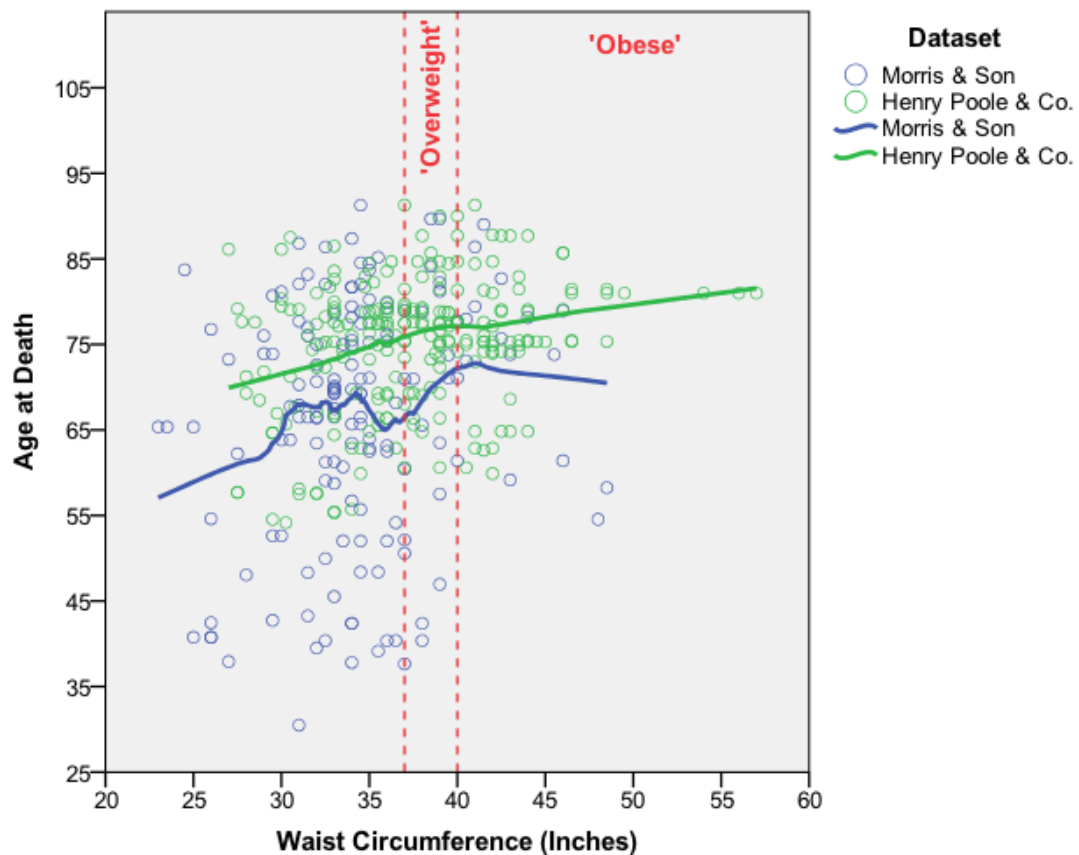
Sources: Morris & Son 'Measure Book 1', Henry Poole & Co. 'Measure Book A', England and Wales Census Records, and the National Probate Calendar.

This relationship is re-affirmed by the loess trend lines in Figure 44. Henry Poole & Co.'s customers' waist circumferences were positively and fairly linearly correlated to their longevity. The red lines to the x-axis demarcate the position of the modern WHO cut-off markers for overweight and obesity, but it is evident that they do not represent a point of disjuncture in Henry Poole & Co.'s customers' health or longevity. Larger waists appear to be persistently positively associated with longevity.

Figure 44 displays a more erratic relationship between waists and longevity for Morris & Son's customers. At every equivalent waist circumference size, Morris & Son's customers died roughly five to ten years earlier than Henry Poole & Co.'s customers. This is unsurprising given their lower wealth and social status. In general, a positive relationship between Morris & Son's customers' waist circumference and longevity can also be identified, especially amongst those who achieved what would now be termed an 'overweight' girth. However, there are signs, albeit from a small sample size of customers, that an 'obese' waist circumference jeopardised Morris & Son's customers' longevity.

Although Figure 44 does not provide concrete evidence that larger waists led to longer life, it does points to bigger being unanimously better for Henry Poole & Co.'s customers and often better, at least until a waist circumference of 40 inches, for Morris & Son's customers. It suggests that in terms of overall mortality, modern notions of overweight health jeopardy were irrelevant amongst the tailors' nineteenth century customers. That is not to say that they did not suffer from chronic diseases associated with excess central adiposity, but that even if they did, their longevity does not appear to have been constricted.

Figure 44: Effect of Waist Circumference on Longevity of Morris & Son and Henry Poole & Co. Customers



Sources: Morris & Son 'Measure Book 1', Henry Poole & Co. 'Measure Book A', England and Wales Census Records, and the National Probate Calendar

n = 155 (Morris & Son), n = 227 (Henry Poole & Co.)

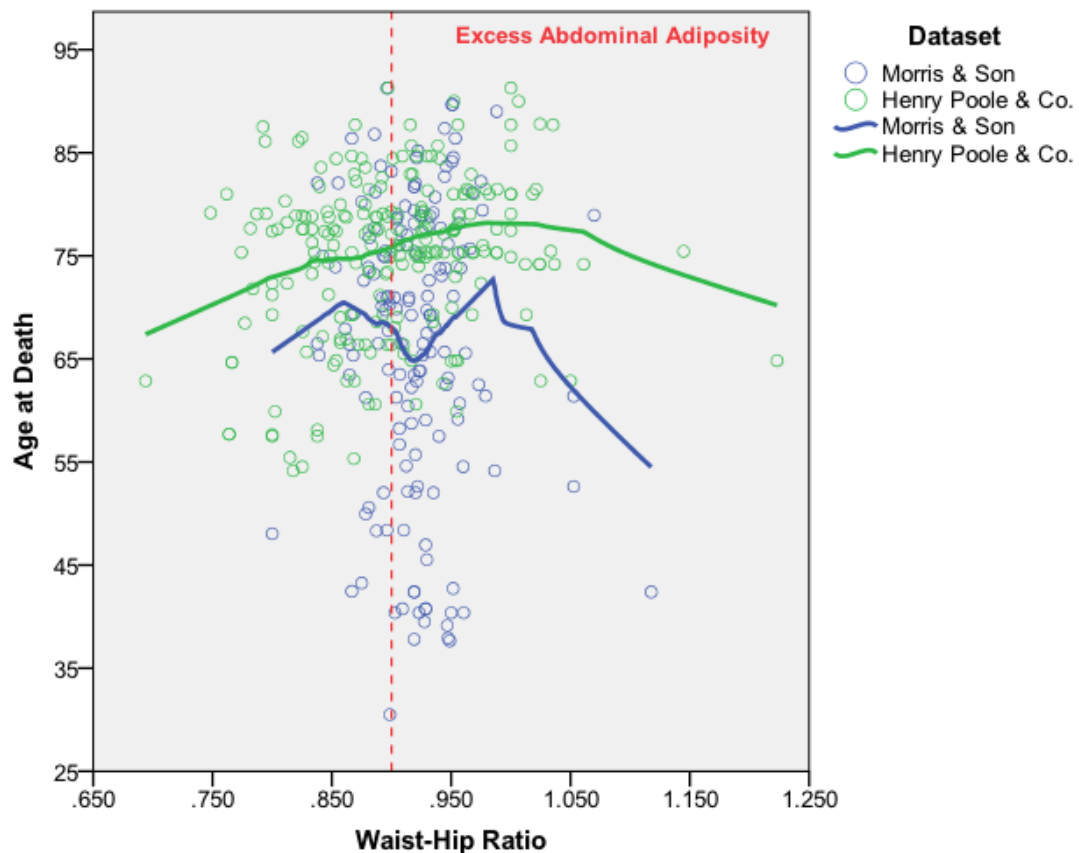
The relationship between Henry Poole & Co.'s customers' waist-hip ratio and their longevity displays a flat-sided inverted U-shape, as shown in Figure 45. Akin to trends identified between BMI, morbidity and mortality, the longevity of Henry Poole & Co.'s customers appears to have been curtailed by either particularly small or particularly large waist-hip ratios. Although the threat of extreme waist-hip ratios in either direction does not appear to be as severe as the steep-sided U-shape relationship between BMI and mortality, the similarity of the two trends helps to make a speculative causal link between waist-hip ratio and longevity. Rather than a waist-hip ratio of 0.9 signaling a threat from excess abdominal obesity, as WHO suggests

currently, Henry Poole & Co.'s customers display signs that a waist-hip ratio above 1.0 began to have a detrimental effect on longevity.

The waist-hip ratios of Morris & Son's customers were clustered between 0.9 and 0.95. Although very few customers were sampled with a waist-hip ratio either side of this range there are tentative signs of a similar detrimental effect on longevity of having a waist-hip ratio below 0.85 or above 1.0. Again, at all equivalent waist-hip ratios, Morris & Son's customers had a lower longevity than Henry Poole & Co.'s customers, by five to ten years.

The loess trend lines in Figure 44 and Figure 45 provide grounds to speculate that high net nutritional status, evidenced by waists, consistently benefited longevity during the second half of the nineteenth century, but only when skeletal frame-size enabled hips to keep-up. It would appear that central adiposity was more beneficial to health and longevity in the past than it is currently, based on WHO policy guidelines.

Figure 45: Effect of Waist-Hip Ratio on Longevity of Morris & Son and Henry Poole & Co. Customers



Sources: Morris & Son 'Measure Book 1', Henry Poole & Co. 'Measure Book A', England and Wales Census Records, and the National Probate Calendar

n = 154 (Morris & Son), n = 223 (Henry Poole & Co.)

The above analyses are based on cross-sectional data for all customers of all ages. An alternative means of examining the impact of body shape on longevity is to utilise each customers' largest recorded waist circumference and waist-hip ratio measurement to assess how peak known net nutritional status impacted longevity. On the whole, the largest recorded waist circumference and waist-hip ratio measure of each customer also equates to their last tailoring measurement because of the correlation between central adiposity and age. Having previously explained the way in which early life conditions influenced longevity in Chapter 7, the following is restricted to customers who were measured aged over 25 in order to examine later-life influences on health outcomes.

The longevity of Morris & Son's customers had no statistically significant linear correlation to their largest recorded waist circumference measures, $r = 0.081$, $p = 0.443$, $n = 92$, or their largest recorded waist-hip ratio, $r = 0.053$, $p = 0.613$, $n = 92$. On the other hand, there was a statistically significant correlation between Henry Poole & Co.'s customers' longevity and their largest known waist circumference, $r = 0.313$, $p = 0.023$, $n = 87$, and waist-hip ratio, $r = 0.244$, $p = 0.023$, $n = 87$. What matters is that yet again the relationship was positive.

The regression analyses in Table 26 shows that whereas the waist circumference and waist-hip ratio of Morris & Son's customers explained less than one percent of their longevity, almost ten percent of the movement in Henry Poole & Co.'s customers' longevity was explained by their waist circumferences and six percent by their waist-hip ratio. For every inch increase in the largest recorded waist circumference measurement of Henry Poole & Co.'s customers, they lived over half-a-year longer. An increase in their waist-hip ratio by a tenth was associated with increased longevity of over two-and-a-half years.

Table 26: Effect of Largest Recorded Waist Circumference and Waist-Hip Ratio of Morris & Son and Henry Poole & Co. Customers Aged Over 25 on Longevity

	Age at Death			
	Morris & Son		Henry Poole & Co.	
	Coefficient		Coefficient	
(Constant)	59.907*** (4.997)	52.446 (1.597)	54.079*** (8.509)	49.412*** (4.731)
Largest WC	0.254 (0.770)		0.515*** (3.086)	
Largest WHR		18.009 (0.507)		26.362** (2.323)
R²	0.007	0.003	0.098	0.060
N	92	92	90	87

*** = significant at 1% level

** = significant at 5% level

* = significant at 10% level

t-value in parentheses

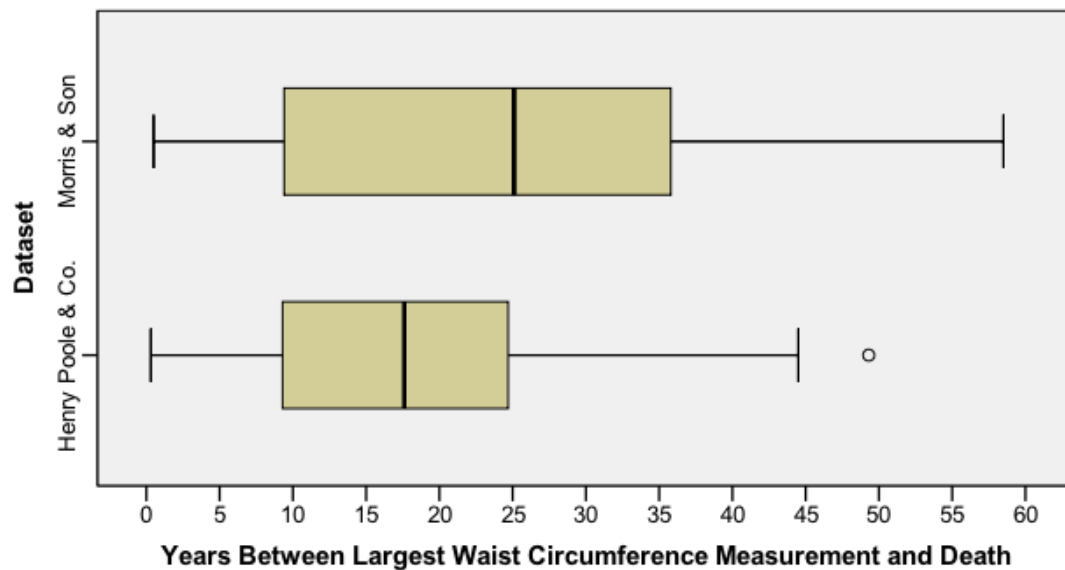
Constant = Largest WC = 0 or largest WHR = 0

Sources: Morris & Son 'Measure Book 1', Henry Poole & Co. 'Measure Book A', Death Index, and the National Probate Calendar.

The large age gap between the measurement of Morris & Son's customers' maximum known central adiposity and their death may partly explain why no bivariate relationship is apparent. Although longevity is a product of health throughout life, it is more strongly influenced by health shortly before death. The largest measurements of each customer are a far more accurate representation of net nutritional status before death for Henry Poole & Co.'s customers than Morris & Son's customers. This is because, as identified earlier, Henry Poole & Co.'s customers were measured at much older ages than Morris & Son's customers.

Figure 46 confirms this, showing that although both tailors measured some of their customers mere months before their death, some of Morris & Son's customers lived another sixty years after their largest waist circumference measurement was noted, whereas at most Henry Poole & Co's customers lived another fifty years and the majority lived less than forty-five years longer. Furthermore, the longevity of Henry Poole & Co.'s customers after their largest recorded waist circumference measurement was moderately positively skewed (skewness = 0.513) with a mean of only 18.4 years (SD = 15.0) compared to a very mildly skewed Morris & Son sample (skewness = 0.130) and a mean 23.7 years between final measurement and death (SD = 11.4).

Figure 46: Years Between Largest Waist Circumference Measurement and Death of Morris & Son and Henry Poole & Co. Customers Measured Aged Over 25



Sources: Morris & Son 'Measure Book 1', Henry Poole & Co. 'Measure Book A', Death Index, and the National Probate Calendar.

n = 93 (Morris & Son), n = 90 (Henry Poole & Co.)

This proves that the length of time between a customers' largest waist circumference measurement by their tailor and their death had a strong degree of variance, which is not accounted for within simple bivariate analyses. To control for this, in Table 27 the number of years between a customers' largest waist circumference measurement and their death is represented by the variable 'Death Age Gap'.

The regression analysis proves that once the number of years between a customer's measurement and their death is controlled for, largest recorded waist circumference and waist-hip ratio had a statistically significant positive correlation with longevity for both Morris & Son's customers and Henry Poole & Co.'s customers. In fact, the effect of both measures of abdominal obesity was stronger for Morris & Son's customers than Henry Poole & Co.'s customers. As the largest known waist circumference measurement increased by an inch, the longevity of Morris & Son's customers increased by almost ten months and the longevity of Henry Poole & Co.'s customers by nearly nine months. Increasing maximum known waist-hip ratio by one

hundredth increased the longevity of Morris & Son's customers by just over half-a-year and Henry Poole & Co.'s customers by just over a-third-of-a-year.

Table 27: Effect of Waist Circumference and Waist-Hip Ratio on Longevity, Controlling for Time Between Measurement and Death, for Morris & Son and Henry Poole & Co. Customers measured Aged Over 25

	Age at Death			
	Morris & Son		Henry Poole & Co.	
	Coefficient		Coefficient	
(Constant)	27.410** (2.487)	7.928 (0.277)	40.961*** (5.716)	32.661*** (2.911)
Largest WC	0.814*** (2.864)		0.728*** (4.281)	
Largest WHR		53.978* (1.767)		39.280*** (3.413)
Death Age Gap	0.515*** (6.620)	0.475*** (6.111)	0.276*** (3.364)	0.267*** (3.196)
R²	0.334	0.298	0.202	0.162
N	92	92	90	87

*** = significant at 1% level

** = significant at 5% level

* = significant at 10% level

t-value in parentheses

Constant = Death age gap = 0; Largest WC = 0 or largest WHR = 0.

Sources: Morris & Son 'Measure Book 1', Henry Poole & Co. 'Measure Book A', Death Index, and the National Probate Calendar.

These results indicate that although an excessive waist circumference exacerbates the risk of metabolic complications according to modern health experts and international guidelines, during the second half of the nineteenth century weight in later life was associated with long life. This relationship sustains after controlling for wealth in probate, occupational class and urban address, as Table 28 shows. Amongst Morris & Son's customers a partly skilled or unskilled occupation was associated with a significant nearly fifteen-year disadvantage on longevity compared to those with a skilled occupation. For Henry Poole & Co. customers an intermediate or professional occupation correlated with a six to nine year longevity advantage over skilled customers.

Table 28: Effect of Largest Recorded Waist Circumference and Waist-Hip Ratio and other Socioeconomic Variables on the Longevity of Morris & Son and Henry Poole & Co. Customers Aged Over 25

	Age at Death			
	Morris & Son		Henry Poole & Co.	
	Coefficient		Coefficient	
(Constant)	41.683*** (3.618)	19.354 (0.651)	40.549*** (4.585)	22.293* (1.667)
Largest WC	0.560* (1.851)		0.620*** (3.294)	
Largest WHR		46.316 (1.451)		43.520*** (3.411)
Death Age Gap	0.418*** (4.789)	0.393*** (4.552)	0.291*** (3.422)	0.313*** (3.748)
Estate in Probate (£0'000)	0.104 (0.061)	0.000 (0.056)	0.000 (0.225)	0.000 (0.024)
Professional	-3.959 (1.068)	-2.541 (0.677)	6.519* (1.750)	8.161** (2.241)
Intermediate	0.439 (0.143)	1.253 (0.409)	7.353* (1.756)	8.665** (2.091)
Partly Skilled or Unskilled	-14.936*** (3.310)	-14.874*** (3.260)		
Urban	-3.299 (0.868)	-4.014 (1.044)	-2.009 (1.028)	-1.990 (1.049)
R²	0.441	0.429	0.240	0.265
N	65	65	81	78

*** = significant at 1% level

** = significant at 5% level

* = significant at 10% level

t-value in parentheses

Constant = Death age gap = 0; Largest WC = 0 or largest WHR = 0; Estate in probate = 0; Skilled occupation, Rural address.

Sources: Morris & Son 'Measure Book 1', Henry Poole & Co. 'Measure Book A', Death Index, and the National Probate Calendar.

The key significant results of Table 28 are the positive relationship for adults between waist circumference and longevity for both sets of customers and waist-hip ratio and longevity for Henry Poole & Co.'s customers. After controlling for other socioeconomic variables an increase in waist circumference by an inch, or waist-hip ratio by one hundredth correlated with roughly an extra half-a-year of life for either set of customers. If this correlation reflects the ability of abdominal adiposity to protect longevity then it implies that a high net nutritional status provided a benefit to health,

beyond that which could be offered by wealth, occupation or address. It is worth acknowledging that the number of variables included within the regression in Table 28 is limited. It is possible that confounding factors blur the true *ceteris paribus* relationship between waist circumference or waist-hip ratio, and longevity. However, it would appear that in the second half of the nineteenth century, individuals did not live longer simply because they were better able to afford a doctor, or to live in a more salubrious area (although this helped) – net nutritional status really mattered – and it seems better to have had more, rather than less.

10.3. Conclusion

Overall, these findings seemingly contradict current epidemiological results and the recommendations of WHO. One would expect that if excessive waist circumferences increased the risk of obesity-related diseases that this would have increased mortality amongst the overweight and obese and reduced their longevity. Instead the results show that those with the largest central adiposity had the longest longevity.

There are a few possible explanations for this. The first is that the positive correlation between central adiposity and longevity is spurious or capturing an effect other than the influence of net nutritional status on longevity. A correlative relationship cannot be assumed to be a causative one. However, the positive relationship that has been identified here between girths and longevity is consistent with analyses based on historical height, BMI and mortality, which also appear to show that improving net nutritional status directly benefitted longevity (until very high levels of height, BMI and perhaps waist-hip ratio). The corroboration of this new waist and hip circumference data with previous anthropometric findings offers confidence that a causative relationship is being captured.

If central adiposity was beneficial to longevity in the second half of the nineteenth century then this can be interpreted in two ways: The first is that the

biological relationship between excessive central adiposity, morbidity and mortality that modern health experts point to, did not exist in nineteenth century Britain.

Chapter 2 has already identified that this is unlikely by proving that chronic diseases were an ever-growing threat in the second half of the nineteenth century and that doctors and health culturists specifically correlated them to overweight and obesity. The work of Fogel, Costa and Steckel, Linares and Su, Zweiniger-Bargielowska and others has all identified that chronic diseases were a threat in the past¹⁰. Barker's hypothesis suggests that, if anything, the metabolic effect of larger waist circumferences should have been greater in nineteenth century Britain when there was a greater prevalence of under-nutrition during development, creating a 'thrifty phenotype' unable to cope with later abundance¹¹.

An alternative explanation therefore seems more likely – factors that increased waist circumferences in nineteenth century Britain also increased longevity, and the effect of this was stronger than the effect of the health jeopardy caused by excessive waist circumferences. Cause of death data would be useful to examine this hypothesis further. Perhaps larger waist circumferences increased individuals' longevity but then eventually their cause of death was related to the metabolic consequences of this. If this were the case it would suggest that larger waist circumferences increased longevity but contributed to death eventually.

¹⁰ Fogel, R., 'New Sources and New Techniques for the Study of Secular Trends in Nutritional Status, Health, Mortality, and the Process of Ageing', *Historical Methods*, vol. 26, 1 (1993), pp. 5-43; Costa, D. L. and Steckel, R. H., 'Long-Term Trends in Health, Welfare, and Economic Growth in the United States', in Steckel, R. H. and Floud, R. (eds.), *Health and Welfare During Industrialisation*, (Chicago & London: University of Chicago Press, 1997), pp. 47-90; Costa, D. L., 'Height, Weight, Wartime Stress, and Older Age Mortality: Evidence from the Union Army Records', *Explorations in Economic History*, vol. 30, 4 (1993), pp. 424-49; Costa, D. L., 'The Measure of Man and Older Age Mortality: Evidence from the Gould Sample', *Journal of Economic History*, vol. 64, 1 (2004), pp. 1-23; Linares, C. and Su, D., 'Body Mass Index and Health Among Union Army Veterans: 1891-1905', *Economics and Human Biology*, vol. 3, 3 (2005), pp. 367-87; Zweiniger-Bargielowska, I., 'The Culture of the Abdomen: Obesity and Reducing in Britain, circa 1900-1939', *Journal of British Studies*, vol. 44, 2 (2005), pp. 239-73; Zweiniger-Bargielowska, I., *Managing the Body: Beauty, Health and Fitness in Britain, 1880-1939*, (Oxford & New York: Oxford University Press, 2010).

¹¹ Barker, D. J. P., *Fetal and Infant Origins of Adult Disease*, (London: British Medical Journal, 1992); Hales, C. N. and Barker, D. J. P., 'Type 2 (Non-Insulin Dependent) Diabetes Mellitus: The Thrifty Phenotype Hypothesis', *Diabetologia*, vol. 35, 7 (1992), pp. 595-601; Hales, C. N. and Barker, D. J. P., 'The Thrifty Phenotype Hypothesis', *British Medical Bulletin*, vol. 60, 1 (2001), pp. 5-20.

If the second hypothesis is correct, then modern health research is not undermined by the above results. Rather, it is entirely feasible that excessive central adiposity did increase the risk of metabolic complications in the second half of the nineteenth century and *all else being equal*, those who were overweight would have displayed shorter longevity compared to those with a waist circumference within a healthy region. But all else was not equal. In the second half of the nineteenth century larger waist circumferences increased longevity because a higher net nutritional status reduced morbidity from other causes by a greater degree than it increased it.

As Chapter 2 previously acknowledged, in mid-nineteenth century Britain infectious diseases were the single greatest killer. GRO data shows that infectious diseases accounted for 32.1 percent and 33.8 percent of all male and female deaths respectively between 1848 and 1872. However, by the first decades of the twentieth century chronic diseases had overtaken infectious diseases as the main morbidity threat¹².

A high net nutritional status, inherent with substantial central adiposity, reduces the susceptibility of individuals to infectious disease and increases their ability to overcome infectious disease if they became afflicted¹³. Thus it would appear that a high net nutritional status was beneficial to Morris & Son and Henry Poole & Co. customers because it enabled them to more successfully avoid and recover from infectious disease. Surviving infectious disease was more critical to longevity in the second half of the nineteenth century than staving off chronic diseases.

Table 22 showed that living in a city constrained Henry Poole & Co.'s customers' waist circumferences and was suggestive of the pervasive impact of a deadly infectious disease environment in nineteenth century Britain, even amongst the

¹² Logan, W. P. D., 'Mortality in England and Wales from 1848 to 1947', *Population Studies*, vol. 4, 2 (1950), pp. 138-9.

¹³ Scrimshaw, N. S. and SanGiovanni, J. P., 'Synergism of Nutrition, Infection, and Immunity: An Overview', *American Journal of Clinical Nutrition*, vol. 66, (1997), pp. 464S-7S.

elites. Yet, Table 28 revealed that there was no statistically significant impact on Henry Poole & Co.'s customers' longevity of living in a city. Henry Poole & Co.'s urban customers had smaller waists but not shorter lives. It appears that the nutritional intake of Henry Poole & Co.'s wealthy customers was sufficiently high that the energy demands of a virulent infectious disease environment took their toll on net nutritional status but were simultaneously protected from jeopardising longevity.

There is reason to believe that Morris & Son's customers may have also found that an ability to overcome infectious disease was more important than the threat of chronic disease in the second half of the nineteenth century. Although Barmouth's rural location might have been expected to pose a low infectious disease threat to its inhabitants, Morris & Son's customers did face a threat from infectious diseases because Barmouth was increasingly being advertised as a tourist 'health resort'¹⁴. At the end of the nineteenth century, tourist brochures extolled:

Barmouth is much recommended by physicians as a winter health resort, especially to those suffering from chronic or recurrent affections of the respiratory organs¹⁵

Some even provided references from doctors – the Barmouth and District Improvement Association cited Sir William Roberts, M.D.:

"As a winter resort Barmouth takes the lead of all places in the United Kingdom, and will compare favourably with any part in the South of France. For years I have been sending my patients to Barmouth with excellent results"¹⁶

It was argued that Barmouth's mild climate ensured that the town was, '...well adapted for chest affections, such as incipient consumption, or any other lowering complaint'¹⁷

As such, it is likely that the town became increasingly popular with middle- and upper class sufferers of infectious disease seeking the popular nineteenth century

¹⁴ Hughes, J., *Hughes' New Guide to Barmouth*, 2nd edn., (Barmouth: John Hughes, 1902), p. 3-4; Anon., *Aberystwyth, Barmouth, and Cardigan bay*, (Llangollen: Darlington Handbooks, 1897), p. 143; Heywood, J., *John Heywood's Illustrated Guide to Barmouth and Dolgelly, With Short Excursions in their Vicinity*, (Manchester & London: John Heywood, 1889), p. 6; Barmouth and District Improvement Association, *Barmouth: Its Beauties and Attractions*, (Barmouth: n.p., 1911), pp. 15-16.

¹⁵ Anon., *Aberystwyth, Barmouth, and Cardigan bay*, (Llangollen: Darlington Handbooks, 1897), p. 143.

¹⁶ Barmouth and District Improvement Association, *Barmouth: Its Beauties and Attractions*, (Barmouth: n.p., 1911), p. 15.

¹⁷ Hughes, J., *Hughes' New Guide to Barmouth*, 2nd edn., (Barmouth: John Hughes, 1902), p. 4.

'clean air' cure. Chapter 4 outlined that these tourists do not seem to feature within the Morris & Son sample personally, however, indirectly their health implications might. As tourism made Barmouth wealthier it is possible that it also brought with it an increasing risk of infectious disease contagion. Even seemingly healthy tourists may have introduced new pathogens to previously isolated Barmouth. Furthermore, compared to Henry Poole & Co.'s customers, Morris & Son's poorer and more remote clientele were likely to have enjoyed less access to health care, more household overcrowding and possibly a more contaminated water and hygiene environment. A high nutritional status, better enabling infectious diseases to be avoided and overcome, was as important to Morris & Son's customers as Henry Poole & Co.'s.

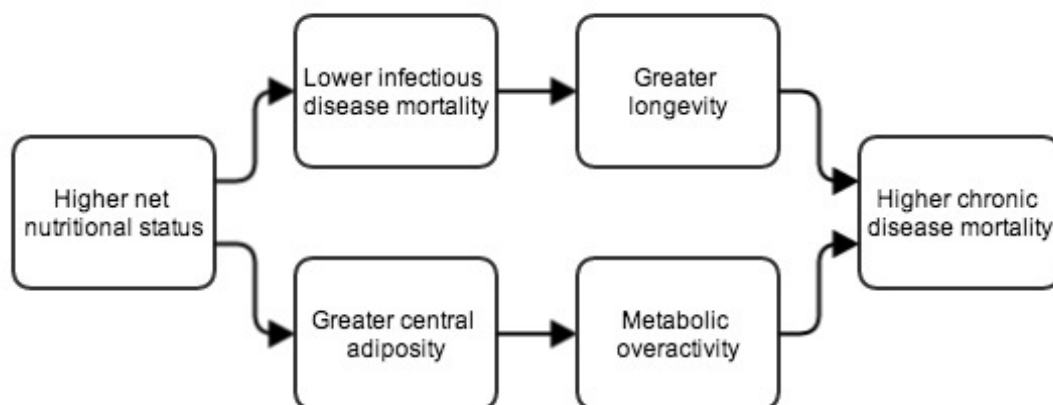
During the second half of the nineteenth century, a waist circumference cut-off point, above which longevity was jeopardised, has not been identified by this data. The positive correlation between both Morris & Son and Henry Poole & Co. customers' waist circumferences and longevity implies that historically bigger was better. This is consistent with the evidence of 'Waalers' surfaces' which suggest that historical populations, by virtue of being shorter, required a higher BMI for optimal health and longevity.

The strong, positive correlation between later life central adiposity and longevity amongst Morris & Son's and Henry Poole & Co's customers also potentially sheds light on the nature of the nineteenth century epidemiological transition in Britain. Firstly, it implies that higher net nutritional status lowered infectious disease mortality, enabling individuals to live longer. By living to older ages the British population was placed at greater risk of chronic disease mortality. This is a fairly traditional perception of the epidemiological transition.

However, this research highlights another mechanism of the epidemiological transition, ignored within the simplistic fulcrum conception of falling infectious disease rates and simultaneous rising chronic disease rates: higher net nutritional status increased central adiposity and thereby also increased the risk of chronic diseases. In

effect, improving net nutritional status increased the risk of chronic diseases via two routes displayed in Figure 47: by reducing the risk of infectious diseases, enabling individuals to live longer and thereby placing them at risk of long-term debilitating diseases; *and* by directly increasing their central adiposity, overwhelming their metabolic system and increasing their risk of obesity-related chronic diseases.

Figure 47: The Effect of Net Nutritional Status on Chronic Disease Mortality



The distinction between net nutritional status and nutrition is important. This hypothesis should not be interpreted as direct agreement with the McKeown theory that most of the secular decline in mortality during the nineteenth century was due to improved diets reducing infectious disease¹⁸. The higher net nutritional status referred to here could be caused by improved diets, greater access to healthcare, the reduced virulence of disease or any number of other factors.

Another important caveat to add to Figure 47 is that the timing of the various mechanisms within the epidemiological transition were variable and uneven. The positive correlation of Morris & Son's and Henry Poole & Co's customers' waist circumferences and waist-hip ratio with longevity implies that for a long time the impact of lower infectious disease mortality was felt before the increase in chronic disease mortality. However, the above analyses have proved that central adiposity

¹⁸ McKeown, T. and Record, R. G., 'Reasons for the Decline in Mortality in England and Wales during the Nineteenth Century', *Population Studies*, vol. 16, 2 (1962), pp. 94-122.

was a feature of upper- and middle class British society in the second half of the nineteenth century – the threat of chronic diseases via the lower strand of Figure 47 was always there. Chronic diseases should not be interpreted as having only appeared after the threat of infectious diseases waned, they had a mechanism distinct from that of infectious disease.

Finally, Figure 47 highlights why the rise in chronic diseases occurred so sharply at the end of the nineteenth century - as net nutrition status improved, chronic disease mortality rose via two mechanisms. It was not just as a consequence of the fall in rates of infectious disease that the threat of chronic disease increased, the very means by which infectious disease rates fell increased chronic disease health jeopardy.

Chapter 11. Conclusion

Some achieve greatness (Henry Poole & Co. customers); others had greatness thrust upon them (Morris & Son customers). For the latter, this reflected poor uterine conditions that had a lingering effect across their lives. This was far more detrimental to longevity than the expanded girth accumulated from excess consumption over life. Such was the epidemiological environment that there was something protective about wealth and weight.

The aims of this research were to examine the prevalence of overweight and obesity amongst the middle- and upper classes in nineteenth century Britain and to highlight the health implications of excess net nutritional status in the past. It was hoped that this would provide more insight into the nature of the epidemiological transition in Britain and the origins of the current global obesity epidemic.

This has been achieved by incorporating: modern epidemiological literature; institutional health guidelines; historical anthropometrics; tailors' records; contemporary medical and dietary tracts; theories of fashion and consumer culture; data linkage across censuses, the probate calendar and birth, marriage and death indices; local history; and more besides. The measurement ledgers of Morris & Son and Henry Poole & Co., nominally linked to a vast array of other sources, have enabled a comparison of the nutritional status of the middle class inhabitants of Barmouth experiencing a period of economic transition, and the elite patrons of Savile Row who largely lacked economic constraints on their consumption. Waist and hip circumference measurements and their ratio have provided markers of abdominal obesity and leg length has been used to proxy nutritional status during the growing years.

The waist and hip measurements of the tailors' customers have identified that overweight and obesity were features of British society in the second half of the nineteenth century. Assessing the girths of customers of Morris & Son and Henry Poole & Co. highlights that it is erroneous to assume that centralised adiposity was a scourge restricted to the highest echelons of society before the last decades of the twentieth century. This thesis has proved that by the second half of the nineteenth century overweight had infiltrated the middle classes, afflicting at least eighteen percent of Morris & Son's customers, and was prevalent amongst at least thirty percent of the upper class professionals attending Henry Poole & Co. Consequently, researchers and modern policy makers seeking to identify the causes of our current global obesity epidemic should pay more attention to its historical origins, which can be traced to at least the end of the Industrial Revolution.

During the second half of the nineteenth century central adiposity afflicted different portions of the British population at different stages of their lives. Morris & Son's customers appear to provide historical evidence of Barker's hypothesis¹. In early adulthood they achieved smaller waists and hips than Henry Poole & Co.'s wealthier customers, but they had a larger waist-hip ratio. This suggests that the bone development of Morris & Son's customers' hips may have been restricted by a deprived fetal and early life nutritional status. The impression that they suffered from fetal deprivation is bolstered by additional evidence of a stunted inside leg length compared to Henry Poole & Co.'s customers and a high rate of infant mortality in contemporary North West Wales. A poor nutritional environment during fetal development may have encouraged Morris & Son's customers to adapt a thrifty metabolism, in preparation for the stringent postnatal environment that they expected to be born into.

¹ Barker, D. J. P., *Fetal and Infant Origins of Adult Disease*, (London: British Medical Journal, 1992); Barker, D. J. P., *Mothers, Babies and Health in Later Life*, 2nd edn., (Edinburgh: Churchill Livingstone, 1998); Hales, C. N. and Barker, D. J. P., 'Type 2 (Non-Insulin Dependent) Diabetes Mellitus: The Thrifty Phenotype Hypothesis', *Diabetologia*, vol. 35, 7 (1992), pp. 595-601; Hales, C. N. and Barker, D. J. P., 'The Thrifty Phenotype Hypothesis', *British Medical Bulletin*, vol. 60, 1 (2001), pp. 5-20.

However, during the second half of the nineteenth century, Barmouth experienced an economic transition, transforming from a small port focused on the exports of primary industry to a seaside resort with a burgeoning service sector catering to a new influx of visitors. As tourism increased the prosperity of Barmouth and its local inhabitants it is feasible that the early adult nutritional status of Morris & Son's customers surpassed their metabolic capability determined as a fetus. Certainly, cross-sectional analyses identify that Morris & Son's customers' waists and hips increased with age, suggesting that they achieved a net nutritional status in excess of their needs. Under such circumstances, Morris & Son's customers' thrifty metabolism may well have been placed under stress, causing a hormonal imbalance encouraging centralised weight distribution and thus a high waist-hip ratio.

The central adiposity of Morris & Son's customers is likely to have placed them at heightened risk of chronic diseases such as cardiovascular disease, type 2 diabetes, and stroke. Their degree of early life central adiposity appears to have exceeded that of Union Army recruits from a similar period². These American soldiers are known to have suffered from high rates of chronic disease, partly attributed to their own central adiposity³, which reinforces the argument that Morris & Son's early life development posed a later life health threat. Amongst Morris & Son's customers high waist-hip ratios in early adulthood were associated with shorter longevity. In sum, it would appear that fetal deprivation combined with postnatal relative prosperity jeopardised adult health and compromised life expectancy.

The corroboration of Morris & Son's customers' anthropometric data with the principles of Barker's hypothesis has important implications for modern policy makers. It suggests that perhaps the social gradient of obesity begins to reverse and affect the

² Costa, D. L. and Steckel, R. H., 'Long-Term Trends in Health, Welfare, and Economic Growth in the United States', in Steckel, R. H. and Floud, R. (eds.), *Health and Welfare During Industrialisation*, (Chicago & London: University of Chicago Press, 1997), pp. 47-89; Costa, D. L., 'The Measure of Man and Older Age Mortality: Evidence from the Gould Sample', *Journal of Economic History*, vol. 64, 1 (2004), pp. 1-23.

³ Costa, D. L., 'Height, Weight, Wartime Stress, and Older Age Mortality: Evidence from the Union Army Records', *Explorations in Economic History*, vol. 30, 4 (1993), pp. 424-49.

middle classes once adult nutritional status exceeds fetal environmental conditions and absolute levels of nutritional status are sufficient to encourage the deposition of fat. Thus central adiposity is a product of 'technophysio evolution'⁴, once levels of subsistence are exceeded. This implies that in many ways industrialisation and capitalist growth does make an overweight population fairly inevitable. For policy makers to limit the burden of obesity in currently developing nations, interventions could be targeted at maternal health in order to try and reduce the degree of mismatch between fetal and adult nutritional status. Promoting adult lifestyles with a lower nutritional status would also be beneficial.

Barker's hypothesis implies that the historical origins of our current obesity epidemic are based neither on a rational nor irrational economic model. The social gradient of obesity reverses as the nutritional status of the lower classes improves generationally. Overweight in early adulthood is less chosen than predestined. Furthermore, in its earliest stages, the threat of centralised adiposity and chronic diseases is particularly difficult to measure and respond to because, as Morris & Son's customers prove, it occurs amidst small absolute sizes of waist and hip circumference. This historical anthropometric data points to the importance of tracking waist-hip ratio within the populations of currently developing nations.

Whereas Morris & Son's customers were more affected by early adult central adiposity based on their waist-hip ratio, Henry Poole & Co.'s customers experienced a greater increase in their waist circumference and waist-hip ratio over the life course. Morris & Son's customers' may have been condemned to central adiposity in early adulthood by their fetal conditions, but the obesity of Henry Poole & Co.'s customers in later life was a product of their elite lifestyles in the context of an environment that provided them with the opportunity to gain weight. In later adulthood Henry Poole & Co.'s customers' waist circumferences increased with age and wealth but were

⁴ Fogel, R. W. and Costa, D. L., 'A Theory of Technophysio Evolution, With Some Implications for Forecasting Population, Health Care Costs, and Pension Costs', *Demography*, vol. 34, 1 (1997), pp. 49-66.

jeopardised by urban living or an occupation amongst the economically constrained, professional upper-middle classes.

Whilst centralised adiposity in early life amongst Morris & Son's customers appears to have jeopardised their longevity, in later life larger waist circumferences were associated with increased life expectancy. Waist-hip ratio in later adulthood had a broad healthy range but may have reduced longevity at extreme levels. Although modern institutions suggest that the risk of morbidity and mortality is exacerbated by an overweight or obese body size, the longevity of Morris & Son and Henry Poole & Co.'s customers does not reflect this.

The relationship between Morris & Son and Henry Poole & Co. customers' girths and their longevity suggests that in the second half of the nineteenth century, a larger body size than is currently recommended may have been beneficial to health. Although high levels of waist circumference and waist-hip ratio are likely to have exacerbated Morris & Son and Henry Poole & Co.'s customers' risk of chronic diseases, a net nutritional status in excess also protected their clients from the more perilous consequences of a rife infectious disease environment.

Contemporary physicians and health promoters were correct to identify that chronic diseases were a feature of nineteenth century society and that they were precipitated by obesity. The risk of chronic diseases did not newly emerge after the threat of infectious diseases waned – it seems likely that they were present throughout the second half of the nineteenth century and especially common amongst those with a net nutritional status in excess. However, until infectious disease contagion was reduced, the positive correlation between girths and longevity implies that, either individuals died before chronic diseases could take their toll, or a large waist circumference was more beneficial to longevity than it was deleterious.

This does not mean that individuals sought to be overweight as a rational response to increase their life expectancy. Contemporary medical literature and health tracts emphasise that a slim, muscular male physique was the aesthetic ideal.

As treatment responses to obesity provided some of the earliest forays into preventative medicine they simultaneously ensured that becoming obese was perceived as an indictment on individuals' character and morality. A wide range of dieting and exercise regimes were available from at least the mid-nineteenth century, which aimed to persuade and support individuals to maintain a temperate lifestyle and reduce their excess weight.

This highlights that attempts to tackle obesity focused on persuading individuals to commit to making lifestyle changes have been failing since at least the second half of the nineteenth century. Recently, modern policy makers have begun to acknowledge that responding to the current obesity epidemic will depend on comprehensive and extensive societal and population level responses. Historical evidence of this has long-existed.

Tailoring measurement data from Morris & Son and Henry Poole & Co. emphasises that a simplistic conceptualisation of the epidemiological transition is inappropriate. The positive correlation of girths with longevity substantiates the hypothesis that improving nutritional status was key to reducing infectious disease mortality. However, improving nutritional status simultaneously increased individuals' propensity towards central adiposity and thus increased their risk of chronic diseases by both enabling individuals to live longer and jeopardising their metabolic function. Thus there were both 'push' and 'pull' factors explaining the rapid rise of chronic disease morbidity and mortality during the second half of the nineteenth century.

This interpretation of the epidemiological transition in Britain suggests that current policy makers in developing countries should try to stem the threat of infectious disease without being overly reliant on improving the net nutritional status of their population to a point of excess. Individuals should not require a nutritional 'buffer' in order to stave-off and recover from infections. When this is relied upon it results in a situation of 'double jeopardy', whereby within a single population there are simultaneously sufferers of infectious disease and overnutrition. Reducing infectious

disease mortality by improving public health infrastructure and offering immunisation entails a more sustainable strategy. This is still likely to result in a rise in population net nutritional status because reducing episodes of infectious disease decreases energy output, however the degree of excess may be reduced.

11.1. Directions for Future Research

The incredible utility of tailors' records as a new source of historical anthropometric data is highlighted by their ability to enable an analysis of the historical origins of obesity and offer a more refined interpretation of Britain's epidemiological transition, with implications for modern social policy.

To explain the rise in nineteenth century chronic disease mortality more thoroughly in the future, nominally linking tailors' customers with their death certificates should be prioritised. Although an expensive and laborious process for a large sample size, this would provide information on customers' cause of death and link their net nutritional status during the life course to their ultimate health outcomes. Cause of death data would be useful to determine whether Morris & Son's customers' propensity towards central adiposity in early adulthood was associated with an increased risk of chronic disease, as Barker's hypothesis implies that it should have been. It would also identify whether larger waist circumferences in later adulthood protected nineteenth century individuals from infectious disease and improved life expectancy but led to chronic disease mortality eventually.

The speculation that Morris & Son's customers provide historical evidence of Barker's hypothesis would benefit from more thorough quantitative evidence of the customers' social mobility. Data outlining real wages or fathers' wealth in probate would be useful; finding a source identifying maternal nutritional status would be even better. The latter is unlikely to be achieved for Barmouth and Morris & Son's customers, but perhaps alternative tailoring and dressmaking sources could be

identified in the future, which provide anthropometric measures for a large sample of male and female members of the same family.

Part III of this thesis concluded that optimal girths in the past might have been larger than they are currently. This corresponds with the findings of Waaler's surfaces that optimal BMI is height dependent – shorter individuals need a larger body mass than taller individuals to minimise their mortality risk⁵. Waaler's surfaces were created by relating the risk of death to height and weight simultaneously – they combine mortality risk with a measure of net nutritional status during the growing years and current net nutritional status. The results based on tailors' records raise the question of whether alternative versions of Waaler's surfaces could be created which instead relate the risk of death to waist circumference and inside leg length simultaneously. This would be an exciting challenge for future research because it would provide a new means of assessing optimal body size in the past and the way that this adapted to secular changes in net nutritional status during the growing years. Verification of the relationships within Waaler's surfaces using alternative anthropometric markers would be welcomed.

Overall the statistical significance of the results of this thesis would be improved by the collection of a larger sample size of data. This is particularly the case when the customers have been disaggregated by a large range of variables such as their region of address or occupational industry. The National Library of Wales and the private archive on Savile Row both provide more measurement books for Morris & Son and Henry Poole & Co. respectively⁶. These would also provide more longitudinal measurements with which to assess trends in body size over the life course. A longer sample period could provide a fascinating opportunity to trace the net nutritional status of different generations of the same family. In future research,

⁵ Fogel, R., 'New Sources and New Techniques for the Study of Secular Trends in Nutritional Status, Health, Mortality, and the Process of Ageing', *Historical Methods*, vol. 26, 1 (1993), p. 17.

⁶ National Library of Wales, GB 0210 MORUTH, Morris & Son Tailoring/Dressmaking Books; Henry Poole & Co. Ltd., Private archive, NRA 22524 Poole, (1846-1960: accounts, clients ledgers, ledgers measurement book and papers).

the additional anthropometric data within these later measurement books could be assembled; noting however, that as the sample size of the tailors' customers increases, the protracted nominal linkage process eventually becomes impracticable.

Future analyses could also try to use alternative measurements collected for clothing construction to elucidate the health and activity of the tailors' customers. For example, the impact of Barmouth's economic transition towards more professional and sedentary service sector occupations might be evidenced by the muscularity of Morris & Son's customers, captured by their shoulder width, thigh circumference, or perhaps a combination of alternative measurements.

This thesis has introduced tailors' records as a new source for anthropometric historians and in the process it has illustrated and utilised many aspects of their unique potential. However, the limited size of this thesis and the enormous contribution that tailors' records could make to the field of anthropometric history has prevented their full capabilities from being explored. In particular, the future identification of large records of anthropometric data from dressmakers' should be prioritised. Currently, few historical sources of anthropometric data for middle- and upper class women exist. Dressmakers' records provide an opportunity to remedy this situation and to examine the impact of wealth on health amongst women. Existing analyses of the historical household distribution of resources have been restricted to the lower, deprived margins of society⁷. It would be interesting to explore women's net nutritional status within an affluent household with theoretically fewer constraints on consumption. In order to utilise dressmakers' measurements, anthropometric historians will first have to determine the degree of permanent body deformation caused by tight lacing corsetry in the past.

The longitudinal data within tailors' records is another asset which future research could appropriate to a greater degree than has been accomplished within

⁷ Horrell, S., Meredith, D., and Oxley, D., 'Measuring Misery: Body Mass, Ageing and Gender Inequality in Victorian London', *Economics and Human Biology*, vol. 46, 1 (2009), pp. 93-119.

this thesis. To achieve this a sample selection method biased towards the collection of longitudinal data would be advantageous. This could involve either targeting records such as those of Henry Poole & Co. where longitudinal measurements for each individual are recorded in one place within the ledger, or identifying a long running series of ledgers within which a sample of longitudinal customers could be repeatedly identified. A paucity of existing sources of anthropometric longitudinal data ensures that this would be a valuable process. It would enable a more detailed assessment of trends in net nutritional status during the life course and the impact of weight change on health. Combining longitudinal data with biographical information for the tailors' customers could help to reduce the ambiguity of the determinants of net nutritional status, which usually plagues anthropometric historians.

A truly ambitious direction for future research would be to try and use the wide range of body measurements captured within a tailors' ledger to digitally model historical body shape to scale. The capabilities of three-dimensional graphic designing software impart confidence that this should be feasible, however it would rely on collaboration between computer scientists and anthropometric historians. Interdisciplinary research has formed the bedrock of anthropometric history since its foundational partnerships with human biologists. Alliances with computer scientists would progress the field's interdisciplinary momentum.

Just as anthropometric height data from historical military records have now been identified worldwide and used to compare the standard of living of populations of different countries with varying processes of economic development, it would also be feasible to identify tailors' records from different places and periods. In particular, it would be useful to uncover sets of tailors' records sampling a broad range of social strata of a similar birth cohort. This would remove the compounding effects of secular changes in body shape when trying to determine explanations for variance in body shape based on wealth or status.

When anthropometric history was first initiated in the late 1970s, it formed part of an agenda to find new measures of welfare in response to an epoch experiencing high rates of economic growth but the accompanying disamenities of urban sprawl, pollution, congestion and crime⁸. This thesis has identified that for anthropometric history to maintain a relevance to neoteric problems the field must engage with the issue of obesity. Tailors' records prove that the origins of our current obesity epidemic should be sought in the economic development processes of the nineteenth century. The contrast between middle class individuals' early adult net nutritional status and their fetal origins points to a source of abdominal adiposity that threatened health and longevity. In later life, wealth enabled the upper classes to increase their waist circumferences, simultaneously protecting them from infectious disease but exacerbating their risk of chronic ailments. Tailor's records provide a new source for anthropometric historians and as such they abound with future potential. It has taken many decades to build up a more thorough picture of the net nutritional status of the historical lower classes and this process is far from complete; this thesis launches the importance of analysing the impact of historical wealth on health.

⁸ Steckel, R. H., 'The Formative Period of the New Anthropometric History', in Komlos, J. and Cuff, T. (eds.), *Classics in Anthropometric History*, (St. Katharinen, Germany: Scripta Mercaturae Verlag, 1998), p. 2.

Waists, Health and History: Obesity in Nineteenth Century Britain

Volume 2: Bibliography

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	Birmingham Burials 1813-1964, 11 Aug 1928, Aston, Warwickshire, DRO41/663	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=BirminghamParishBurial&h=4401180&indiv=try&o_vc=Record:OtherRecord&rhSource=7579
Bernard Moxon Douglas	1881 Census Returns (PRO: RG11): RG11/1271, f. 32, p. 5	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1881&indiv=try&h=221378
	1891 Census Returns (PRO: RG12): RG12/970, f. 25, p. 4	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1891&h=2265786&indiv=try&o_vc=Record:OtherRecord&rhSource=7572
	1901 Census Returns (PRO: RG13): RG13/579, f. 71, p. 31	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1901&h=4453661&indiv=try&o_vc=Record:OtherRecord&rhSource=6598
	1911 Census Returns (PRO: RG14): RG14/5556, Sch. 60	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=1911England&h=42425826&indiv=try&o_vc=Record:OtherRecord&rhSource=7814
	Birth Index 1837-1915, Jul-Aug-Sep 1874, Newbury, Berkshire, vol. 2c, p. 229	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=FreeBMDBirth&h=334231&indiv=try&o_vc=Record:OtherRecord&rhSource=2352
	Marriage Index 1837-1915, Apr-May-Jun 1897, St. Giles, London, vol. 1b, p. 1151	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=FreeBMDMarriage&indiv=try&h=8218526
	Death Index 1916-2007, Jun 1948, Worthing, Sussex, vol. 5h, p. 515	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=ONSDeath93&h=26819138&indiv=try&o_vc=Record:OtherRecord&rhSource=1904
	National Probate Calendar (Index of Wills and Administrations) 1858-1966, Death: 14 May 1948 Sussex, Probate: 27 Jul 1948 London	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=UKProbateCal&h=16203009&indiv=try&o_vc=Record:OtherRecord&rhSource=2352

Cadwalader Roberts	1871 Census Returns (PRO: RG10): RG10/5692, f. 77, p. 21	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1871wales&h=3513127
	1881 Census Returns (PRO: RG11): RG11/5547, f. 61, p. 9	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1881wales&h=12980462
	1891 Census Returns (PRO: RG12): RG12/4642, f. 117, p. 15	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1891wales&h=1656535
	1901 Census Returns (PRO: RG13): RG13/5254, f. 65, p. 3	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1901wales&h=33169462
	1911 Census Returns (PRO: RG14): RG14/34298, Sch. 133	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=1911wales&h=894189
	Death Index 1916-2007, Sep 1922, Dolgelly, Merionethshire, vol. 11b, p. 402	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=ONSDeath93&h=19625188&indiv=try&o_cvc=Image:OtherRecord
	National Probate Calendar (Index of Wills and Administrations) 1858-1966, Death: 16 Jul 1922 Merionethshire, Probate: 15 Dec 1922 St. Asaph	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=UKProbateCal&h=2426373&indiv=try&o_vc=Record:OtherRecord&rhSource=7579
Cadwalder Williams	1871 Census Returns (PRO: RG10): RG10/5692, f. 31, p. 8	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1871wales&h=3511753
	1881 Census Returns (PRO: RG11): RG11/5547, f. 21, p. 2	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1881wales&h=12979385
	1891 Census Returns (PRO: RG12): RG12/4643, f. 30, p. 2	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1891wales&h=1663907
	1901 Census Returns (PRO: RG13): RG13/5255, f. 60, p. 2	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1901wales&h=33173199
	1911 Census Returns (PRO: RG14): RG14/34301, Sch. 18	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=1911wales&h=1051599

	Birth Index 1837-1915, Jan-Feb-Mar 1862, Dolgelly, Merionethshire, vol. 11b, p. 426	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=FreeBMDBirth&h=60420136&indiv=try&o_cvc=Image:OtherRecord
	Marriage Index 1837-1915, Apr-May-Jun 1897, Dolgelly, Merionethshire, vol. 11b, p. 648	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=FreeBMDMarriage&indiv=try&h=31461209
Cecil Howard Douglas	1891 Census Returns (PRO: RG12): RG12/733, f. 105, p. 4	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1891&indiv=try&h=11744946
	1901 Census Returns (PRO: RG13): RG13/1122, f. 14, p. 19	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1901&h=1396457&indiv=try&o_vc=Record:OtherRecord&rhSource=6598
	Birth Index 1837-1915, Oct-Nov-Dec 1882, Newbury, Berkshire, vol. 2c, p. 257	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=FreeBMDBirth&h=334583&indiv=try&o_vc=Record:OtherRecord&rhSource=8914
	Death Index 1837-1915, Apr-May-Jun 1905, Southwark, London, vol. 1d, p. 21	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=FreeBMDDeath&h=9638009&indiv=try&o_vc=Record:OtherRecord&rhSource=8912
	National Probate Calendar (Index of Wills and Administrations) 1858-1966, Death: 8 Jun 1905 Berkshire, Probate: 6 Jun 1919 London	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=UKProbateCal&h=3821530&indiv=try&o_vc=Record:OtherRecord&rhSource=8914
Charles James Gregson Ellis	1861 Census Returns (PRO: RG9): RG9/4290, f. 108, p. 1	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1861wales&h=15473305
	1871 Census Returns (PRO: RG10): RG10/5661, f. 36, p. 30	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1871wales&h=27245860
	1881 Census Returns (PRO: RG11): RG11/85, f. 88, p. 18	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1881&h=13452165
	1891 Census Returns (PRO: RG12): RG12/813, f. 36, p. 29	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1891&h=11837772
	Birth Index 1837-1915, Oct-Nov-Dec 1856, Ruthin, Denbighshire, vol. 11b, p. 315	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=freebmdbirth&h=1806604

	Marriage Index 1837-1915, Jul-Aug-Sep 1882, Kensington, London, vol. 1a, p. 165	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=FreeBMDMarriage&indiv=try&h=8988250
	National Probate Calendar (Index of Wills and Administrations) 1858-1966, Death: 25 Dec 1899 London, Probate: 26 Jan 1900 London	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=ukprobatecal&h=16755854
	No. 572395	http://www.thepeerage.com/p57240.htm#i572395
Charles Henry Branscombe	1871 Census Returns (PRO: RG10): RG10/849, f. 52, p. 11	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1871&h=13540003&indiv=try&o_vc=Record:OtherRecord&rhSource=7814
	1881 Census Returns (PRO: RG11): RG11/1905, f. 111, p. 9	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1881&h=20252713&indiv=try&o_vc=Record:OtherRecord&rhSource=7619
	1891 Census Returns (PRO: RG12): RG12/819, f. 36, p. 5	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1891&h=10739165&indiv=try&o_vc=Record:OtherRecord&rhSource=7572
	1901 Census Returns (PRO: RG13): RG13/2175, f. 48, p. 35	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1901&h=11938846&indiv=try&o_cvc=Image:OtherRecord
	1911 Census Returns (PRO: RG14): RG14/13516	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=1911England&h=32591908&indiv=try&o_vc=Record:OtherRecord&rhSource=6598
	Birth Index 1837-1915, Jan-Feb-Mar 1858, Kingston, Surrey, vol. 2a, p. 201	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=FreeBMDBirth&h=33640238&indiv=try&o_vc=Record:OtherRecord&rhSource=2352
	Marriage Index 1837-1915, Jan-Feb-Mar 1897, Alresford, Hampshire, vol. 2c, p. 233	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=FreeBMDMarriage&indiv=try&h=3334247
	Death Index 1837-1915, Jul-Aug-Sep 1892, Christchurch, Hampshire, vol. 2b, p. 366	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=freebmddeath&h=3886824
	Death Index 1916-2007, Jun 1924, Stratton, Cornwall, vol. 15c, p. 5	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=onsdeath93&h=20711465

		http://www.bbc.co.uk/arts/yourpaintings/artists/charles-henry-branscombe
Charles Harrison	1841 Census Returns (PRO: HO107): HO107/1232, bk. 14m, f. 58, p. 23, ln. 7	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1841&h=11756814
	1851 Census Returns (PRO: HO107): HO107/2360, f. 331, p. 17	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1851&h=10974247
	1861 Census Returns (PRO: RG9): RG9/3620, f. 37, p. 3	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1861&h=12066044
	1891 Census Returns (PRO: RG12): RG12/4643, f. 18, p. 30	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1891wales&h=1683655
	Marriage Index 1837-1915, Apr-May-Jun 1845, Sculcoates, Yorkshire East Riding, vol. 22, p. 399	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=FreeBMDMarriage&indiv=try&h=12798234
	Death Index 1837-1915, Jan-Feb-Mar 1894, Dolgelly, Merionethshire, vol. 11b, p. 289	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=FreeBMDDeath&h=15020274&indiv=try&o_vc=Record:OtherRecord&rhSource=1904
	National Probate Calendar (Index of Wills and Administrations) 1858-1966, Death: 12 Jan 1894 Merionethshire, Probate: 6 Mar 1894 London	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=UKProbateCal&h=3328164&indiv=try&o_vc=Record:OtherRecord&rhSource=8914
Charles John Webb	1861 Census Returns (PRO: RG9): RG9/143, f. 98, p. 19	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1861&indiv=try&h=5135746
	1871 Census Returns (PRO: RG10): RG10/182, f. 25, p. 40	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1871&h=11537726
	1881 Census Returns (PRO: RG11): RG11/182, f. 28, p. 5	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1881&h=13913805
	1891 Census Returns (PRO: RG12): RG12/101, f. 92, p. 58	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1891&h=8639849&indiv=try&o_vc=Record:OtherRecord&rhSource=7572
	Birth Index 1837-1915, Oct-Nov-Dec 1851, Islington, London, vol. 3, p. 296	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=freebmdbirth&h=58663699

	London Births and Baptisms 1813-1906, Baptism: 16 Nov 1851, Islington St. Mary, Islington, P83/MRY1/1179	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=lmabirths&h=3339913
	Marriage Index 1837-1915, Oct-Nov-Dec 1876, St. George Hanover Square, London, vol. 1a, p. 621	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=FreeBMDMarriage&indiv=try&h=30548661
	London and Surrey Marriage Bonds and Allegations 1597-1921, 18 Dec 1855, Hanover Square, St. George, MS10091/253, Part 4	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=surreymarriage&h=70769
	Death Index 1837-1915, Jul-Aug-Sep 1900, Marylebone, London, vol. 1a, p. 371	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=FreeBMDDeath&h=35823920&indiv=try&o_vc=Record:OtherRecord&rhSource=1904
	National Probate Calendar (Index of Wills and Administrations) 1858-1966, Death: 1 Jul 1900 Middlesex, Probate: 7 Dec 1900 London	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=UKProbateCal&h=16575691&indiv=try&o_vc=Record:OtherRecord&rhSource=8914
Charles Kirk	1881 Census Returns (PRO: RG11): RG11/5546, f. 136, p. 13	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1881wales&h=12978058
	1891 Census Returns (PRO: RG12): RG12/4643, f. 18, p. 30	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1891wales&h=1683576
Charles Parsons	1901 Census Returns (PRO: RG13): RG13/5254, f. 89, p. 5	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1901wales&h=33170659
Charles Robert Falconer Morgan	1891 Census Returns (PRO: RG12): RG12/2408, f. 55, p. 15	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1891&h=2796335
	1901 Census Returns (PRO: RG13): RG13/2182, f. 10, p. 11	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1901&indiv=try&h=11955003
	1911 Census Returns (PRO: RG14): RG14/34996, p. 1	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=1911england&h=37333660
	National Probate Calendar (Index of Wills and Administrations) 1858-1966, Death: 2 May 1934 Hampshire, Probate: 27 Jul 1934 London	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=ukprobatecal&h=752844

Charles Rivers Bulkeley	1841 Census Returns (PRO: HO107): HO107/26, bk. 3, f. 4, p. 4, ln. 12	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1841&indiv=try&h=1355912
	1851 Census Returns (PRO: HO107): HO107/1695, f. 589, p. 20	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1851&h=3752170&indiv=try&o_vc=Record:OtherRecord&rhSource=8767
	1861 Census Returns (PRO: RG9): RG9/761, f. 56, p. 17	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1861&h=8371598&indiv=try&o_vc=Record:OtherRecord&rhSource=7572
	1881 Census Returns (PRO: RG11): RG11/2671, f. 56, p. 6	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1881&h=18367551&indiv=try&o_vc=Record:OtherRecord&rhSource=8978
	1891 Census Returns (PRO: RG12): RG12/2125, f. 152, p. 13	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1891&h=2129783&indiv=try&o_vc=Record:OtherRecord&rhSource=8860
	1911 Census Returns (PRO: RG14): RG14/16236, p. 67	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=1911England&h=43447707&indiv=try&o_vc=Record:OtherRecord&rhSource=6598
	Marriage Index 1837-1915, Jul-Aug-Sep 1875, Newcastle Under Lyme, Staffordshire, vol. 6b, p. 70	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=FreeBMDMarriage&indiv=try&h=4089507
	Death Index 1916-2007, Jun 1934, Whitechurch, Shropshire, vol. 6a, p. 787	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=ONSDeath93&h=23751761&indiv=try&o_vc=Record:OtherRecord&rhSource=8913
	National Probate Calendar (Index of Wills and Administrations) 1858-1966, Death: 10 May 1934 Shropshire, Probate: 3 Jul 1934 London	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=UKProbateCal&h=979258&indiv=try&o_vc=Record:OtherRecord&rhSource=7579
Charles Robert Schotly	1891 Census Returns (PRO: RG12): RG12/4642, f. 117, p. 15	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1891wales&h=1659968
	1901 Census Returns (PRO: RG13): RG13/5256, f. 33, p. 2	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1901wales&h=33176874
	Marriage Index 1837-1915, Oct-Nov-Dec 1894, Dolgelly, Merionethshire, vol. 11b, p. 665	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=FreeBMDMarriage&indiv=try&h=25438547

	Death Index 1916-2007, Dec 1926, Birmingham North, Warwickshire, vol. 6d, p. 431	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=onsdeath93&h=14870004
Claude Cotterill Scholefield	1871 Census Returns (PRO: RG10): RG10/309, f. 25, p. 40	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1871&indiv=try&h=14304932
	1881 Census Returns (PRO: RG11): RG11/847, f. 25, p. 5	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1881&h=21691358&indiv=try&o_vc=Record:OtherRecord&rhSource=7619
	1891 Census Returns (PRO: RG12): RG12/1698, f. 104, p. 2	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1891&h=2488975&indiv=try&o_vc=Record:OtherRecord&rhSource=7572
	Birth Index 1837-1915, Jul-Aug-Sep 1869, Wycombe, Buckinghamshire, vol. 3a, p. 471	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=FreeBMDBirth&h=48838403&indiv=try&o_vc=Record:OtherRecord&rhSource=8914
	Death Index 1837-1915, Oct-Nov-Dec 1899, Hastings, Sussex, vol. 2b, p. 42	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=FreeBMDDeath&h=29832251&indiv=try&o_vc=Record:OtherRecord&rhSource=1904
	National Probate Calendar (Index of Wills and Administrations) 1858-1966, Death: 21 Dec 1899 Hastings, Probate: 5 Feb 1900 London	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=UKProbateCal&h=17468501&indiv=try&o_vc=Record:OtherRecord&rhSource=8912
	No. 573891	http://www.thepeerage.com/p57390.htm#i573891
David Davies	1871 Census Returns (PRO: RG10): RG10/5692, f. 29, p. 3	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1871wales&indiv=try&h=3511644
	1881 Census Returns (PRO: RG11): RG11/5547, f. 22, p. 4	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1881wales&h=12979399
	1891 Census Returns (PRO: RG12): RG12/4643, f. 32, p. 6	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1891wales&h=1689108
	1901 Census Returns (PRO: RG13): RG13/5255, f. 62, p. 5	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1901wales&h=33173274

David Davies	1881 Census Returns (PRO: RG11): RG11/5546, f. 136, p. 14	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1881wales&h=12978059
	1891 Census Returns (PRO: RG12): RG12/4643, f. 9, p. 11	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1891wales&h=1675375
	1901 Census Returns (PRO: RG13): RG13/5254, f. 73, p. 20	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1901wales&h=33169961
	1911 Census Returns (PRO: RG14): RG14/34299, p. 39	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=1911wales&h=2063884
David Davies	1841 Census Returns (PRO: HO107): HO107/1432, bk. 4, f. 46, p. 21, ln. 7	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1841wales&h=14289854
	1881 Census Returns (PRO: RG11): RG11/5546, f. 136, p. 14	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1881wales&h=12977985
	1891 Census Returns (PRO: RG12): RG12/4643, f. 9, p. 11	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1891wales&h=1670896
	1901 Census Returns (PRO: RG13): RG13/5254, f. 89, p. 6	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1901wales&h=33170683
	1911 Census Returns (PRO: RG14): RG14/34299, p. 39	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=1911wales&h=2063881
David Ellis Davies	1871 Census Returns (PRO: RG10): RG10/5687, f. 41, p. 1	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1871wales&h=3498999
	1881 Census Returns (PRO: RG11): RG11/5547, f. 8, p. 9	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1881wales&h=12978889
	1891 Census Returns (PRO: RG12): RG12/4643, f. 10, p. 14	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1891wales&h=1675274

	1901 Census Returns (PRO: RG13): RG13/5254, f. 87, p. 1	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1901wales&h=33170549
	1911 Census Returns (PRO: RG14): RG14/34299, p. 41	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=1911wales&h=2063895
	Birth Index 1837-1915, Apr-May-Jun 1864, Bala, Merionethshire, vol. 11b, p. 469	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=freebmdbirth&h=41337225
	Marriage Index 1837-1915, Jan-Feb-Mar 1884, Dolgelly, Merionethshire, vol. 11b, p. 450	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=FreeBMDMarriage&indiv=try&h=7348336
	Death Index 1916-2007, Dec 1948, Merioneth South, Merionethshire, vol. 8c, p. 27	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=onsdeath93&h=28083331
	National Probate Calendar (Index of Wills and Administrations) 1858-1966, Death: 29 Sep 1948 Merionethshire, Probate: 22 Feb 1949 Bangor	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=ukprobatecal&h=15445253
David Jones	1881 Census Returns (PRO: RG11): RG11/5547, f. 11, p. 15	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1881wales&indiv=try&h=12979024
David Jones	1891 Census Returns (PRO: RG12): RG12/4642, f. 113, p. 7	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1891wales&h=1656456
	Marriage Index 1837-1915, Apr-May-Jun 1888, Dolgelly, Merionethshire, vol. 11b, p. 590	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=FreeBMDMarriage&indiv=try&h=15995466
David Jones	1881 Census Returns (PRO: RG11): RG11/5545, f. 71, p. 3	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1881wales&indiv=try&h=12972846
	1891 Census Returns (PRO: RG12): RG12/4641, f. 156, p. 5	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1891wales&indiv=try&h=1432776
	1901 Census Returns (PRO: RG13): RG13/5253, f. 177, p. 7	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1901wales&indiv=try&h=33166335
	1911 Census Returns (PRO: RG14): RG14/34289, p. 37	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=1911Wales&indiv=try&h=2068106

David Jones	1861 Census Returns (PRO: RG9): RG9/4320, f. 57, p. 18	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1861wales&h=15532657
	1871 Census Returns (PRO: RG10): RG10/5692, f. 12, p. 1	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1871wales&h=3511221
	1881 Census Returns (PRO: RG11): RG11/5568, f. 101, p. 1	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1881wales&h=738625
	1891 Census Returns (PRO: RG12): RG12/4642, f. 125, p. 32	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1891wales&h=1674967
	1901 Census Returns (PRO: RG13): RG13/5254, f. 87, p. 37	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1901wales&h=33170478
	National Probate Calendar (Index of Wills and Administrations) 1858-1966, Death: 25 Apr 1936 Merionethshire, Probate: 28 Jul 1936 Cheshire	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=ukprobatecal&h=6031181
		http://www.williamsfamilytree.co.uk/tree/getperson.php?personID=I1924&tree=wft
David Pritchard	1881 Census Returns (PRO: RG11): RG11/5546, f. 144, p. 29	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1881wales&h=12978502
	1901 Census Returns (PRO: RG13): RG13/5254, f. 64, p. 2	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1901wales&h=33169458
	1911 Census Returns (PRO: RG14): RG14/34298, p. 132	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=1911wales&h=894186
	Marriage Index 1837-1915, Jul-Aug-Sep 1871, Corwen, Merionethshire, vol. 11b, p. 493	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=FreeBMDMarriage&indiv=try&h=23294011
	Death Index 1916-2007, Dec 1928, Dolgelly, Merionethshire, vol. 11b, p. 410	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=onsdeath93&h=19989258
David Richards	1871 Census Returns (PRO: RG10): RG10/5691, f. 59, p. 16	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1871wales&h=3510963

	1891 Census Returns (PRO: RG12): RG12/4642, f. 1214, p. 10	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1891wales&h=1652528
	1901 Census Returns (PRO: RG13): RG13/3468, f. 42, p. 26	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1901&h=20737719
	1911 Census Returns (PRO: RG14): RG14/22458	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=1911england&h=21416881
David Richards	1891 Census Returns (PRO: RG12): RG12/4643, f. 12, p. 18	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1891wales&h=1677829
	1901 Census Returns (PRO: RG13): RG13/5254, f. 95, p. 17	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1901wales&h=33170961
	1911 Census Returns (PRO: RG14): RG14/34298, Sch. 129	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=1911wales&h=894167
	Marriage Index 1837-1915, Jul-Aug-Sep 1884, Dolgelly, Merionethshire, vol. 11b, p. 486	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=FreeBMDMarriage&indiv=try&h=24024122
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	1891 Census Returns (PRO: RG12): RG12/4642, f. 122, p. 26	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1891wales&h=1639613
	1901 Census Returns (PRO: RG13): RG13/5254, f. 67, p. 7	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1901wales&h=33169602
	1911 Census Returns (PRO: RG14): RG14/342980, Sch. 105	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=1911wales&h=1042621
	Birth Index 1837-1915, Jan-Feb-Mar 1873, Dolgelly, Merionethshire, vol. 11b, p. 426	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=freebmdbirth&h=46141334
	Marriage Index 1837-1915, Jan-Feb-Mar 1898, Dolgelly, Merionethshire, vol. 11b, p. 440	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=FreeBMDMarriage&indiv=try&h=24024290

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	1871 Census Returns (PRO: RG10): RG10/3919, f. 85, p. 16	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1871&indiv=try&h=27953383
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	1891 Census Returns (PRO: RG12): RG12/3266, f. 12, p. 17	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1891&indiv=try&h=3937194
	Manchester Births and Baptisms 1813-1901 (Cathedral), Birth: 27 Aug 1854, Baptism: 23 Jun 1855, Manchester	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=ManchesterBaptismsCathedral&h=331461&indiv=try&o_vc=Record:OtherRecord&rhSource=8913
	Marriage Index 1837-1915, Apr-May-Jun 1880, Nantwich, Cheshire, vol. 8a, p. 388	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=FreeBMDMarriage&indiv=try&h=31248819
	Death Index 1837-1915, Apr-May-Jun 1892, Congleton, Cheshire, vol. 81, p. 12	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=FreeBMDDeath&h=36635722&indiv=try&o_vc=Record:OtherRecord&rhSource=2965
	National Probate Calendar (Index of Wills and Administrations) 1858-1966, Death: 6 June 1892 Cheshire, Probate: 26 Sep 1892 Cheshire	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=UKProbateCal&h=1875790&indiv=try&o_vc=Record:OtherRecord&rhSource=8914
Edmund Yeamans Walcott Henderson	1871 Census Returns (PRO: RG10): RG10/1087, f. 76, p. 15	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1871&h=28925146
	Canada British Regimental Registers of Service 1756-1900 (PRO: WO25): WO25/3913	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=CanadaRegimentalBooks&h=89791&indiv=try&o_vc=Record:OtherRecord&rhSource=70699
	Death Index 1837-1915, Oct-Nov-Dec 1896, Kensington, London, vol. 1a, p. 130	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=FreeBMDDeath&h=15743792&indiv=try&o_vc=Record:OtherRecord&rhSource=1904
	National Probate Calendar (Index of Wills and Administrations) 1858-1966, Death: 8 Dec 1896 Middlesex, Probate: 12 Jan 1897 London	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=UKProbateCal&h=480617&indiv=try&o_vc=Record:OtherRecord&rhSource=8914

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Edward Arthur Edwards	1861 Census Returns (PRO: RG9): RG9/933, f. 43, p. 18	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1861&indiv=try&h=23518941
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	1891 Census Returns (PRO: RG12): RG12/682, f. 20, p. 34	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1891&indiv=try&h=15295654
	1901 Census Returns (PRO: RG13): RG13/1321, f. 97, p. 4	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1901&indiv=try&h=7712401
	1911 Census Returns (PRO: RG14): RG14/3661, Sch. 13	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=1911England&indiv=try&h=41247284
	Birth Index 1837-1915, Apr-May-Jun 1852, Stamford, Lincolnshire, vol. 71, p. 262	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=FreeBMDBirth&h=1449072&indiv=try&o_vc=Record:OtherRecord&rhSource=2352
	Marriage Index 1837-1915, Jul-Aug-Sep 1882, Spalding, Lincolnshire, vol. 7a, p. 593	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=FreeBMDMarriage&indiv=try&h=8800449
	Death Index 1916-2007, Jun 1931, Lewes, Sussex, vol. 2b, p. 218	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=onsdeath93&h=28908137
	National Probate Calendar (Index of Wills and Administrations) 1858-1966, Death: 11 May 1931 Sussex, Probate: 30 Jun 1931 London	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=ukprobatecal&h=2784465
Edward Davies	1881 Census Returns (PRO: RG11): RG11/5547, f. 15, p. 23	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1881wales&h=12979265
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	1911 Census Returns (PRO: RG14): RG14/34299, Sch. 142	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=1911wales&h=2064329
	Marriage Index 1837-1915, Apr-May-Jun 1903, Dolgelly, Merionethshire, vol. 11b, p. 690	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=FreeBMDMarriage&indiv=try&h=7353997
	Death Index 1916-2007, Dec 1949, Merioneth A, Merionethshire, vol. 8c, p. 26	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=onsdeath93&h=30724341
	National Probate Calendar (Index of Wills and Administrations) 1858-1966, Death: 23 Nov 1949 Merionethshire, Probate: 9 Feb 1950 Bangor	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=UKProbateCal&h=18187267&indiv=try&o_vc=Record:OtherRecord&rhSource=7579
Edward Edwards	1851 Census Returns (PRO: HO107): HO107/2511, f. 442, p. 12	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1851wales&h=16225578
	1861 Census Returns (PRO: RG9): RG9/4320, f. 41, p. 10	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1861wales&h=15532058
	1871 Census Returns (PRO: RG10): RG10/5692, f. 14, p. 20	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1871wales&h=3511320
	1881 Census Returns (PRO: RG11): RG11/5546, f. 136, p. 14	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1881wales&h=12978062
	1891 Census Returns (PRO: RG12): RG12/4643, f. 10, p. 14	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1891wales&h=1677889
Edward Evans	1851 Census Returns (PRO: HO107): HO107/2511, f. 423, p. 7	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1851wales&h=16225006
	1861 Census Returns (PRO: RG9): RG9/4320, f. 39, p. 5	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1861wales&h=15531929

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	1891 Census Returns (PRO: RG12): RG12/4643, f. 18, p. 14	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1891wales&h=1683572
	National Probate Calendar (Index of Wills and Administrations) 1858-1966, Death: 21 Oct 1895 Merionethshire, Probate: 26 Apr 1899 London	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=ukprobatecal&h=18432670
Edward Francis Grey	1851 Census Returns (PRO: HO107): HO107/1685, f. 243, p. 31	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1851&indiv=try&h=3571598
	1891 Census Returns (PRO: RG12): RG12/4641, f. 166, p. 6	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1891wales&h=1432756
	1901 Census Returns (PRO: RG13): RG13/2024, f. 158, p. 27	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1901&h=24758262
	Birth Index 1837-1915, Jan-Feb-Mar 1844, Newbury, Berkshire, vol. 6	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=FreeBMDBirth&h=6647676&indiv=try&o_vc=Record:OtherRecord&rhSource=7814
	Marriage Index 1837-1915, Oct-Nov-Dec 1885, St. Saviour Southwark, London, vol. 11b, p. 440	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=FreeBMDMarriage&h=11501822&indiv=try&o_vc=Record:OtherRecord&rhSource=1623
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	Death Index 1837-1915, Jul-Aug-Sep 1903, Honiton, Devonshire, vol. 5b, p. 13	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=freebmddeath&h=13491999

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Edward Humphreys	1861 Census Returns (PRO: RG9): RG9/4320, f. 63, p. 3	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1861wales&h=15532730
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	1891 Census Returns (PRO: RG12): RG12/4643, f. 30, p. 1	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1891wales&h=1689068
	Birth Index 1837-1915, Apr-May-Jun 1858, Dolgelly, Merionethshire, vol. 11b, p. 411	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=freebmdbirth&h=13306228
Edward Pugh	1861 Census Returns (PRO: RG9): RG9/1589, f. 116	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1861&h=17844864
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Edward Roberts	1871 Census Returns (PRO: RG10): RG10/5692, f. 15, p. 22	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1871wales&h=3511330
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	1901 Census Returns (PRO: RG13): RG13/5254, f. 73, p. 19	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1901wales&h=33169940
	1911 Census Returns (PRO: RG14): RG14/34299, Sch. 45	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=1911wales&h=2063916
	Marriage Index 1837-1915, Jan-Feb-Mar 1855, Dolgelly, London, vol. 11b, p. 564	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=FreeBMDMarriage&indiv=try&h=24329929
	Death Index 1916-2007, Mar 1919, Dolgelly, Merionethshire, vol. 11b, p. 653	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=onsdeath93&h=21917805
	National Probate Calendar (Index of Wills and Administrations) 1858-1966, Death: 23 Mar 1919 Merionethshire, Probate: 30 Jan 1920 London	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=ukprobatecal&h=2594905
Edward William Roberts	1881 Census Returns (PRO: RG11): RG11/5546, f. 139, p. 19	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1881wales&h=12978281
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	1901 Census Returns (PRO: RG13): RG13/5254, f. 30, p. 19	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1901wales&indiv=try&h=33168167
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	National Probate Calendar (Index of Wills and Administrations) 1858-1966, Death: 1 Nov 1952 Caernarvonshire, Probate: 12 Jan 1953 Bangor	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=ukprobatecal&h=19336168

Edward Roden	1861 Census Returns (PRO: RG9): RG9/4274, f. 10, p. 13	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1861wales&h=15418780
	1891 Census Returns (PRO: RG12): RG12/4642, f. 117, p. 15	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1891wales&h=1659954
	1901 Census Returns (PRO: RG13): RG13/2599, p. 2	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1901&h=34329266
	1911 Census Returns (PRO: RG14): RG14/16544, Sch. 22	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=1911england&h=56508939
	Birth Index 1837-1915, Apr-May-Jun 1850, Holywell, Flintshire, vol. 27, p. 268	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=freebmdbirth&h=47295422
	Marriage Index 1837-1915, Oct-Nov-Dec 1889, Dolgelly, Merionethshire, vol. 11b, p. 637	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=FreeBMDMarriage&indiv=try&h=24623046
	Death Index 1916-2007, Dec 1923, Stoke on Trent, Staffordshire, vol. 6b, p. 260	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=onsdeath93&h=14891372
Edward Williams	1851 Census Returns (PRO: HO107): HO107/2511, f. 457, p. 8	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1851wales&indiv=try&h=16225939
	1871 Census Returns (PRO: RG10): RG10/5691, f. 46, p. 5	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1871wales&indiv=try&h=3510524
	1881 Census Returns (PRO: RG11): RG11/5546, f. 125, p. 5	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1881wales&indiv=try&h=12977697
	1891 Census Returns (PRO: RG12): RG12/4643, f. 24, p. 3	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1891wales&h=1686185
	Death Index 1837-1915, Apr-May-Jun 1893, Dolgelly, Merionethshire, vol. 11b, p. 274	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=freebmddeath&h=36916237
	National Probate Calendar (Index of Wills and Administrations) 1858-1966, Death: 17 May 1893 Merionethshire, Probate: 15 Aug 1893 London	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=ukprobatecal&h=1492097

Edwin Brazier	1871 Census Returns (PRO: RG10): RG10/2748, f. 65, p. 14	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1871&h=2065290
	1881 Census Returns (PRO: RG11): RG11/2668, f. 59, p. 12	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1881&indiv=try&h=18356441
	1891 Census Returns (PRO: RG12): RG12/4643, f. 8, p. 9	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1891wales&h=1678169
	1901 Census Returns (PRO: RG13): RG13/2554, f. 90, p. 8	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1901wales&h=33170703
	1911 Census Returns (PRO: RG14): RG14/34299, Sch. 71	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=1911wales&h=2064047
	Birth Index 1837-1915, Jan-Feb-Mar 1868, Shifnal, Shropshire, vol. 6a, p. 598	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=freebmdbirth&h=33710705
	Marriage Index 1837-1915, Apr-May-Jun 1893, Dolgelly, Merionethshire, vol. 11b, p. 616	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=FreeBMDMarriage&indiv=try&h=3370934
	Death Index 1916-2007, Dec 1943, Merioneth South, Merionethshire, vol. 11b, p. 445	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=onsdeath93&h=31457541
	National Probate Calendar (Index of Wills and Administrations) 1858-1966, Death: 22 Dec 1943 Merionethshire, Probate: 9 Mar 1944 Bangor	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=ukprobatecal&h=17068559
Elizabeth Jones	1891 Census Returns (PRO: RG12): RG12/4643, f. 8, p. 10	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1891wales&h=1671327
	1901 Census Returns (PRO: RG13): RG13/5254, f. 104, p. 35	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1901wales&h=33171476
Elizabeth Thomas Jones	1881 Census Returns (PRO: RG11): RG11/5546, f. 151, p. 23	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1881wales&h=12978323
	1891 Census Returns (PRO: RG12): RG12/4642, f. 1188, p. 17	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1891wales&h=1660323

	1901 Census Returns (PRO: RG13): RG13/5254, f. 65, p. 4	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1901wales&indiv=try&h=33169495
	1911 Census Returns (PRO: RG14): RG14/34298, Sch. 111	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=1911wales&h=894072
Ellis Jones	1861 Census Returns (PRO: RG9): RG9/4320, f. 37, p. 2	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1861wales&h=15531847
	1871 Census Returns (PRO: RG10): RG10/5691, f. 60, p. 18	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1871wales&h=3511000
	1881 Census Returns (PRO: RG11): RG11/5546, f. 132, p. 5	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1881wales&h=12977953
	1891 Census Returns (PRO: RG12): RG12/4643, f. 13, p. 19	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1891wales&h=1680726
	Death Index 1837-1915, Oct-Nov-Dec 1898, Dolgelly, Merionethshire, vol. 11b, p. 258	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=freebmddeath&h=18845430
	National Probate Calendar (Index of Wills and Administrations) 1858-1966, Death: 4 Sep 1898 Merionethshire, Probate: 3 Oct 1898 London	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=ukprobatecal&h=4655272
Ellis Lewis	1871 Census Returns (PRO: RG10): RG10/5689, f. 54, p. 11	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1871wales&h=3505231
	1881 Census Returns (PRO: RG11): RG11/5545, f. 48, p. 12	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1881wales&indiv=try&h=12972250
	1891 Census Returns (PRO: RG12): RG12/4641, f. 132, p. 5	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1891wales&h=1416305
	1901 Census Returns (PRO: RG13): RG13/5253, f. 96, p. 8	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1901wales&h=33165728
	1911 Census Returns (PRO: RG14): RG14/34286, Sch. 13	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=1911wales&h=1039458

	Birth Index 1837-1915, Jul-Aug-Sep 1865, Festiniog, Merionethshire, vol. 11b, p. 440	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=freebmdbirth&h=18709653
	Marriage Index 1837-1915, Jan-Apr-May 1907, Dolgelly, Merionethshire, vol. 11b, p. 437	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=FreeBMDMarriage&indiv=try&h=17757191
	National Probate Calendar (Index of Wills and Administrations) 1858-1966, Death: 3 Mar 1921 Merionethshire, Probate: 27 May 1921 London	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=ukprobatecal&h=1297188
Elizabeth Lloyd Jones	1891 Census Returns (PRO: RG12): RG12/4643, f. 12, p. 18	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1891wales&indiv=try&h=1677841
	1901 Census Returns (PRO: RG13): RG13/3484, f. 139, p. 11	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1901&indiv=try&h=20881916
	1911 Census Returns (PRO: RG14): RG14/34305, Sch. 27	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=1911Wales&indiv=try&h=1046115
	Marriage Index 1837-1915, Jan-Feb-Mar 1891, Dolgelly, Merionethshire, vol. 11b, p. 498	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=FreeBMDMarriage&indiv=try&h=31501661
	Death Index 1916-2007, Sep 1924, Festiniog, Merionethshire, vol. 11b, p. 412	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=onsdeath93&h=20086569
Ellis Parry	1851 Census Returns (PRO: HO107): HO107/2512, f. 35, p. 1	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1851wales&h=16228638
	1861 Census Returns (PRO: RG9): RG9/4322, f. 21, p. 5	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1861wales&h=15536012
	1871 Census Returns (PRO: RG10): RG10/5693, f. 10, p. 11	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1871wales&h=3513378
	1891 Census Returns (PRO: RG12): RG12/4641, f. 147, p. 6	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1891wales&h=1423749
	Birth Index 1837-1915, Oct-Nov-Dec 1849, Festiniog, Merionethshire, vol. 27, p. 148	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=freebmdbirth&h=26618136

	Marriage Index 1837-1915, Oct-Nov-Dec 1885, Dolgelly, Merionethshire, vol. 11b, p. 584	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=FreeBMDMarriage&indiv=try&h=21902199
	Death Index 1837-1915, Apr-May-Jun 1900, Dolgelly, Merionethshire, vol. 11b, p. 271	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=freebmddeath&h=25735885
	National Probate Calendar (Index of Wills and Administrations) 1858-1966, Death: 20 Apr 1900 Merioneth, Probate: 17 Jul 1900 London	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=ukprobatecal&h=18758790
Ellis William Ellis	1861 Census Returns (PRO: RG9): RG9/4320, f. 56, p. 15	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1861wales&h=15532579
	1881 Census Returns (PRO: RG11): RG11/5547, f. 9, p. 11	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1881wales&h=12978931
	1891 Census Returns (PRO: RG12): RG12/4642, f. 120, p. 21	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1891wales&h=1636963
	1901 Census Returns (PRO: RG13): RG13/5254, f. 71, p. 16	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1901wales&h=33169854
	1911 Census Returns (PRO: RG14): RG14/34298, Sch. 61	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=1911wales&h=893863
	Death Index 1837-1915, Apr-May-Jun 1915, Dolgelly, Merionethshire, vol. 11b, p. 513	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=freebmddeath&h=10557572
	National Probate Calendar (Index of Wills and Administrations) 1858-1966, Death: 11 Apr 1915 Merionethshire, Probate: 10 Jul 1915 St. Asaph	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=UKProbateCal&h=6060768&indiv=try&o_vc=Record:OtherRecord&rhSource=8914
Evan Davies	1881 Census Returns (PRO: RG11): RG11/5547, f. 7, p. 7	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1881wales&indiv=try&h=12978814
	1891 Census Returns (PRO: RG12): RG12/4642, f. 127, p. 36	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1891wales&h=1667321

Evan Thomas Edwards	1871 Census Returns (PRO: RG10): RG10/5691, f. 47, p. 8	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1871wales&h=3510596
	1891 Census Returns (PRO: RG12): RG12/4649, f. 22, p. 38	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1891wales&h=566648
	1901 Census Returns (PRO: RG13): RG13/5261, f. 25, p. 12	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1901wales&h=33200204
	1911 Census Returns (PRO: RG14): RG14/34350, Sch. 346	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=1911wales&h=939401
	Birth Index 1837-1915, Jul-Aug-Sep 1867, Dolgelly, Merionethshire, vol. 11b, p. 478	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=freebmdbirth&h=1472535
	Marriage Index 1837-1915, Apr-May-Jun 1892, Dolgelly, Merionethshire, vol. 11b, p. 692	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=FreeBMDMarriage&indiv=try&h=8813813
	Death Index 1916-2007, Dec 1929, Pwllheli, Caernarvonshire, vol. 11b, p. 427	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=onsdeath93&h=19830452
Evan Evans	1881 Census Returns (PRO: RG11): RG11/5546, f. 144, p. 30	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1881wales&h=12978415
	1891 Census Returns (PRO: RG12): RG12/4642, f. 124, p. 30	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1891wales&h=1667629
	1901 Census Returns (PRO: RG13): RG13/5254, f. 75, p. 23	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1901wales&h=33170069
	1911 Census Returns (PRO: RG14): RG14/34298, Sch. 242	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=1911wales&h=894583
Evan Griffith	1841 Census Returns (PRO: HO107): HO107/1427, bk. 4, f. 22, p. 4, ln. 9	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1841wales&h=14266734
	1871 Census Returns (PRO: RG10): RG10/5691, f. 54, p. 6	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1871wales&h=3510749

	1881 Census Returns (PRO: RG11): RG11/5546, f. 132, p. 6	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1881wales&h=12977883
	1891 Census Returns (PRO: RG12): RG12/4642, f. 121, p. 23	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1891wales&h=1663853
	1901 Census Returns (PRO: RG13): RG13/5254, f. 72, p. 18	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1901wales&h=33169918
	1911 Census Returns (PRO: RG14): RG14/34298, Sch. 51	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=1911wales&h=893830
	Birth Index 1837-1915, Jan-Feb-Mar 1839, Dolgelly, Merionethshire, vol. 27, p. 152	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=freebmdbirth&h=7244230
	Death Index 1837-1915, Jan-Feb-Mar 1915, Dolgelly, Merionethshire, vol. 11b, p. 606	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=freebmddeath&h=13857820
	National Probate Calendar (Index of Wills and Administrations) 1858-1966, Death: 3 Feb 1915 Merionethshire, Probate: 25 Feb 1915 St. Asaph	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=ukprobatecal&h=6078988
Evan Griffith	1861 Census Returns (PRO: RG9): RG9/4320, f. 38, p. 3	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1861wales&h=15531874
	1891 Census Returns (PRO: RG12): RG12/4643, f. 7, p. 7	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1891wales&h=1648397
	1901 Census Returns (PRO: RG13): RG13/5254, f. 65, p. 4	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1901wales&h=33169504
Evan Jones	1861 Census Returns (PRO: RG9): RG9/4320, f. 49, p. 2	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1861wales&h=15532264
	1871 Census Returns (PRO: RG10): RG10/5371, f. 16	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1871wales&h=26792694

	1881 Census Returns (PRO: RG11): RG11/2318, f. 216, p. -8	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1881&h=2035898
	1891 Census Returns (PRO: RG12): RG12/4642, f. 124, p. 30	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1891wales&h=1667643
Evan Morris Jones	1871 Census Returns (PRO: RG10): RG10/5600, f. 74, p. 5	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1871wales&h=27128682
	1891 Census Returns (PRO: RG12): RG12/4643, f. 10, p. 13	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1891wales&h=1680713
	1901 Census Returns (PRO: RG13): RG13/5254, f. 91, p. 10	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1901wales&h=33170755
	Death Index 1837-1915, Jan-Feb-Mar 1902, Dolgelly, Merionethshire, vol. 11b, p. 281	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=freebmddeath&h=18861984
	National Probate Calendar (Index of Wills and Administrations) 1858-1966, Death: 25 Feb 1902 Merionethshire, Probate: 13 Jun 1902 St. Asaph	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=UKProbateCal&h=19191301&indiv=try&o_vc=Record:OtherRecord&rhSource=8914
Evan Lewis	1881 Census Returns (PRO: RG11): RG11/5545, f. 76, p. 13	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1881wales&indiv=try&h=12972946
	1891 Census Returns (PRO: RG12): RG12/4643, f. 124, p. 5	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1891wales&indiv=try&h=1722574
	1901 Census Returns (PRO: RG13): RG13/5253, f. 131, p. 18	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1901wales&indiv=try&h=33166947
	1911 Census Returns (PRO: RG14): RG14/34290, Sch. 128	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=1911Wales&indiv=try&h=1042786
Evan Lewis Jones	1871 Census Returns (PRO: RG10): RG10/5691, f. 57, p. 12	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1871wales&h=3510868
	1881 Census Returns (PRO: RG11): RG11/5547, f. 6, p. 5	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1881wales&h=12978751

	1891 Census Returns (PRO: RG12): RG12/4642, f. 125, p. 32	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1891wales&h=1674975
	1901 Census Returns (PRO: RG13): RG13/5254, f. 82, p. 37	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1901wales&h=33170472
	Marriage Index 1837-1915, Jan-Feb-Mar 1879, Dolgelly, Merionethshire, vol. 11b, p. 447	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=FreeBMDMarriage&indiv=try&h=16065596
	Death Index 1916-2007, Sep 1920, Dolgelly, Merionethshire, vol. 11b, p. 409	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=onsdeath93&h=20957932
	National Probate Calendar (Index of Wills and Administrations) 1858-1966, Death: 1 Aug 1920 Merionethshire, Probate: 7 Oct 1920 London	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=ukprobatecal&h=2944197
Evan Owen Edwards	1891 Census Returns (PRO: RG12): RG12/4643, f. 9, p. 12	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1891wales&h=1680816
	1901 Census Returns (PRO: RG13): RG13/2725, p. 37	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1901&h=35204014
	Birth Index 1837-1915, Apr-May-Jun 1882, Dolgelly, Merionethshire, vol. 11b, p. 428	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=freebmdbirth&h=1472473
Evan Parry	1851 Census Returns (PRO: HO107): HO107/2511, f. 220, p. 11	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1851wales&h=16220204
	1861 Census Returns (PRO: RG9): RG9/4319, f. 4, p. 7	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1861wales&h=15528559
	1871 Census Returns (PRO: RG10): RG10/5690, f. 9, p. 9	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1871wales&h=3506777
	1881 Census Returns (PRO: RG11): RG11/5547, f. 6, p. 6	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1881wales&h=12978801
	1891 Census Returns (PRO: RG12): RG12/4642, f. 127, p. 35	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1891wales&h=1663895

	1901 Census Returns (PRO: RG13): RG13/5254, f. 82, p. 38	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1901wales&h=33170492
	1911 Census Returns (PRO: RG14): RG14/34299, Sch. 189	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=1911wales&h=2064740
	Birth Index 1837-1915, Jul-Aug-Sep 1848, Dolgelly, Merionethshire, vol. 27, p. 162	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=freebmdbirth&h=26619805
	Death Index 1916-2007, Sep 1916, Dolgelly, Merionethshire, vol. 11b, p. 406	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=onsdeath93&h=19613664
Evan Pugh	1861 Census Returns (PRO: RG9): RG9/4320, f. 76, p. 14	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1861wales&h=15533141
	1881 Census Returns (PRO: RG11): RG11/5547, f. 13, p. 19	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1881wales&h=12979102
	1891 Census Returns (PRO: RG12): RG12/4643, f. 5, p. 4	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1891wales&h=1670997
	1901 Census Returns (PRO: RG13): RG13/5254, f. 106, p. 40	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1901wales&h=33171592
	1911 Census Returns (PRO: RG14): RG14/34299, Sch. 161	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=1911wales&h=2064486
	Marriage Index 1837-1915, Apr-May-Jun 1877, Festiniog, Merionethshire, vol. 11b, p. 760	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=FreeBMDMarriage&indiv=try&h=23376020
	Death Index 1916-2007, Dec 1937, Merioneth South, Merionethshire, vol. 11b, p. 423	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=onsdeath93&h=27768551
	National Probate Calendar (Index of Wills and Administrations) 1858-1966, Death: 5 Nov 1936 Merionethshire, Probate: 26 Apr 1937 Bangor	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=ukprobatecal&h=601080
Evan Roberts	1871 Census Returns (PRO: RG10): RG10/5692, f. 32, p. 9	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1871wales&h=3511766

	1881 Census Returns (PRO: RG11): RG11/5547, f. 22, p. 3	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1881wales&h=12979436
	1891 Census Returns (PRO: RG12): RG12/4643, f. 30, p. 1	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1891wales&h=1689028
	1901 Census Returns (PRO: RG13): RG13/5253, f. 129, p. 13	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1901wales&h=33166830
Faulconer Morgan	1861 Census Returns (PRO: RG9): RG9/1684, f. 82, p. 35	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1861&h=19183711
	1881 Census Returns (PRO: RG11): RG11/200, f. 79, p. 19	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1881&h=13998403
	1891 Census Returns (PRO: RG12): RG12/2408, f. 55, p. 15	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1891&h=2794780
	1901 Census Returns (PRO: RG13): RG13/2182, p. 11	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1901&indiv=try&h=11955001
	London Marriage and Banns 1754-1921, 28 Jul 1874, Hampstead All Souls, Camden, P81/ALS, 002	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=lmamarriages&h=3545809
	National Probate Calendar (Index of Wills and Administrations) 1858-1966, Death: 2 Jun 1902 Pretoria, Probate: 3 Nov 1902 London	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=ukprobatecal&h=19400045
Francis Morris	1861 Census Returns (PRO: RG9): RG9/4320, f. 50, p. 4	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1861wales&h=15532329
	1881 Census Returns (PRO: RG11): RG11/5546, f. 144, p. 29	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1881wales&h=12978540
	1891 Census Returns (PRO: RG12): RG12/2642, f. 117, p. 15	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1891wales&h=1656523

	1901 Census Returns (PRO: RG13): RG13/5254, f. 87, p. 1	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1901wales&h=33170534
	1911 Census Returns (PRO: RG14): RG14/34299, Sch. 253	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=1911wales&h=2065297
	Marriage Index 1837-1915, Apr-May-Jun 1896, Dolgelly, Merionethshire, vol. 11b, p. 675	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=FreeBMDMarriage&indiv=try&h=20297923
	Death Index 1916-2007, Mar 1942, Merioneth South, Merionethshire, vol. 11b, p. 951	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=onsdeath93&h=22455966
	National Probate Calendar (Index of Wills and Administrations) 1858-1966, Death: 20 Jan 1942 Merionethshire, Probate: 30 Apr 1942 Bangor	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=ukprobatecal&h=18014844
Francis Tinley R. Hornby	1881 Census Returns (PRO: RG11): RG11/3478, f. 118, p. 27	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1881&indiv=try&h=1232187
	1891 Census Returns (PRO: RG12): RG12/3790, f. 81, p. 17	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1891&h=6108838
	Birth Index 1837-1915, Jul-Aug-Sep 1872, Rotherham, Yorkshire West Riding, vol. 9c, p. 555	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=freebmdbirth&h=12358824
Frederick Barclay Wilkinson	1861 Census Returns (PRO: RG9): RG9/228, f. 65, p. 24	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1861&indiv=try&h=5484419
	1871 Census Returns (PRO: RG10): RG10/671, f. 39, p. 33	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1871&indiv=try&h=2435185
	1881 Census Returns (PRO: RG11): RG11/602, f. 48, p. 30	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1881&indiv=try&h=20710520
	1891 Census Returns (PRO: RG12): RG12/2825, f. 29, p. 15	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1891&h=3258439
	Birth Index 1837-1915, Jul-Aug-Sep 1854, City of London, London, vol. 1c, p. 91	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=FreeBMDBirth&h=60237847&indiv=try&o_vc=Record:OtherRecord&rhSource=8913

	London Births and Baptisms 1813-1906, 17 Sep 1854, St. Andrew Undershaft, City of London, P69/AND4/A/01/Ms4110, 2	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=LMAbirths&h=810314&indiv=try&o_vc=Record:OtherRecord&rhSource=1904
	Marriage Index 1837-1915, Apr-May-Jun 1891, Altrincham, Cheshire, vol. 8a, p. 240	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=FreeBMDMarriage&indiv=try&h=31368079
	Death Index 1916-2007, Dec 1937, Essex South Western, Essex, vol. 4a, p. 254	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=ONSDeath93&h=30523902&indiv=try&o_vc=Record:OtherRecord&rhSource=8912
	National Probate Calendar (Index of Wills and Administrations) 1858-1966, Death: 11 Nov 1937 Essex, Probate: 15 Dec 1937 London	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=UKProbateCal&h=2683498&indiv=try&o_vc=Record:OtherRecord&rhSource=7579
George Batten	1841 Census Returns (PRO: HO107): HO107/491, bk. 4, f. 10, p. 13, ln. 13	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1841&indiv=try&h=3204587
	1881 Census Returns (PRO: RG11): RG11/853, f. 69, p. 29	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1881&indiv=try&h=7907939
	1891 Census Returns (PRO: RG12): RG12/629, f. 108, p. 14	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1891&h=12319449
	Death Index 1837-1915, Apr-May-Jun 1895, Bromley, Kent, vol. 2a, p. 230	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=FreeBMDDeath&h=2076891&indiv=try&o_vc=Record:OtherRecord&rhSource=1904
	National Probate Calendar (Index of Wills and Administrations) 1858-1966, Death: 29 Apr 1895 Kent, Probate: 18 Sep 1895 London	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=UKProbateCal&h=2718723&indiv=try&o_vc=Record:OtherRecord&rhSource=8914
George Crosby	1841 Census Returns (PRO: HO107): HO107/529, bk. 10, f. 12, p. 16, ln. 5	http://search.ancestry.co.uk/iexec?htx=view&r=5538&dbid=8978&iid=LANHO107_529_531-0027&fn=George&ln=Crosby&st=r&ssrc=&pid=5274816
	1851 Census Returns (PRO: HO107): HO107/2425, f. 199, p. 19	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1851&h=15084764
	1861 Census Returns (PRO: RG9): RG9/3900, f. 26, p. 4	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1861&h=13129831

	1891 Census Returns (PRO: RG12): RG12/4642, f. 115, p. 12	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1891wales&h=1659924
	Birth Index 1837-1915, Jan-Feb-Mar 1839, Ulverston, Lancashire, vol. 25, p. 174	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=freebmdbirth&h=40392027
Georg Lanerhass	1891 Census Returns (PRO: RG12): RG12/3183, f. 122, p. 36	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1891&h=3988657
George Thomas Crump	1871 Census Returns (PRO: RG10): RG10/2719, f. 15, p. 23	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1871&h=2000365
	1881 Census Returns (PRO: RG11): RG11/2607, f. 90, p. 20	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1881&h=7207820
	1891 Census Returns (PRO: RG12): RG12/4642, f. 120, p. 21	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1891wales&h=1636954
	1901 Census Returns (PRO: RG13): RG13/5254, f. 88, p. 3	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1901wales&h=33170609
	1911 Census Returns (PRO: RG14): RG14/34254, Sch. 113	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=1911Wales&indiv=try&h=2094846
	Marriage Index 1837-1915, Oct-Nov-Dec 1893, Dolgelly, Merionethshire, vol. 11b, p. 637	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=FreeBMDMarriage&indiv=try&h=6952652
	National Probate Calendar (Index of Wills and Administrations) 1858-1966, Death: 2 Apr 1915 Merionethshire, Probate: 21 May 1915 London	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=ukprobatecal&h=4509245
George William Faulconer Morgan	1891 Census Returns (PRO: RG12): RG12/2408, f. 55, p. 15	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1891&h=2796335
	1901 Census Returns (PRO: RG13): RG13/2182, p. 11	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1901&indiv=try&h=11955002
	1911 Census Returns (PRO: RG14): RG14/34972, p. 1	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=1911England&indiv=try&h=34793889

	Birth Index 1837-1915, Jul-Aug-Sep 1878, Hackney, London, vol. 1b, p. 475	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=freebmdbirth&h=23350571
	London Births and Baptisms 1813-1906, 7 Aug 1878, Stoke Newington St Mary, Hackney, P94/MRY, 004	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=lmabirths&h=4227273
	National Probate Calendar (Index of Wills and Administrations) 1858-1966, Death: 31 May 1916 Devon, Probate: 9 Sep 1916 Exeter	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=ukprobatecal&h=5480012
	Singlehurst, P., <i>Memorials to the Naval Ranks and Ratings of the Empire Who Fell in the Great War and Have No Other Grave than the Sea</i> , Portsmouth Memorial, part 4, 1916, G-N	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=CommonWarGraves&h=251801&indiv=try&o_vc=Record:OtherRecord&rhSource=70699
George William Pybus	1861 Census Returns (PRO: RG9): RG9/3438, f. 33, p. 27	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1861&h=10712622
	1871 Census Returns (PRO: RG10): RG10/4346, f. 42, p. 10	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1871&indiv=try&h=28155973
	1881 Census Returns (PRO: RG11): RG11/4590, f. 49, p. 11	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1881&indiv=try&h=25241168
	1891 Census Returns (PRO: RG12): RG12/4642, f. 118, p. 18	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1891wales&indiv=try&h=1637061
	1901 Census Returns (PRO: RG13): RG13/5254, f. 70, p. 14	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1901wales&h=33169796
	Birth Index 1837-1915, Apr-May-Jun 1851, Pontefract, Yorkshire West Riding, vol. 22, p. 562	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=freebmdbirth&h=29555415
	Marriage Index 1837-1915, Oct-Nov-Dec 1881, Festiniog, Merionethshire, vol. 11b, p. 663	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=FreeBMDMarriage&indiv=try&h=23441532
Gilbert Talbot	1841 Census Returns (PRO: HO107): HO107/56, bk. 16, f. 4, p. 1, ln. 6	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1841&h=3633302
	1851 Census Returns (PRO: HO107): HO107/1838, f. 246, p. 8	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1851&h=16904043

	1861 Census Returns (PRO: RG9): RG9/866, f. 20, p. 34	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1861&indiv=try&h=11264331
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	1881 Census Returns (PRO: RG11): RG11/1493, f. 97, p. 8	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1881&indiv=try&h=17884924
	1891 Census Returns (PRO: RG12): RG12/1161, f. 139, p. 3	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1891&indiv=try&h=16010368
	Birth Index 1837-1915, Oct-Nov-Dec 1840, Newport Pagnell, Buckinghamshire, vol. 6, p. 372	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=freebmdbirth&h=53901475
	Marriage Index 1837-1915, Oct-Nov-Dec 1873, Elham, Kent, vol. 2a, p. 1666	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=FreeBMDMarriage&indiv=try&h=28063761
	Death Index 1837-1915, Jan-Feb-Mar 1894, Newcastle Under Lyme, Staffordshire, vol. 6b, p. 47	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=freebmddeath&h=32892940
	National Probate Calendar (Index of Wills and Administrations) 1858-1966, Death: 2 Mar 1894 Staffordshire, Probate: 15 Mar 1894 London	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=UKProbateCal&h=2895632&indiv=try&o_vc=Record:OtherRecord&rhSource=8914
Godfrey Stevenson	1881 Census Returns (PRO: RG11): RG11/5546, f. 131, p. 4	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1881wales&indiv=try&h=12977941
	1891 Census Returns (PRO: RG12): RG12/926, f. 134, p. 25	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1891&indiv=try&h=24977396
	Birth Index 1837-1915, Jul-Aug-Sep 1876, Lambeth, London, vol. 1d, p. 527	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=FreeBMDBirth&h=52805617&indiv=try&o_vc=Record:OtherRecord&rhSource=6598
	London Births and Baptisms 1813-1906, 9 Sep 1876, Brixton St Matthew, Lambeth, P85/MTW1, 004	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=LMAbirths&h=1986792&indiv=try&o_vc=Record:OtherRecord&rhSource=8912
	Marriage Index 1837-1915, Oct-Nov-Dec 1910, Southampton, Hampshire, vol. 2c, p. 39	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=FreeBMDMarriage&indiv=try&h=27488023

Grace Lloyd Humphreys	1861 Census Returns (PRO: RG9): RG9/4319, f. 75, p. 7	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1861wales&h=15528209
	1871 Census Returns (PRO: RG10): RG10/5689, f. 89, p. 5	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1871wales&h=3506186
	1891 Census Returns (PRO: RG12): RG12/4642, f. 4, p. 1	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1891wales&h=1437562
	Birth Index 1837-1915, Jan-Feb-Mar 1861, Dolgelly, Merionethshire, vol. 11b, p. 411	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=freebmdbirth&h=13312381
Griffith Ellis Owen	1861 Census Returns (PRO: RG9): RG9/4327, f. 60, p. 4	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1861wales&h=15551802
	1881 Census Returns (PRO: RG11): RG11/5547, f. 7, p. 8	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1881wales&h=12978929
	1891 Census Returns (PRO: RG12): RG12/4642, f. 119, p. 19	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1891wales&indiv=try&h=1656137
	1901 Census Returns (PRO: RG13): RG13/5254, f. 67, p. 8	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1901wales&indiv=try&h=33169632
	1911 Census Returns (PRO: RG14): RG14/34298, Sch. 100	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=1911Wales&indiv=try&h=894024
	Birth Index 1837-1915, Jul-Oct-Sep 1855, Festiniog, Merionethshire, vol. 11b, p. 411	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=FreeBMDBirth&h=25883646&indiv=try&o_vc=Record:OtherRecord&rhSource=2353
	Marriage Index 1837-1915, Oct-Nov-Dec 1878, Carnarvon, Caernarvonshire, vol. 11b, p. 751	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=FreeBMDMarriage&indiv=try&h=21517337
	Death Index 1916-2007, Jun 1930, Liverpool, Lancashire, vol. 48b, p. 82	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=onsdeath93&h=15377262
	National Probate Calendar (Index of Wills and Administrations) 1858-1966, Death: 11 Jun 1930 Merionethshire, Probate: 10 Nov 1930 Bangor	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=ukprobatecal&h=5375085

Griffith Griffiths	1871 Census Returns (PRO: RG10): RG10/5692, f. 16, p. 12	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1871wales&h=3511267
	1881 Census Returns (PRO: RG11): RG11/5546, f. 137, p. 16	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1881wales&h=12978275
	1891 Census Returns (PRO: RG12): RG12/4643, f. 8, p. 9	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1891wales&h=1678195
	1911 Census Returns (PRO: RG14): RG14/34298, Sch. 21	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=1911wales&h=893724
	Marriage Index 1837-1915, Oct-Nov-Dec 1877, Dolgelly, Merionethshire, vol. 11b, p. 696	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=FreeBMDMarriage&indiv=try&h=11836687
Griffith Jones	1861 Census Returns (PRO: RG9): RG9/4320, f. 57, p. 18	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1861wales&h=15532656
	1871 Census Returns (PRO: RG10): RG10/5709, f. 78	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1871wales&h=3795251
	1881 Census Returns (PRO: RG11): RG11/5547, f. 6, p. 5	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1881wales&h=12978689
	1891 Census Returns (PRO: RG12): RG12/4642, f. 125, p. 32	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1891wales&h=1674970
	1901 Census Returns (PRO: RG13): RG13/5254, f. 66, p. 6	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1901wales&h=33169574
	1911 Census Returns (PRO: RG14): RG14/34298, Sch. 107	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=1911wales&h=894056
	Birth Index 1837-1915, Jan-Feb-Mar 1858, Festiniog, Merionethshire, vol. 11b, p. 406	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=freebmdbirth&h=15522958
	Death Index 1916-2007, Dec 1939, Merioneth South, Merionethshire, vol. 1b, p. 1223	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=onsdeath93&h=27329570

	National Probate Calendar (Index of Wills and Administrations) 1858-1966, Death: 19 Dec 1939 Merionethshire, Probate: 12 March 1940 Carmarthen	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=ukprobatecal&h=5058615
		http://www.williamsfamilytree.co.uk/tree/getperson.php?personID=11925&tree=wft#cite8
Griffith Jones	1881 Census Returns (PRO: RG11): RG11/5546, f. 125, p. 6	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1881wales&h=12977775
	1891 Census Returns (PRO: RG12): RG12/4643, f. 23, p. 2	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1891wales&h=1683551
	1901 Census Returns (PRO: RG13): RG13/5255, f. 56, p. 7	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1901wales&h=33173115
	1911 Census Returns (PRO: RG14): RG14/34300, Sch. 6	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=1911wales&h=880587
	Birth Index 1837-1915, Apr-May-Jun 1838, Dolgelly, Merionethshire, vol. 27, p. 144	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=freebmdbirth&h=15522447
Griffith Lewis	1881 Census Returns (PRO: RG11): RG11/5545, f. 54, p. 4	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1881wales&h=12972379
	1891 Census Returns (PRO: RG12): RG12/4642, f. 128, p. 38	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1891wales&h=1667604
Griffith Williams	1851 Census Returns (PRO: HO107): HO107/2511, f. 427, p. 15	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1851wales&h=16225171
	1861 Census Returns (PRO: RG9): RG9/4495, f. 87	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1861&h=14020627
	1891 Census Returns (PRO: RG12): RG12/4642, f. 127, p. 36	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1891wales&h=1667268

	1901 Census Returns (PRO: RG13): RG13/5254, f. 89, p. 5	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1901wales&h=33170666
	1911 Census Returns (PRO: RG14): RG14/34299, Sch. 62	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=1911wales&h=2064006
	Death Index 1916-2007, Dec 1921, Dolgelly, Merionethshire, vol. 11b, p. 420	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=onsdeath93&h=16447241
	National Probate Calendar (Index of Wills and Administrations) 1858-1966, Death: 6 Nov 1921 Merionethshire, Probate: 22 Jun 1922 St. Asaph	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=ukprobatecal&h=5446133
Griffith Williams	1871 Census Returns (PRO: RG10): RG10/5692, f. 10, p. 9	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1871wales&h=3511200
	1881 Census Returns (PRO: RG11): RG11/5547, f. 5, p. 3	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1881wales&h=12978770
	1891 Census Returns (PRO: RG12): RG12/4642, f. 128, p. 38	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1891wales&h=1667670
	1901 Census Returns (PRO: RG13): RG13/5254, f. 81, p. 36	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1901wales&h=33170434
	1911 Census Returns (PRO: RG14): RG14/34298, Sch. 44	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=1911wales&h=893802
Harold Reginald Ernest Farrar	1871 Census Returns (PRO: RG10): RG10/111, f. 107, p. 44	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1871&h=284991
	1881 Census Returns (PRO: RG11): RG11/5546, f. 138, p. 17	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1881wales&indiv=try&h=12978117
	1891 Census Returns (PRO: RG12): RG12/4642, f. 219, p. 58	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1891&h=9240475
	1901 Census Returns (PRO: RG13): RG13/2862, p. 25	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1901&indiv=try&h=16486771

	1911 Census Returns (PRO: RG14): RG14/7212, Sch. 267	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=1911england&h=40133719
	Birth Index 1837-1915, Oct-Nov-Dec 1867, St George Hanover Square, London, vol. 1a, p. 318	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=freebmdbirth&h=2791773
	Death Index 1916-2007, Mar 1934, Lambeth, Greater London, vol. 1d, p. 368	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=onsdeath93&h=26633954
Henry Cal Smith	1861 Census Returns (PRO: RG9): RG9/762, f. 60, p. 9	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1861&indiv=try&h=8377584
	1881 Census Returns (PRO: RG11): RG11/1326, f. 91, p. 2	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1881&indiv=try&h=15599563
	1891 Census Returns (PRO: RG12): RG12/1014, f. 137, p. 30	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1891&h=23950130
	1901 Census Returns (PRO: RG13): RG13/932, p. 2	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1901&indiv=try&h=6442561
Henry Martyn Townsend	1861 Census Returns (PRO: RG9): RG9/1728, f. 97, p. 10	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1861&indiv=try&h=19387583
	1871 Census Returns (PRO: RG10): RG10/2544, f. 5, p. 1	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1871&indiv=try&h=1092250
	1881 Census Returns (PRO: RG11): RG11/2022, f. 85, p. 16	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1881&indiv=try&h=23080829
	1891 Census Returns (PRO: RG12): RG12/2146, f. 97, p. 9	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1891&indiv=try&h=13354257
	Birth Index 1837-1915, Apr-May-Jun 1854, Clifton, Gloucestershire, vol. 6a, p. 65	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=FreeBMDBirth&h=55911447&indiv=try&o_vc=Record:OtherRecord&rhSource=6598
	Marriage Index 1837-1915, Oct-Nov-Dec 1882, Woolwich, London, vol. 1d, p. 1619	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=FreeBMDMarriage&indiv=try&h=29110882
Henry Padbury Hall	1861 Census Returns (PRO: RG9): RG9/2006, f. 54, p. 11	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1861&h=20318481

	1871 Census Returns (PRO: RG10): RG10/2952, f. 94, p. 10	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1871&indiv=try&h=27810815
	1881 Census Returns (PRO: RG11): RG11/2815, f. 106, p. 1	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1881&indiv=try&h=19529008
	1891 Census Returns (PRO: RG12): RG12/2243, f. 7, p. 7	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1891&indiv=try&h=26366350
	1901 Census Returns (PRO: RG13): RG13/2690, p. 1	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1901&indiv=try&h=34935529
	1911 Census Returns (PRO: RG14): RG14/8422	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=1911England&indiv=try&h=51999459
	Birth Index 1837-1915, Jan-Feb-Mar 1856, Wolverhampton, Staffordshire, vol. 6b, p. 396	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=FreeBMDBirth&h=8038970&indiv=try&o_vc=Record:OtherRecord&rhSource=6598
	National Probate Calendar (Index of Wills and Administrations) 1858-1966, Death: 30 Nov 1916 Hertfordshire, Probate: 14 Mar 1917 London	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=ukprobatecal&h=153115
Henry Powell	1881 Census Returns (PRO: RG11): RG11/5546, f. 123, p. 1	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1881wales&h=12977568
	1891 Census Returns (PRO: RG12): RG12/4643, f. 24, p. 3	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1891wales&indiv=try&h=1686199
	1901 Census Returns (PRO: RG13): RG13/5184, f. 60, p. 29	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1901wales&h=32917416
Henry Roberts	1871 Census Returns (PRO: RG10): RG10/5692, f. 24, p. 40	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1871wales&h=3511583
	1881 Census Returns (PRO: RG11): RG11/5547, f. 13, p. 19	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1881wales&h=12979229
	1891 Census Returns (PRO: RG12): RG12/92, f. 107, p. 8	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1891&h=8666724

	1901 Census Returns (PRO: RG13): RG13/5289, f. 105, p. 40	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1901wales&h=33327216
	1911 Census Returns (PRO: RG14): RG14/30	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=1911england&h=769878
	Birth Index 1837-1915, Jul-Aug-Sep 1869, Dolgelly, Merionethshire, vol. 11b, p. 426	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=freebmdbirth&h=46799408
	Marriage Index 1837-1915, Jul-Aug-Sep 1894, Woolwich, London, vol. 11b, p. 673	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=FreeBMDMarriage&indiv=try&h=24361291
Hugh Barrow Evans	1851 Census Returns (PRO: HO107): HO107/2514, f. 43, p. 5	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1851wales&indiv=try&h=16257850
	1861 Census Returns (PRO: RG9): RG9/4332, f. 24, p. 9	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1861wales&indiv=try&h=15561656
	1881 Census Returns (PRO: RG11): RG11/5547, f. 16, p. 26	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1881wales&indiv=try&h=12979282
	1891 Census Returns (PRO: RG12): RG12/4653, f. 17, p. 7	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1891wales&indiv=try&h=57673
	1901 Census Returns (PRO: RG13): RG13/5254, f. 88, p. 4	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1901wales&indiv=try&h=33170642
	1911 Census Returns (PRO: RG14): RG14/34299, Sch. 56	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=1911Wales&indiv=try&h=2063977
Hugh James Lloyd	1851 Census Returns (PRO: HO107): HO107/2511, f. 217, p. 4	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1851wales&h=16220082
	1861 Census Returns (PRO: RG9): RG9/4315, f. 4, p. 2	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1861wales&h=15519709
	1871 Census Returns (PRO: RG10): RG10/5691, f. 54, p. 5	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1871wales&indiv=try&h=3510720

	1881 Census Returns (PRO: RG11): RG11/5546, f. 140, p. 21	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1881wales&indiv=try&h=12978331
	1891 Census Returns (PRO: RG12): RG12/4642, f. 128, p. 37	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1891wales&h=1663797
	1901 Census Returns (PRO: RG13): RG13/5254, f. 66, p. 6	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1901wales&h=33169553
	Birth Index 1837-1915, Jan-Feb-Mar 1843, Dolgelly, Merionethshire, vol. 27, p. 171	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=freebmdbirth&h=19237375
	Death Index 1837-1915, Oct-Nov-Dec 1902, Dolgelly, Merionethshire, vol. 11b, p. 258a	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=freebmddeath&h=21176400
	National Probate Calendar (Index of Wills and Administrations) 1858-1966, Death: 24 Nov 1902 Merionethshire, Probate: 7 Feb 1903 London	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=ukprobatecal&h=3694409
Hugh Jones	1851 Census Returns (PRO: HO107): HO107/2511, f. 441, p. 11	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1851wales&h=16225558
	1871 Census Returns (PRO: RG10): RG10/5715, f. 24, p. 27	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1871wales&h=3562501
	1891 Census Returns (PRO: RG12): RG12/4642, f. 116, p. 13	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1891wales&h=1637118
	1901 Census Returns (PRO: RG13): RG13/5254, f. 72, p. 17	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1901wales&h=33169891
	1911 Census Returns (PRO: RG14): RG14/34298, Sch. 178	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=1911wales&h=894363
	Death Index 1916-2007, Mar 1920, Dolgelly, Merionethshire, vol. 11b, p. 388	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=onsdeath93&h=21502915

Hugh Morris	1881 Census Returns (PRO: RG11): RG11/5547, f. 8, p. 10	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1881wales&h=12978879
	1891 Census Returns (PRO: RG12): RG12/4642, f. 120, p. 21	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1891wales&h=1636979
	Birth Index 1837-1915, Apr-May-Jun 1845, Dolgelly, Merionethshire, vol. 27, p. 137	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=freebmdbirth&h=23578344
	Death Index 1916-2007, Mar 1927, Dolgelly, Merionethshire, vol. 11b, p. 556	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=onsdeath93&h=16173160
	National Probate Calendar (Index of Wills and Administrations) 1858-1966, Death: 21 Jan 1927 Merionethshire, Probate: 22 Mar 1927 St Asaph	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=ukprobatecal&h=3054510
Hugh Owen	1861 Census Returns (PRO: RG9): RG9/4320, f. 39, p. 5	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1861wales&h=15531925
	1871 Census Returns (PRO: RG10): RG10/5691, f. 60, p. 17	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1871wales&h=3510986
	1881 Census Returns (PRO: RG11): RG11/5546, f. 134, p. 10	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1881wales&h=12978023
	1891 Census Returns (PRO: RG12): RG12/4643, f. 15, p. 23	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1891wales&h=1680673
	Birth Index 1837-1915, Oct-Nov-Dec 1856, Dolgelly, Merionethshire, vol. 11b, p. 385	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=freebmdbirth&h=25888169
	Death Index 1837-1915, Oct-Nov-Dec 1894, Dolgelly, Merionethshire, vol. 11b, p. 251	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=freebmddeath&h=25295450
Hugh Rees	1861 Census Returns (PRO: RG9): RG9/4239, f. 47, p. 24	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1861wales&h=15332125

	1871 Census Returns (PRO: RG10): RG10/5601, f. 57, p. 34	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1871wales&indiv=try&h=27131431
	1881 Census Returns (PRO: RG11): RG11/5477, f. 52, p. 34	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1881wales&indiv=try&h=16206827
	1901 Census Returns (PRO: RG13): RG13/5254, f. 76, p. 26	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1901wales&h=33170142
	1911 Census Returns (PRO: RG14): RG14/32337, Sch. 254	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=1911Wales&indiv=try&h=366128
	Birth Index 1837-1915, Jan-Feb-Mar 1858, Machynlleth, Montgomeryshire, vol. 11b, p. 187	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=freebmdbirth&h=30315210
Hugh Roberts	1891 Census Returns (PRO: RG12): RG12/4642, f. 124, p. 30	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1891wales&h=1671008
Hugh Evans Williams	1891 Census Returns (PRO: RG12): RG12/4642, f. 128, p. 38	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1891wales&h=1667607
	1901 Census Returns (PRO: RG13): RG13/5254, f. 66, p. 5	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1901wales&h=33169546
	1911 Census Returns (PRO: RG14): RG14/34299, Sch. 151	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=1911wales&h=2064384
Humphrey Edwards	1871 Census Returns (PRO: RG10): RG10/5691, f. 46, p. 6	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1871wales&h=3510543
	1881 Census Returns (PRO: RG11): RG11/5546, f. 143, p. 27	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1881wales&h=12978473
	1891 Census Returns (PRO: RG12): RG12/4642, f. 113, p. 7	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1891wales&h=1659958

	1901 Census Returns (PRO: RG13): RG13/5192, f. 62, p. 5	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1901wales&h=32937415
	1911 Census Returns (PRO: RG14): RG14/33739, Sch. 223	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=1911wales&h=555967
	Birth Index 1837-1915, Apr-May-Jun 1871, Dolgelly, Merionethshire, vol. 11b, p. 443	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=freebmdbirth&h=1502828
	Death Index 1916-2007, Mar 1936, Newtown, Montgomeryshire, vol. 11b, p. 173	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=onsdeath93&h=30110172
Humphrey Lloyd Lewis	1881 Census Returns (PRO: RG11): RG11/5546, f. 135, p. 11	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1881wales&h=12978134
	1891 Census Returns (PRO: RG12): RG12/4643, f. 14, p. 21	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1891wales&indiv=try&h=1678266
	1911 Census Returns (PRO: RG14): RG14/531	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=1911England&indiv=try&h=1529397
	Birth Index 1837-1915, Jul-Aug-Sep 1868, Dolgelly, Merionethshire, vol. 11b, p. 442	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=FreeBMDBirth&h=18745101&indiv=try&o_vc=Record:OtherRecord&rhSource=2352
	Death Index 1916-2007, Dec 1918, Dolgelly, Merionethshire, vol. 11b, p. 691	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=onsdeath93&h=15984938
	National Probate Calendar (Index of Wills and Administrations) 1858-1966, Death: 7 Dec 1918 Merionethshire, Probate: 30 Dec 1918 St Asaph	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=UKProbateCal&h=5719474&indiv=try&o_vc=Record:OtherRecord&rhSource=7579
Humphrey Morgan	1881 Census Returns (PRO: RG11): RG11/5553, f. 98, p. 31	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1881wales&h=678166
	1891 Census Returns (PRO: RG12): RG12/4643, f. 31, p. 4	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1891wales&h=1686597
	1901 Census Returns (PRO: RG13): RG13/5218, f. 32, p. 19	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1901wales&h=33052499

	1911 Census Returns (PRO: RG14): RG14/33986, Sch. 6	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=1911wales&h=1102236
Humphrey Williams	1881 Census Returns (PRO: RG11): RG11/5547, f. 41, p. 5	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1881wales&h=12979960
	1891 Census Returns (PRO: RG12): RG12/4642, f. 116, p. 14	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1891wales&h=1660015
	1901 Census Returns (PRO: RG13): RG13/5254, f. 73, p. 20	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1901wales&h=33169975
	1911 Census Returns (PRO: RG14): RG14/34298, Sch. 165	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=1911wales&h=894319
Isaac Butterworth	1851 Census Returns (PRO: HO107): HO107/2247, f. 56, p. 4	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1851&indiv=try&h=11881424
	1861 Census Returns (PRO: RG9): RG9/3090, f. 107, p. 32	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1861&indiv=try&h=14903448
	1871 Census Returns (PRO: RG10): RG10/4125, f. 128, p. 46	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1871&indiv=try&h=18258043
	1881 Census Returns (PRO: RG11): RG11/4117, f. 90, p. 29	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1881&indiv=try&h=11308426
	1891 Census Returns (PRO: RG12): RG12/3332, f. 29, p. 7	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1891&indiv=try&h=10635078
	Birth Index 1837-1915, Jul-Aug-Sep 1842, Rochdale, Lancashire, vol. 21, p. 582	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=FreeBMDBirth&h=35843725&indiv=try&o_vc=Record:OtherRecord&rhSource=8912
	Marriage Index 1837-1915, Jul-Aug-Sep 1871, Rochdale, Lancashire, vol. 8e, p. 113	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=FreeBMDMarriage&indiv=try&h=4480816
	Death Index 1837-1915, Oct-Nov-Dec 1899, Ormskirk, Lancashire, vol. 8b, p. 605	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=freebmddeath&h=5236493

	National Probate Calendar (Index of Wills and Administrations) 1858-1966, Death: 17 Dec 1899 Lancashire, Probate: 29 Jan 1900 London	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=UKProbateCal&h=17605694&indiv=try&o_vc=Record:OtherRecord&rhSource=8914
James Edwards	1871 Census Returns (PRO: RG10): RG10/5691, f. 47, p. 8	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1871wales&h=3510593
	1881 Census Returns (PRO: RG11): RG11/5546, f. 123, p. 1	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1881wales&indiv=try&h=12977570
	1891 Census Returns (PRO: RG12): RG12/4643, f. 24, p. 3	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1891wales&indiv=try&h=1686208
	1901 Census Returns (PRO: RG13): RG13/5255, f. 55, p. 5	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1901wales&indiv=try&h=33173074
	Birth Index 1837-1915, Jan-Feb-Mar 1856, Ruthin, Denbighshire, vol. 11b, p. 349	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=freebmdbirth&h=1505636
	Death Index 1837-1915, Apr-May-Jun 1904, Bala, Merionethshire, vol. 11b, p. 267	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=freebmddeath&h=10360637
	National Probate Calendar (Index of Wills and Administrations) 1858-1966, Death: 11 May 1904 Merionethshire, Probate: 19 Sep 1904 London	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=ukprobatecal&h=2917421
James Kynoch	1841 Census Returns, Peterhead, ED2, p. 10, ln. 730	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=1841Scotland&indiv=try&h=1448955
	1851 Census Returns, Glasgow St Mungo, ED4, p. 5, ln. 14	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=1851Scotland&indiv=try&h=1985501
	1871 Census Returns (PRO: RG10): RG10/2972, f. 5, p. 4	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1871&h=2411570
	1881 Census Returns (PRO: RG11): RG11/5546, f. 140, p. 22	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1881wales&indiv=try&h=12978261
	1891 Census Returns (PRO: RG12): RG12/4643, f. 7, p. 8	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1891wales&indiv=try&h=1645590

	1901 Census Returns (PRO: RG13): RG13/5254, f. 102, p. 32	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1901wales&indiv=try&h=33171382
	1911 Census Returns (PRO: RG14): RG14/5113, Sch. 166	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=1911England&indiv=try&h=51379848
	Marriage Index 1837-1915, Jan-Feb-Mar 1877, Dolgelly, Merionethshire, vol. 11b, p. 468	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=FreeBMDMarriage&indiv=try&h=17076753
	Death Index 1837-1915, Jan-Feb-Mar 1913, Brighton, Sussex, vol. 2b, p. 270	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=FreeBMDDeath&h=20069996&indiv=try&o_vc=Record:OtherRecord&rhSource=1904
	National Probate Calendar (Index of Wills and Administrations) 1858-1966, Death: 1 Feb 1913 Brighton, Probate: 21 Feb 1913 Lewes	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=UKProbateCal&h=5872895&indiv=try&o_vc=Record:OtherRecord&rhSource=8914
James Roberts	1881 Census Returns (PRO: RG11): RG11/5547, f. 31, p. 9	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1881wales&h=12979647
	1891 Census Returns (PRO: RG12): RG12/4643, f. 6, p. 5	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1891wales&h=1670945
	1901 Census Returns (PRO: RG13): RG13/3468, p. 42	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1901&h=20742358
	1911 Census Returns (PRO: RG14): RG14/22372	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=1911england&h=21169403
Jenkin David	1881 Census Returns (PRO: RG11): RG11/5546, f. 17, p. 1	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1881wales&indiv=try&h=12973919
	1891 Census Returns (PRO: RG12): RG12/4642, f. 5, p. 4	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1891wales&h=1442228
	Death Index 1837-1915, Oct-Nov-Dec 1895, Dolgelly, Merionethshire, vol. 11b, p. 263	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=freebmddeath&h=8549246
	National Probate Calendar (Index of Wills and Administrations) 1858-1966, Death: 21 Dec 1895, Probate: 10 Mar 1896 St Asaph	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=ukprobatecal&h=917608

Jessie Hartley	1871 Census Returns (PRO: RG10): RG10/3985, f. 54, p. 7	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1871&h=5016450
	1881 Census Returns (PRO: RG11): RG11/3910, f. 119, p. 6	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1881&h=10317927
	1891 Census Returns (PRO: RG12): RG12/4642, f. 128, p. 38	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1891wales&h=1671043
John Alfred Warwick	1871 Census Returns (PRO: RG10): RG10/3573, f. 17, p. 28	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1871&h=9437864
	1891 Census Returns (PRO: RG12): RG12/4643, f. 8, p. 9	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1891wales&h=1678217
	1901 Census Returns (PRO: RG13): RG13/3207, p. 41	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1901&indiv=try&h=18891045
	1911 Census Returns (PRO: RG14): RG14/20862	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=1911England&indiv=try&h=5809810
	Birth Index 1837-1915, Apr-May-Jun 1863, Derby, Derbyshire, vol. 7b, p. 383	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=FreeBMDBirth&h=58218248&indiv=try&o_vc=Record:OtherRecord&rhSource=6897
	Marriage Index 1837-1915, Apr-May-Jun 1887, Nottingham, Nottinghamshire, vol. 7b, p. 527	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=FreeBMDMarriage&indiv=try&h=30315641
	Death Index 1916-2007, Jun 1933, Shardlow, Derbyshire, vol. 7b, p. 496	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=onsdeath93&h=30558457
	National Probate Calendar (Index of Wills and Administrations) 1858-1966, Death: 25 Apr 1933 Derbyshire, Probate: 8 May 1933 Nottinghamshire	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=UKProbateCal&h=995305&indiv=try&o_vc=Record:OtherRecord&rhSource=7579
John Astley	1881 Census Returns (PRO: RG11): RG11/5547, f. 4, p. 2	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1881wales&indiv=try&h=12978649
	1891 Census Returns (PRO: RG12): RG12/4642, f. 126, p. 34	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1891wales&indiv=try&h=1671011
	1911 Census Returns (PRO: RG14): RG14/32329, Sch. 36	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=1911Wales&indiv=try&h=387163

	Birth Index 1837-1915, Jul-Aug-Sep 1874, Dolgelly, Merionethshire, vol. 11b, p. 402	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=freebmdbirth&h=44232404
John Astley	1851 Census Returns (PRO: HO107): HO107/2498, f. 697, p. 4	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1851wales&h=16043103
	1861 Census Returns (PRO: RG9): RG9/4258, f. 34, p. 29	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1861wales&indiv=try&h=15378520
	1871 Census Returns (PRO: RG10): RG10/5691, f. 58, p. 14	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1871wales&indiv=try&h=3510918
	1881 Census Returns (PRO: RG11): RG11/5547, f. 4, p. 2	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1881wales&indiv=try&h=12978782
	1891 Census Returns (PRO: RG12): RG12/4642, f. 126, p. 34	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1891wales&indiv=try&h=1671001
	1901 Census Returns (PRO: RG13): RG13/5254, f. 76, p. 25	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1901wales&indiv=try&h=33170121
	1911 Census Returns (PRO: RG14): RG14/34298, Sch. 93	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=1911Wales&indiv=try&h=894004
	Birth Index 1837-1915, Jul-Aug-Sep 1844, Montgomery, Montgomeryshire, vol. 27, p. 107	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=freebmdbirth&h=44232327
	Death Index 1837-1915, Oct-Nov-Dec 1915, Dolgelly, Merionethshire, vol. 11b, p. 608	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=freebmddeath&h=949058
John B. Lowe	1851 Census Returns (PRO: HO107): HO107/2172, f. 245, p. 24	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1851&h=11428729
	1871 Census Returns (PRO: RG10): RG10/5739, f. 82, p. 37	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1871wales&h=3638353
	1881 Census Returns (PRO: RG11): RG11/5583, f. 20, p. 2	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1881wales&indiv=try&h=781730
	1891 Census Returns (PRO: RG12): RG12/4644, f. 36, p. 8	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1891wales&h=1730690

John Charles	1891 Census Returns (PRO: RG12): RG12/4642, f. 115, p. 12	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1891wales&h=1659910
John Charles	1891 Census Returns (PRO: RG12): RG12/4642, f. 115, p. 12	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1891wales&indiv=try&h=1660385
John Cheese	1841 Census Returns (PRO: HO107): HO107/62, bk. 9, f. 17, p. 29, ln. 1	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1841&indiv=try&h=15838774
	1851 Census Returns (PRO: HO107): HO107/1721, f. 395, p. 9	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1851&indiv=try&h=4002874
	1861 Census Returns (PRO: RG9): RG9/2098, f. 28, p. 6	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1861&indiv=try&h=20771735
	1871 Census Returns (PRO: RG10): RG10/1395, f. 9, p. 10	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1871&indiv=try&h=12995578
	1881 Census Returns (PRO: RG11): RG11/1453, f. 8, p. 9	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1881&indiv=try&h=499701
	1891 Census Returns (PRO: RG12): RG12/1130, f. 7, p. 7	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1891&h=16331079
	1901 Census Returns (PRO: RG13): RG13/1335, p. 21	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1901&indiv=try&h=7771077
	Marriage Index 1837-1915, Jul-Aug-Sep 1861, Weobley, Herefordshire, vol. 6a, p. 811	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=FreeBMDMarriage&indiv=try&h=5237305
	Death Index 1837-1915, Apr-May-Jun 1906, Amersham, Buckinghamshire, vol. 3a, p. 406	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=freebmddeath&h=6131905
	National Probate Calendar (Index of Wills and Administrations) 1858-1966, Death: 28 Apr 1906 Buckinghamshire, Probate: 9 Aug 1906 London	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=UKProbateCal&h=3908437&indiv=try&o_vc=Record:OtherRecord&rhSource=8914

John Davies	1891 Census Returns (PRO: RG12): RG12/4643, f. 17, p. 27	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1891wales&h=1652557
John Davies	1841 Census Returns (PRO: HO107): HO107/1428, bk. 8, f. 5, p. 3, ln. 18	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1841wales&h=14278310
	1851 Census Returns (PRO: HO107): HO107/2519, f. 173, p. 13	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1851wales&h=16212459
	1861 Census Returns (PRO: RG9): RG9/4315, f. 21, p. 2	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1861wales&h=15520387
	1871 Census Returns (PRO: RG10): RG10/5652, f. 25, p. 12	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1871wales&h=27223331
	1881 Census Returns (PRO: RG11): RG11/5512, f. 98, p. 3	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1881wales&h=2435564
	1891 Census Returns (PRO: RG12): RG12/4643, f. 16, p. 25	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1891wales&h=1680784
	1901 Census Returns (PRO: RG13): RG13/5254, f. 106, p. 39	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1901wales&h=33171564
John Edwards	1871 Census Returns (PRO: RG10): RG10/5691, f. 47, p. 7	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1871wales&h=3510591
	1891 Census Returns (PRO: RG12): RG12/4643, f. 23, p. 2	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1891wales&h=1686229
	1901 Census Returns (PRO: RG13): RG13/5255, f. 56, p. 7	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1901wales&h=33173140
	1911 Census Returns (PRO: RG14): RG14/34300, Sch. 18	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=1911wales&h=880665

	Death Index 1916-2007, Sep 1922, Dolgelly, Merionethshire, vol. 11b, p. 402	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=onsdeath93&h=21997494
John Simon P. Edwards	1871 Census Returns (PRO: RG10): RG10/5691, f. 47, p. 8	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1871wales&h=3510595
	1891 Census Returns (PRO: RG12): RG12/4642, f. 114, p. 10	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1891wales&h=1656177
	1901 Census Returns (PRO: RG13): RG13/5252, f. 106, p. 39	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1901wales&h=33171558
	1911 Census Returns (PRO: RG14): RG14/34299, Sch. 139	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=1911wales&h=2064317
	Birth Index 1837-1915, Jan-Feb-Mar 1865, Dolgelly, Merionethshire, vol. 11b, p. 433	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=freebmdbirth&h=1515851
John Griffith Edwards	1881 Census Returns (PRO: RG11): RG11/5549, f. 61, p. 16	http://search.ancestry.co.uk/iexec?htx=view&r=5538&dbid=8059&iid=MERRG11_5544_5549-1111&fn=John+G.&ln=Edwards&st=r&ssrc=&pid=12986851
	1891 Census Returns (PRO: RG12): RG12/4643, f. 16, p. 25	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1891wales&h=1680825
	Birth Index 1837-1915, Apr-May-Jun 1872, Festiniog, Merionethshire, vol. 11b, p. 443	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=freebmdbirth&h=1520225
John Evans	1861 Census Returns (PRO: RG9): RG9/4320, f. 54, p. 12	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1861wales&h=15532524
	1881 Census Returns (PRO: RG11): RG11/5547, f. 12, p. 17	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1881wales&h=12979120
	1891 Census Returns (PRO: RG12): RG12/4642, f. 123, p. 27	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1891wales&h=1667264
	1901 Census Returns (PRO: RG13): RG13/5254, f. 69, p. 11	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1901wales&h=33169699

	1911 Census Returns (PRO: RG14): RG14/34298, Sch. 20	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=1911wales&h=893716
	Birth Index 1837-1915, Oct-Nov-Dec 1846, Dolgelly, Merionethshire, vol. 27, p. 165	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=freebmdbirth&h=2347162
	Death Index 1837-1915, Oct-Nov-Dec 1915, Dolgelly, Merionethshire, vol. 11b, p. 489	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=freebmddeath&h=10885236
John Garnett	1871 Census Returns (PRO: RG10): RG10/5692, f. 30, p. 5	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1871wales&indiv=try&h=3511692
	1881 Census Returns (PRO: RG11): RG11/5547, f. 11, p. 16	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1881wales&indiv=try&h=12979049
	1891 Census Returns (PRO: RG12): RG12/4642, f. 122, p. 26	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1891wales&indiv=try&h=1640085
	Marriage Index 1837-1915, Jul-Aug-Sep 1861, Dolgelly, Merionethshire, vol. 11b, p. 553	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=FreeBMDMarriage&indiv=try&h=10651060
	Death Index 1837-1915, Jan-Feb-Mar 1900, Dolgelly, Merionethshire, vol. 11b, p. 331	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=freebmddeath&h=12507948
	National Probate Calendar (Index of Wills and Administrations) 1858-1966, Death: 6 Feb 1900 Merionethshire, Probate: 31 Mar 1900 London	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=ukprobatecal&h=16759538
John Jones	1871 Census Returns (PRO: RG10): RG10/2774, f. 57, p. 26	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1871&h=2147356
	1881 Census Returns (PRO: RG11): RG11/2654, f. 49, p. 14	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1881&h=18312905
	1891 Census Returns (PRO: RG12): RG12/4643, f. 16, p. 26	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1891wales&h=1683753
John Jones	1871 Census Returns (PRO: RG10): RG10/5692, f. 2, p. 5	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1871wales&h=3511086

	1881 Census Returns (PRO: RG11): RG11/5547, f. 7, p. 8	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1881wales&h=12978716
	1891 Census Returns (PRO: RG12): RG12/4643, f. 17, p. 28	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1891wales&h=1683607
	1901 Census Returns (PRO: RG13): RG13/5254, f. 97, p. 21	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1901wales&h=33171065
	1911 Census Returns (PRO: RG14): RG14/34299, Sch. 51	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=1911wales&h=2063944
	Marriage Index 1837-1915, Jul-Aug-Sep 1890, Dolgelly, Merionethshire, vol. 11b, p. 486	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=FreeBMDMarriage&indiv=try&h=16149685
John Jones	1891 Census Returns (PRO: RG12): RG12/4642, f. 128, p. 38	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1891wales&h=1667612
John Jones	1881 Census Returns (PRO: RG11): RG11/5546, f. 132, p. 6	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1881wales&indiv=try&h=12977891
	1891 Census Returns (PRO: RG12): RG12/4601, f. 121, p. 1	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1891wales&h=1568345
	Marriage Index 1837-1915, Jul-Aug-Sep 1890, Llanfyllin, Montgomeryshire, vol. 11b, p. 319	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=FreeBMDMarriage&indiv=try&h=16063429
	Death Index 1837-1915, Apr-May-Jun 1942, Llanfyllin, Montgomeryshire, vol. 11b, p. 153	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=freebmddeath&h=18971805
	National Probate Calendar (Index of Wills and Administrations) 1858-1966, Death: 9 Apr Montgomeryshire, Probate: 24 Apr 1897 London	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=ukprobatecal&h=923558
John Jones	1841 Census Returns (PRO: HO107): HO107/1427, bk. 4, f. 26, p. 12, ln. 24	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1841wales&h=14266949

	1891 Census Returns (PRO: RG12): RG12/4643, f. 9, p. 11	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1891wales&h=1675395
John Evans Lloyd	1861 Census Returns (PRO: RG9): RG9/4320, f. 51, p. 5	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1861wales&h=15532353
	1871 Census Returns (PRO: RG10): RG10/5691, f. 61, p. 19	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1871wales&h=3511025
	1881 Census Returns (PRO: RG11): RG11/5546, f. 142, p. 26	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1881wales&h=12978429
	1891 Census Returns (PRO: RG12): RG12/4643, f. 7, p. 7	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1891wales&h=1648400
	1901 Census Returns (PRO: RG13): RG13/5254, f. 93, p. 23	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1901wales&h=33170850
	1911 Census Returns (PRO: RG14): RG14/34254, Sch. 190	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=1911wales&h=2095498
	Marriage Index 1837-1915, Oct-Nov-Dec 1879, Bala, Merionethshire, vol. 11b, p. 625	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=FreeBMDMarriage&indiv=try&h=18033613
	National Probate Calendar (Index of Wills and Administrations) 1858-1966, Death: 11 Aug Merionethshire, Probate: 4 Apr 1930 London	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=ukprobatecal&h=5331399
John Morgan	1861 Census Returns (PRO: RG9): RG9/4240, f. 41, p. 1	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1861wales&h=15335398
	1871 Census Returns (PRO: RG10): RG10/5602, f. 15, p. 1	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1871wales&h=27134554
	1881 Census Returns (PRO: RG11): RG11/5546, f. 145, p. 32	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1881wales&h=12978508

	1891 Census Returns (PRO: RG12): RG12/4643, f. 11, p. 16	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1891wales&h=1678146
	1901 Census Returns (PRO: RG13): RG13/5254, f. 96, p. 19	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1901wales&h=33171024
John Morris	1851 Census Returns (PRO: HO107): HO107/2511, f. 422, p. 4	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1851wales&h=16224959
	1881 Census Returns (PRO: RG11): RG11/5546, f. 134, p. 9	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1881wales&h=12977980
	1891 Census Returns (PRO: RG12): RG12/4643, f. 6, p. 6	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1891wales&h=1677836
	1901 Census Returns (PRO: RG13): RG13/5254, f. 94, p. 15	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1901wales&h=33170911
	Death Index 1837-1915, Oct-Nov-Dec 1902, Dolgelly, Merionethshire, vol. 11b, p. 260	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=freebmddeath&h=23875845
John Owen	1861 Census Returns (PRO: RG9): RG9/3420, f. 43, p. 14	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1861wales&h=15532138
	1871 Census Returns (PRO: RG10): RG10/5691, f. 62, p. 21	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1871wales&h=3511065
	1891 Census Returns (PRO: RG12): RG12/4642, f. 116, p. 14	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1891wales&h=1659982
	1901 Census Returns (PRO: RG13): RG13/5254, f. 95, p. 18	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1901wales&h=33170984
	Birth Index 1837-1915, Jul-Aug-Sep 1859, Dolgelly, Merionethshire, vol. 11b, p. 419	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=freebmdbirth&h=25894520

	Death Index 1916-2007, Mar 1935, Dolgelly, Merionethshire, vol. 11b, p. 455	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=onsdeath93&h=30975827
John Pendrill Mackenzie	1871 Census Returns (PRO: RG10): RG10/1146, f. 57, p. 52	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1871&indiv=try&h=10998691
	1881 Census Returns (PRO: RG11): RG11/5446, f. 88, p. 5	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1881wales&indiv=try&h=1024296
	1891 Census Returns (PRO: RG12): RG12/4528, f. 23, p. 38	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1891wales&indiv=try&h=1206778
	London Marriages and Banns 1754-1921, Marriage: 20 Oct 1859, Camberwell St. Giles, Southwark, P73/GIS/027	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=lmamarriages&h=3295509
	Death Index 1837-1915, Jan-Feb-Mar 1898, Pembroke, Pembrokeshire, vol. 11a, p. 756	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=freebmddeath&h=21711820
	National Probate Calendar (Index of Wills and Administrations) 1858-1966, Death: 19 Mar 1898 Pembrokeshire, Probate: 18 Jul 1898 London	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=ukprobatecal&h=1468580
	'John Pendrill Mackenzie', Malta Family History	http://website.lineone.net/~aldosliema/rm.htm
John Richard Powell	1891 Census Returns (PRO: RG12): RG12/5546, f. 123, p. 1	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1881wales&h=12977718
	1901 Census Returns (PRO: RG13): RG13/4643, f. 24, p. 3	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1891wales&h=1686199
	1901 Census Returns (PRO: RG13): RG13/5255, f. 55, p. 5	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1901wales&h=33173082
	1911 Census Returns (PRO: RG14): RG14/34300, Sch. 7	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=1911wales&h=880595
	Birth Index 1837-1915, Apr-May-Jun 1876, Dolgelly, Merionethshire, vol. 11b, p. 461	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=freebmdbirth&h=28827169

	Marriage Index 1837-1915, Apr-May-Jun 1910, Dolgelly, Merionethshire, vol. 11b, p. 575	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=FreeBMDMarriage&indiv=try&h=23058735
	Death Index 1916-2007, Jun 1924, Dolgelly, Merionethshire, vol. 11b, p. 468	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=onsdeath93&h=15974910
	National Probate Calendar (Index of Wills and Administrations) 1858-1966, Death: 7 Apr 1924 Merionethshire, Probate: 18 Jul 1924 Aspah	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=UKProbateCal&h=2580862&indiv=try&o_vc=Record:OtherRecord&rhSource=7579
John Pritchard	1871 Census Returns (PRO: RG10): RG10/5668, f. 30, p. 28	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1871wales&indiv=try&h=7719579
	1881 Census Returns (PRO: RG11): RG11/5528, f. 14, p. 21	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1881wales&indiv=try&h=5352300
	1891 Census Returns (PRO: RG12): RG12/4643, f. 7, p. 8	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1891wales&h=1645620
	1901 Census Returns (PRO: RG13): RG13/5190, f. 56, p. 9	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1901wales&h=32930644
	1911 Census Returns (PRO: RG14): RG14/33838, Sch. 125	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=1911Wales&indiv=try&h=1876156
	Marriage Index 1837-1915, Oct-Nov-Dec 1896, Festiniog, Merionethshire, vol. 11b, p. 721	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=FreeBMDMarriage&indiv=try&h=23301795
	Death Index 1916-2007, Mar 1925, Festiniog, Merionethshire, vol. 11b, p. 503	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=onsdeath93&h=15634259
	National Probate Calendar (Index of Wills and Administrations) 1858-1966, Death: 27 Feb 1925 Merionethshire, Probate: 5 May 1925 London	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=ukprobatecal&h=3700564
John Richard Taylor	1871 Census Returns (PRO: RG10): RG10/3894, f. 105, p. 7	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1871&h=16422494
	1881 Census Returns (PRO: RG11): RG11/3779, f. 35, p. 18	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1881&indiv=try&h=9655108

	1891 Census Returns (PRO: RG12): RG12/4643, f. 17, p. 28	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1891wales&indiv=try&h=1683650
	1901 Census Returns (PRO: RG13): RG13/3504, p. 16	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1901&indiv=try&h=21749438
	Birth Index 1837-1915, Oct-Nov-Dec 1865, Wigan, Lancashire, vol. 8c, p. 91	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=freebmdbirth&h=54319042
	Marriage Index 1837-1915, Oct-Nov-Dec 1887, Wigan, Lancashire, vol. 8c, p. 86	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=FreeBMDMarriage&indiv=try&h=28278015
	Death Index 1837-1915, Jan-Feb-Mar 1908, West Derby, Lancashire, vol. 8b, p. 527	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=freebmddeath&h=33140306
John Rees Davies	1891 Census Returns (PRO: RG12): RG12/4643, f. 9, p. 12	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1891wales&h=1680790
	Death Index 1837-1915, Apr-May-Jun 1895, Dolgelly, Merionethshire, vol. 11b, p. 294	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=freebmddeath&h=8697878
John Robert Davies	1861 Census Returns (PRO: RG9): RG9/4320, f. 39, p. 6	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1861wales&h=15531963
	1871 Census Returns (PRO: RG10): RG10/5662, f. 26, p. 10	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1871wales&h=27247677
	1891 Census Returns (PRO: RG12): RG12/4642, f. 116, p. 14	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1891wales&h=1660059
	Marriage Index 1837-1915, Oct-Nov-Dec 1857, Dolgelly, Merionethshire, vol. 11b, p. 383	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=freebmdbirth&h=41488493
John Williams	1871 Census Returns (PRO: RG10): RG10/5691, f. 59, p. 16	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1871wales&h=3510946
	1881 Census Returns (PRO: RG11): RG11/5546, f. 144, p. 30	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1881wales&h=12978565

	1901 Census Returns (PRO: RG13): RG13/5254, f. 64, p. 2	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1901wales&h=33169449
	Marriage Index 1837-1915, Jan-Feb-Mar 1901, Pwllheli, Caernarvonshire, vol. 11b, p. 485	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=FreeBMDMarriage&indiv=try&h=31579109
	National Probate Calendar (Index of Wills and Administrations) 1858-1966, Death: 6 Feb 1910 Merionethshire, Probate: 2 Mar 1910 London	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=ukprobatecal&h=14894614
John Williams	1891 Census Returns (PRO: RG12): RG12/4643, f. 10, p. 13	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1891wales&h=1678166
	1901 Census Returns (PRO: RG13): RG13/5254, f. 64, p. 1	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1901wales&h=33169404
Johnnie Jones	1881 Census Returns (PRO: RG11): RG11/5547, f. 52, p. 8	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1881wales&h=12980335
	1891 Census Returns (PRO: RG12): RG12/4643, f. 25, p. 6	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1891wales&h=1659967
Johnny Morgan	1881 Census Returns (PRO: RG11): RG11/5546, f. 145, p. 32	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1881wales&h=12978628
	1891 Census Returns (PRO: RG12): RG12/4643, f. 11, p. 16	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1891wales&h=1678154
Joseph Herbert Lister	1861 Census Returns (PRO: RG9): RG9/3048, f. 14, p. 21	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1861&indiv=try&h=14769486
	1871 Census Returns (PRO: RG10): RG10/4367, f. 80, p. 10	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1871&indiv=try&h=25667269
	1881 Census Returns (PRO: RG11): RG11/4292, f. 25, p. 50	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1881&indiv=try&h=12130848
	1891 Census Returns (PRO: RG12): RG12/4642, f. 127, p. 36	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1891wales&indiv=try&h=1667705

	1901 Census Returns (PRO: RG13): RG13/5254, f. 67, p. 7	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1901wales&indiv=try&h=33169598
	1911 Census Returns (PRO: RG14): RG14/34289, Sch. 68	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=1911Wales&indiv=try&h=2068210
	Birth Index 1837-1915, Jan-Feb-Mar 1858, Rochdale, Lancashire, vol. 8e, p. 68	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=FreeBMDBirth&h=19085122&indiv=try&o_vc=Record:OtherRecord&rhSource=7579
	Marriage Index 1837-1915, Oct-Nov-Dec 1907, Westminster, London, vol. 1a, p. 1093	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=FreeBMDMarriage&indiv=try&h=17951330
	Death Index 1916-2007, Mar 1929, Dolgelly, Merionethshire, vol. 11b, p. 531	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=ONSDeath93&h=18621962&indiv=try&o_vc=Record:OtherRecord&rhSource=8913
	National Probate Calendar (Index of Wills and Administrations) 1858-1966, Death: 24 Jan 1929 Merionethshire, Probate: 14 Jun 1929 Cheshire	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=ukprobatecal&h=2575201
Joseph Thomas	1861 Census Returns (PRO: RG9): RG9/4320, f. 6, p. 5	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1861wales&h=15531081
	1871 Census Returns (PRO: RG10): RG10/5727, f. 68, p. 3	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1871wales&indiv=try&h=3605052
	1881 Census Returns (PRO: RG11): RG11/5546, f. 135, p. 11	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1881wales&indiv=try&h=12978132
	1891 Census Returns (PRO: RG12): RG12/4642, f. 121, p. 23	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1891wales&h=1663888
	1901 Census Returns (PRO: RG13): RG13/5254, f. 99, p. 26	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1901wales&indiv=try&h=33171212
	1911 Census Returns (PRO: RG14): RG14/34298, Sch. 7	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=1911Wales&indiv=try&h=893659
	Birth Index 1837-1915, Jan-Feb-Mar 1853, Dolgelly, Merionethshire, vol. 11b, p. 409	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=FreeBMDBirth&h=54845146&indiv=try&o_vc=Record:OtherRecord&rhSource=2353

	Death Index 1916-2007, Dec 1929, Dolgelly, Merionethshire, vol. 11b, p. 395	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=ONSDeath93&h=21427149&indiv=try&o_vc=Record:OtherRecord&rhSource=8912
Joseph William Cotton	1861 Census Returns (PRO: RG9): RG9/2020, f. 90, p. 31	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1861&h=20398903
	1871 Census Returns (PRO: RG10): RG10/2972, f. 43, p. 21	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1871&h=2413055
	1891 Census Returns (PRO: RG12): RG12/4643, f. 16, p. 26	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1891wales&h=1683694
	Marriage Index 1837-1915, Jan-Feb-Mar 1850, Birmingham, Warwickshire, vol. 16, p. 387	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=FreeBMDMarriage&indiv=try&h=6467920
	Death Index 1837-1915, Jul-Aug-Sep 1900, Dolgelly, Merionethshire, vol. 11b, p. 234	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=freebmddeath&h=7579583
	National Probate Calendar (Index of Wills and Administrations) 1858-1966, Death: 17 Jul 1900 Merionethshire, Probate: 10 Aug 1900 London	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=UKProbateCal&h=17328317&indiv=try&o_vc=Record:OtherRecord&rhSource=8914
Kenelm Julian Stevenson	1881 Census Returns (PRO: RG11): RG11/5546, f. 131, p. 4	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1881wales&indiv=try&h=12977888
	1891 Census Returns (PRO: RG12): RG12/936, f. 134, p. 25	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1891&indiv=try&h=24977715
	1911 Census Returns (PRO: RG14): RG14/20512	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=1911England&indiv=try&h=24352784
	Birth Index 1837-1915, Oct-Nov-Dec 1877, Lambeth, London, vol. 1d, p. 557	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=FreeBMDBirth&h=52811829&indiv=try&o_vc=Record:OtherRecord&rhSource=6598
	London Births and Baptisms 1813-1906, 30 Dec 1877, Brixton St Matthew, Lambeth	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=LMAbirths&h=1736799&indiv=try&o_vc=Record:OtherRecord&rhSource=8912
	Marriage Index 1837-1915, Oct-Nov-Dec 1903, St Pancras, London, vol. 1b, p. 233	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=FreeBMDMarriage&indiv=try&h=27491668

	Soldiers Died in the Great War 1914-1919, 26 Aug 1918, France & Flanders, Private, Royal Welsh Fusiliers, 16 th Battallion, No. 23258	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=UKsoldiersGreatWar&h=197547&indiv=try&o_vc=Record:OtherRecord&rhSource=8913
	Commonwealth War Graves 1914-1921 and 1939-1947, 26 Aug 1918, Daours Communal Cemetry, France, No. 23258	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=CommonWarGraves&h=413007&indiv=try&o_vc=Record:OtherRecord&rhSource=1543
Laurence Arthur Burd	1871 Census Returns (PRO: RG10): RG10/2775, f. 48, p. 29	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1871&indiv=try&h=2152448
	1881 Census Returns (PRO: RG11): RG11/2483, f. 29, p. 54	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1881&indiv=try&h=5979399
	1891 Census Returns (PRO: RG12): RG12/2197, f. 136, p. 22	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1891&indiv=try&h=4412108
	1901 Census Returns (PRO: RG13): RG13/2637, p. 19	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1901&indiv=try&h=34575891
	1911 Census Returns (PRO: RG14): RG14/16767, Sch. 130	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=1911England&indiv=try&h=56725345
	Birth Index 1837-1915, Jul-Aug-Sep 1863, Shrewsbury, Shropshire, vol. 6a, p. 597	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=FreeBMDBirth&h=35257881&indiv=try&o_vc=Record:OtherRecord&rhSource=2352
	Marriage Index 1837-1915, Oct-Nov-Dec 1886, Atcham, Shropshire, vol. 6a, p. 1276	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=FreeBMDMarriage&indiv=try&h=4177662
	Death Index 1916-2007, Jun 1931, Burton upon Trent, Staffordshire, vol. 6b, p. 358	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=ONSDeath93&h=27860643&indiv=try&o_vc=Record:OtherRecord&rhSource=8912
	National Probate Calendar (Index of Wills and Administrations) 1858-1966, Death: 12 Apr 1931 Derbyshire, Probate: 16 Jul 1831 London	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=UKProbateCal&h=1265726&indiv=try&o_vc=Record:OtherRecord&rhSource=7579
	Wikisource, 'Obituary: Laurence Arthur Burd (1931)'	http://en.wikisource.org/wiki/The_Times/1931/Obituary/Laurence_Arthur_Burd
Lawrence Burd	1851 Census Returns (PRO: HO107): HO107/1992, f.48, p. 3	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1851&indiv=try&h=8092113

	1861 Census Returns (PRO: RG9): RG9/1872, f. 96, p. 21	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1861&indiv=try&h=19735896
	1871 Census Returns (PRO: RG10): RG10/2775, f. 48, p. 29	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1871&indiv=try&h=2152442
	1881 Census Returns (PRO: RG11): RG11/2652, f. 105, p. 13	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1881&indiv=try&h=18303794
	1891 Census Returns (PRO: RG12): RG12/2111, f. 130, p. 7	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1891&indiv=try&h=438846
	Marriage Index 1837-1915, Oct-Nov-Dec 1859, Shrewsbury, Shropshire, vol. 6a, p. 1283	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=FreeBMDMarriage&indiv=try&h=4177663
	Death Index 1837-1915, Oct-Nov-Dec 1899, Atcham, Shropshire, vol. 5a, p. 530	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=freebmddeath&h=4874497
	National Probate Calendar (Index of Wills and Administrations) 1858-1966, Death: 4 Dec 1899 Shrewsbury, Probate: 3 Mar 1900 Shrewsbury	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=ukprobatecal&h=17604376
Lewis Edwards	1841 Census Returns (PRO: HO107): HO107/1427, bk. 5, f. 6, p. 4, ln. 21	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1841wales&h=14267196
	1851 Census Returns (PRO: HO107): HO107/2511, f.457, p. 9	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1851wales&h=16225973
	1881 Census Returns (PRO: RG11): RG11/2348, f. 166, p. -8	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1881&h=2155318
	1891 Census Returns (PRO: RG12): RG12/4643, f. 9, p. 11	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1891wales&h=1670881
	Birth Index 1837-1915, Apr-May-Jun 1839, Dolgelly, Merionethshire, vol. 27, p. 165	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=freebmdbirth&h=1404555
	Death Index 1837-1915, Jul-Aug-Sep 1900, Dolgelly, Merionethshire, vol. 11b, p. 235	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=freebmddeath&h=10377683

	National Probate Calendar (Index of Wills and Administrations) 1858-1966, Death: 6 Aug 1900 Merionethshire, Probate: 31 Oct 1900 St Asaph	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=ukprobatecal&h=16755530
Lewis Jones Griffith	1871 Census Returns (PRO: RG10): RG10/5690, f. 23, p. 16	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1871wales&h=3507301
	1881 Census Returns (PRO: RG11): RG11/5546, f. 24, p. 15	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1881wales&h=12974485
	1891 Census Returns (PRO: RG12): RG12/4643, f. 13, p. 19	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1891wales&indiv=try&h=1680684
	1901 Census Returns (PRO: RG13): RG13/5254, f. 92, p. 11	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1901wales&indiv=try&h=33170797
	Marriage Index 1837-1915, Oct-Nov-Dec 1890, Dolgelly, Merionethshire, vol. 11b, p. 715	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=FreeBMDMarriage&indiv=try&h=11850795
	Death Index 1837-1915, Oct-Nov-Dec 1909, Dolgelly, Merionethshire, vol. 11b, p. 263	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=freebmddeath&h=13861312
Lewis Jones	1871 Census Returns (PRO: RG10): RG10/5691, f. 38, p. 1	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1871wales&h=3510314
	1891 Census Returns (PRO: RG12): RG12/4643, f. 18, p. 30	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1891wales&h=1683587
	1901 Census Returns (PRO: RG13): RG13/5254, f. 98, p. 23	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1901wales&h=33171132
	Death Index 1837-1915, Oct-Nov-Dec 1905, Dolgelly, Merionethshire, vol. 11b, p. 248	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=freebmddeath&h=18997976
	National Probate Calendar (Index of Wills and Administrations) 1858-1966, Death: 15 Nov 1905 Merionethshire, Probate: 8 Feb 1906 St Asaph	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=ukprobatecal&h=342224

Lewis Roberts	1861 Census Returns (PRO: RG9): RG9/4320, f. 43, p. 14	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1861wales&h=15532158
	1871 Census Returns (PRO: RG10): RG10/5692, f. 24, p. 40	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1871wales&h=3511581
	1881 Census Returns (PRO: RG11): RG11/5547, f. 13, p. 19	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1881wales&h=12979189
	1891 Census Returns (PRO: RG12): RG12/69, f. 39, p. 21	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1891&h=8380139
	1911 Census Returns (PRO: RG14): RG14/34299, Sch. 229	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=1911Wales&indiv=try&h=2065067
	Death Index 1916-2007, Mar 1931, Dolgelly, Merionethshire, vol. 11b, p. 521	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=onsdeath93&h=24277317
Lewis Roberts	1871 Census Returns (PRO: RG10): RG10/5691, f. 58, p. 13	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1871wales&h=3510888
	1881 Census Returns (PRO: RG11): RG11/5546, f. 139, p. 19	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1881wales&h=12978193
	1891 Census Returns (PRO: RG12): RG12/4642, f. 113, p. 7	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1891wales&h=1656490
	1901 Census Returns (PRO: RG13): RG13/5254, f. 80, p. 33	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1901wales&h=33170359
	1911 Census Returns (PRO: RG14): RG14/34298, Sch. 209	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=1911wales&h=894459
	Birth Index 1837-1915, Jul-Aug-Sep 1866, Dolgelly, Merionethshire, vol. 11b, p. 431	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=freebmdbirth&h=46844446
	Marriage Index 1837-1915, Jan-Feb-Mar 1895, Dolgelly, Merionethshire, vol. 11b, p. 429	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=FreeBMDMarriage&indiv=try&h=24386571

	Death Index 1916-2007, Sep 1925, Dolgelly, Merionethshire, vol. 11b, p. 391	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=onsdeath93&h=16921957
	National Probate Calendar (Index of Wills and Administrations) 1858-1966, Death: 13 Jul 1925 Merionethshire, Probate: 16 Sep 1925 St Asaph	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=UKProbateCal&h=2409052&indiv=try&o_vc=Record:OtherRecord&rhSource=7579
Lewis Williams	1881 Census Returns (PRO: RG11): RG11/5547, f. 5, p. 3	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1881wales&h=12978795
	1891 Census Returns (PRO: RG12): RG12/4642, f. 126, p. 33	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1891wales&h=1670864
	1901 Census Returns (PRO: RG13): RG13/5254, f. 88, p. 3	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1901wales&h=33170599
	1911 Census Returns (PRO: RG14): RG14/34299, Sch. 94	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=1911wales&h=2064137
Margaret Morris	1861 Census Returns (PRO: RG9): RG9/4320, f. 42, p. 11	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1861wales&h=15532074
	1881 Census Returns (PRO: RG11): RG11/5546, f. 139, p. 19	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1881wales&h=12978101
	1891 Census Returns (PRO: RG12): RG12/4642, f. 128, p. 38	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1891wales&h=1671040
	1901 Census Returns (PRO: RG13): RG13/4990, f. 47, p. 23	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1901wales&h=31921357
	1911 Census Returns (PRO: RG14): RG14/32171, Sch. 340	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=1911wales&h=136860
	Birth Index 1837-1915, Apr-May-Jun 1869, Dolgelly, Merionethshire, vol. 11b, p. 429	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=freebmdbirth&h=23607398

Mary Elizabeth Jones	1881 Census Returns (PRO: RG11): RG11/5546, f. 141, p. 23	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1881wales&indiv=try&h=12978322
	1891 Census Returns (PRO: RG12): RG12/4642, f. 118, p. 17	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=uki1891wales&h=1663518
Mathew Arthur Joseph Tower	1871 Census Returns (PRO: RG10): RG10/1420, f. 127, p. 15	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1871&h=13070549
	1881 Census Returns (PRO: RG11): RG11/779, f. 49, p. 61	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1881&h=21368970
	1891 Census Returns (PRO: RG12): RG12/1152, f. 98, p. 15	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1891&h=13167157
	1901 Census Returns (PRO: RG13): RG13/1152, f. 98, p. 15	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1891&h=13167157
	1911 Census Returns (PRO: RG14): RG14/20850, Sch. 1	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=1911england&h=21232861
	Birth Index 1837-1915, Jul-Ag-Sep 1869, Newport Pagnell, Buckinghamshire, vol. 3a, p. 532	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=freebmdbirth&h=54006515
	Death Index 1916-2007, Jun 1947, Claro, Yorkshire West Riding, vol. 2c, p. 146	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=onsdeath93&h=29616920
	National Probate Calendar (Index of Wills and Administrations) 1858-1966, Death: 15 Jun 1947 Ripon, Probate: 8 Aug 1947 London	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=ukprobatecal&h=17522180
Meredith Evans	1841 Census Returns (PRO: HO107): HO107/1427, bk. 3, f. 39, p. 7, ln. 19	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1841wales&h=14265774
	1851 Census Returns (PRO: HO107): HO107/2515, f.444, p. 26	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1851wales&h=16278147

	1861 Census Returns (PRO: RG9): RG9/4341, f. 52, p. 9	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1861wales&h=15585858
	1881 Census Returns (PRO: RG11): RG11/5546, f. 137, p. 16	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1881wales&h=12978189
	1891 Census Returns (PRO: RG12): RG12/4643, f. 8, p. 10	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1891wales&h=1671316
	1901 Census Returns (PRO: RG13): RG13/5254, f. 104, p. 35	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1901wales&h=33171474
	1911 Census Returns (PRO: RG14): RG14/34299, Sch. 210	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=1911wales&h=2064935
	Death Index 1837-1915, Jul-Aug-Sep 1914, Dolgelly, Merionethshire, vol. 11b, p. 409	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=freebmddeath&h=10921916
	National Probate Calendar (Index of Wills and Administrations) 1858-1966, Death: 7 Jul 1914 Merionethshire, Probate: 3 Sep 1914 St. Asaph	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=ukprobatecal&h=1934214
Morris Jones Morris	1861 Census Returns (PRO: RG9): RG9/4320, f. 42, p. 11	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1861wales&indiv=try&h=15532072
	1881 Census Returns (PRO: RG11): RG11/5546, f. 139, p. 19	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1881wales&indiv=try&h=12978292
	1891 Census Returns (PRO: RG12): RG12/4642, f. 128, p. 38	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1891wales&h=1671029
	Death Index 1837-1915, Jul-Aug-Sep 1900, Dolgelly, Merionethshire, vol. 11b, p. 236	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=freebmddeath&h=23895132
	National Probate Calendar (Index of Wills and Administrations) 1858-1966, Death: 7 Sep 1900 Merionethshire, Probate: 28 Dec 1900 St. Asaph	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=ukprobatecal&h=18346147

Morris Morris	1881 Census Returns (PRO: RG11): RG11/5546, f. 134, p. 9	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1881wales&h=12977946
	1891 Census Returns (PRO: RG12): RG12/4643, f. 6, p. 6	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1891wales&h=1677840
	1901 Census Returns (PRO: RG13): RG13/5254, f. 94, p. 15	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1901wales&h=33170913
	1911 Census Returns (PRO: RG14): RG14/34299, Sch. 17	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=1911wales&h=2063789
	Marriage Index 1837-1915, Jul-Aug-Sep 1902, Dolgelly, Merionethshire, vol. 11b, p. 573	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=FreeBMDMarriage&indiv=try&h=20330127
	National Probate Calendar (Index of Wills and Administrations) 1858-1966, Death: 25 May 1958 Merionethshire, Probate: 15 Sep 1958 Bangor	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=ukprobatecal&h=18427497
Morris Pugh	1851 Census Returns (PRO: HO107): HO107/2511, f. 441, p. 11	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1851wales&h=16225567
	1861 Census Returns (PRO: RG9): RG9/4168, f. 45	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1861wales&h=15147153
	1891 Census Returns (PRO: RG12): RG12/4643, f. 12, p. 12	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1891wales&h=1677822
	1901 Census Returns (PRO: RG13): RG13/5254, f. 100, p. 27	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1901wales&h=33171228
	1911 Census Returns (PRO: RG14): RG14/34299, Sch. 188	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=1911wales&h=2064730
	Birth Index 1837-1915, Jan-Feb-Mar 1844, Dolgelly, Merionethshire, vol. 27, p. 173	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=freebmdbirth&h=29443332

	Marriage Index 1837-1915, Jul-Aug-Sep 1889, Dolgelly, Merionethshire, vol. 11b, p. 470	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=FreeBMDMarriage&indiv=try&h=23382006
	Death Index 1916-2007, Sep 1922, Dolgelly, Merionethshire, vol. 11b, p. 405	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=onsdeath93&h=19304552
Nevinson William De Courcy	1881 Census Returns (PRO: RG11): RG11/2204, f. 14, p. 14	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1881&indiv=try&h=3361397
	1891 Census Returns (PRO: RG12): RG12/1028, f. 88, p. 4	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1891&indiv=try&h=25925317
	Birth Index 1837-1915, Apr-May-Jun 1869, East Stonehouse, Devon, vol. 5b, p. 304	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=FreeBMDBirth&h=42018829&indiv=try&o_vc=Record:OtherRecord&rhSource=6598
	Ireland Births and Baptisms 1620-1911, 1869, Newry, Down, Ireland.	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=FSIrelandBirth&h=163813&indiv=try&o_vc=Record:OtherRecord&rhSource=1904
	National Probate Calendar (Index of Wills and Administrations) 1858-1966, Death: 4 Nov 1919 Egypt, Probate: 17 Jun 1920 London	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=UKProbateCal&h=1654939&indiv=try&o_vc=Record:OtherRecord&rhSource=8912
	Cambridge University Alumni 1261-1900, Emmanuel, Michs. 1889	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=alumni6&h=110416&indiv=try&o_vc=Record:OtherRecord&rhSource=2533
Norman Bernard	1841 Census Returns (PRO: HO107): HO107/672, bk. 5, f. 9, p. 13, ln. 3	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1841&indiv=try&h=7159447
	1871 Census Returns (PRO: RG10): RG10/1106, f. 58, p. 39	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1871&h=324538
	1891 Census Returns (PRO: RG12): RG12/4642, f. 122, p. 26	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1891wales&h=1639630
	1901 Census Returns (PRO: RG13): RG13/2220, p. 6	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1901&h=12091665
Onslow Powell Traherne	1871 Census Returns (PRO: RG10): RG10/5421, f. 47, p. 24	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1871wales&h=26982968

	1881 Census Returns (PRO: RG11): RG11/2117, f. 14, p. 21	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1881&h=3772277
	1901 Census Returns (PRO: RG13): RG13/83, p. 29	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1901&h=637828
	1911 Census Returns (PRO: RG14): RG14/504	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=1911england&h=1494958
	Birth Index 1837-1915, Apr-May-Jun 1866, Bridgend, Glamorgan, vol. 11a, p. 478	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=freebmdbirth&h=55956171
	Marriage Index 1837-1915, Jul-Aug-Sep 1896, Axminster, Devon, vol. 5b, p. 30	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=FreeBMDMarriage&indiv=try&h=29134784
	Marriage Index 1916-2005, Jan-Feb-Mar 1917, Paddington, London, vol. 1a, p. 174	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=onsmarriage1984&h=64275842
	Civil Divorce Records, 1858-1911, J77/721/1928	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=divorcerecords&h=2329
	Death Index 1916-2007, Jun 1950, Bridgend, Glamorganshire, vol. 8b, p. 20	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=onsdeath93&h=23592241
	National Probate Calendar (Index of Wills and Administrations) 1858-1966, Death: 28 May 1950 Glamorgan, Probate: 9 Aug 1950 London	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=ukprobatecal&h=16926205
Owen Aran Roberts	1881 Census Returns (PRO: RG11): RG11/5546, f. 4, p. 2	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1881wales&h=12973620
	1891 Census Returns (PRO: RG12): RG12/4642, f. 116, p. 14	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1891wales&h=1660021
	1911 Census Returns (PRO: RG14): RG14/34299, Sch. 115	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=1911wales&h=2064244
	Death Index 1916-2007, Sep 1938, Merioneth East, Merionethshire, vol. 11b, p. 372	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=onsdeath93&h=27154327

Owen Davies	1881 Census Returns (PRO: RG11): RG11/5547, f. 22, p. 4	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1881wales&indiv=try&h=12979390
	1891 Census Returns (PRO: RG12): RG12/4643, f. 33, p. 7	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1891wales&h=1663871
	1901 Census Returns (PRO: RG13): RG13/5255, f. 62 p. 5	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1901wales&indiv=try&h=33173275
	Birth Index 1837-1915, Jul-Aug-Sep 1871, Dolgelly, Merionethshire, vol. 11b, p. 371	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=freebmdbirth&h=41566189
	Marriage Index 1916-2005, Apr-May-Jun 1916, Wolverhampton, Staffordshire, vol. 6b, p. 999	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=onsmarriage1984&h=63772323
	Death Index 1916-2007, Jun 1946, Merioneth South, Merionethshire, vol. 11b, p. 362	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=onsdeath93&h=30061379
	National Probate Calendar (Index of Wills and Administrations) 1858-1966, Death: 5 May 1946 Merionethshire, Probate: 5 Dec 1946 Bangor	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=ukprobatecal&h=15348664
Owen Edwards	1851 Census Returns (PRO: HO107): HO107/2511, f. 447, p. 22	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1851wales&h=16225738
	1861 Census Returns (PRO: RG9): RG9/4320, f. 53	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1861wales&h=15532472
	1871 Census Returns (PRO: RG10): RG10/5692, f. 17, p. 26	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1871wales&h=3511369
	1881 Census Returns (PRO: RG11): RG11/5547, f. 8, p. 10	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1881wales&h=12978867
	1891 Census Returns (PRO: RG12): RG12/4642, f. 124, p. 29	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1891wales&h=1667726

	1901 Census Returns (PRO: RG13): RG13/5254, f. 71 p. 16	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1901wales&h=33169848
	National Probate Calendar (Index of Wills and Administrations) 1858-1966, Death: 17 Apr 1905 Merionethshire, Probate: 21 Sep 1905 St. Asaph	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=ukprobatecal&h=2389679
Owen Hughes	1881 Census Returns (PRO: RG11): RG11/5572, f. 9, p. 9	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1881wales&indiv=try&h=7944
	1891 Census Returns (PRO: RG12): RG12/4663, f. 108, p. 5	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1891wales&h=1049960
Owen Hughes	1851 Census Returns (PRO: HO107): HO107/2519, f. 208, p. 11	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1851wales&indiv=try&h=16332647
	1861 Census Returns (PRO: RG9): RG9/4358, f. 8, p. 9	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1861wales&indiv=try&h=15635966
	1871 Census Returns (PRO: RG10): RG10/5691, f. 57, p. 12	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1871wales&indiv=try&h=3510853
	1891 Census Returns (PRO: RG12): RG12/4642, f. 114, p. 9	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1891wales&indiv=try&h=1659969
	Marriage Index 1837-1915, Oct-Nov-Dec 1864, Dolgelly, Merionethshire, vol. 11b, p. 777	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=FreeBMDMarriage&indiv=try&h=14875050
Owen Jones	1851 Census Returns (PRO: HO107): HO107/2511, f. 441, p. 11	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1851wales&indiv=try&h=16225557
	1871 Census Returns (PRO: RG10): RG10/5706, f. 78	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1871wales&indiv=try&h=3795250
	1881 Census Returns (PRO: RG11): RG11/5568, f. 101, p. 1	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1881wales&indiv=try&h=738675
	1891 Census Returns (PRO: RG12): RG12/4642, f. 127, p. 36	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1891wales&indiv=try&h=1667701
	1901 Census Returns (PRO: RG13): RG13/5254, f. 67, p. 7	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1901wales&indiv=try&h=33169594

	1911 Census Returns (PRO: RG14): RG14/34298, Sch. 102	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=1911Wales&indiv=try&h=894036
	Marriage Index 1837-1915, Oct-Nov-Dec 1899, Dolgelly, Merionethshire, vol. 11b, p. 678	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=FreeBMDMarriage&indiv=try&h=16241397
	National Probate Calendar (Index of Wills and Administrations) 1858-1966, Death: 30 Oct 1915 Merionethshire, Probate: 30 Oct 1915 London	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=UKProbateCal&h=4247052
Owen Roberts	1881 Census Returns (PRO: RG11): RG11/5546, f. 142, p. 25	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=uki1881wales&h=12978424
	1891 Census Returns (PRO: RG12): RG12/4643, f. 6, p. 5	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=uki1891wales&h=1670916
	1901 Census Returns (PRO: RG13): RG13/5002, f. 117, p. 23	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=uki1901wales&h=32002646
	1911 Census Returns (PRO: RG14): RG14/32260, Sch. 143	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=1911Wales&h=2014326
Owen Williams Morris	1891 Census Returns (PRO: RG12): RG12/4642, f. 128, p. 38	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=uki1891wales&h=1671035
	1901 Census Returns (PRO: RG13): RG13/5254, f. 66, p. 5	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1901wales&indiv=try&h=33169528
	1911 Census Returns (PRO: RG14): RG14/34298, Sch. 116	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=1911Wales&h=894091
	Birth Index 1837-1915, Jan-Feb-Mar 1862, Festiniog, Merionethshire, vol. 11b, p. 7	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=FreeBMDBirth&h=23624510&indiv=try&o_vc=Record:OtherRecord&rhSource=2353
	Death Index 1837-1915, Jan-Feb-Mar 1915, Dolgelly, Merionethshire, vol. 11b, p. 605	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=freebmddeath&h=23896040
	National Probate Calendar (Index of Wills and Administrations) 1858-1966, Death: 17 Jan 1915 Merionethshire, Probate: 24 Apr 1915 St. Asaph	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=UKProbateCal&h=2664646

Owen Williams	1871 Census Returns (PRO: RG10): RG10/5692, f. 37, p. 3	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=uki1871wales&h=3511823
	1891 Census Returns (PRO: RG12): RG12/4642, f. 128, p. 37	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=uki1891wales&h=1663851
	1901 Census Returns (PRO: RG13): RG13/5254, f. 66, p. 5	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=uki1901wales&h=33169543
	Marriage Index 1837-1915, Apr-May-Jun 1871, Dolgelly, Merionethshire, vol. 11b, p. 689	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=FreeBMDMarriage&indiv=try&h=31635938
	Death Index 1837-1915, Oct-Nov-Dec 1904, Dolgelly, Merionethshire, vol. 11b, p. 259	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=FreeBMDDeath&h=37098582&indiv=try&o_cv=Image%3aOtherRecord
	National Probate Calendar (Index of Wills and Administrations) 1858-1966, Death: 10 Dec 1904 Merionethshire, Probate: 12 Jan 1906 London	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=ukprobatecal&h=392848
Owen Williams	1891 Census Returns (PRO: RG12): RG12/4643, f. 17, p. 27	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=uki1891wales&h=1652549
	1901 Census Returns (PRO: RG13): RG13/5254, f. 74, p. 22	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=uki1901wales&h=33170014
	1911 Census Returns (PRO: RG14): RG14/34298, Sch. 104	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=1911Wales&h=894044
	Marriage Index 1837-1915, Oct-Nov-Dec 1892, Dolgelly, Merionethshire, vol. 11b, p. 705	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=FreeBMDMarriage&indiv=try&h=31636319
Ralph Blaydes	1861 Census Returns (PRO: RG9): RG9/4320, f. 74, p. 9	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=uki1861wales&h=15533026
	1871 Census Returns (PRO: RG10): RG10/5692, f. 37, p. 3	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=uki1871wales&h=3511836
	1881 Census Returns (PRO: RG11): RG11/5547, f. 30, p. 8	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=uki1881wales&h=12979597
	1891 Census Returns (PRO: RG12): RG12/4642, f. 130, p. 41	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=uki1891wales&h=1645655

	1901 Census Returns (PRO: RG13): RG13/5255, f. 62, p. 5	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=uki1901wales&h=33173267
	Marriage Index 1837-1915, Jan-Feb-Mar 1876, Dolgelly, Merionethshire, vol. 11b, p. 527	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=FreeBMDMarriage&indiv=try&h=2708971
	Death Index 1916-2007, Mar 1940, Cardiff, Glamorganshire, vol. 11a, p. 830	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=onsdeath93&h=24037438
Rees Griffith	1881 Census Returns (PRO: RG11): RG11/5547, f. 10, p. 14	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=uki1881wales&h=12979023
	1891 Census Returns (PRO: RG12): RG12/4643, f. 17, p. 27	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=uki1891wales&h=1652559
	1901 Census Returns (PRO: RG13): RG13/5254, f. 96, p. 19	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=uki1901wales&h=33171015
	Death Index 1837-1915, Jan-Feb-Mar 1902, Dolgelly, Merionethshire, vol. 11b, p. 282	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=freebmddeath&h=13863631
	National Probate Calendar (Index of Wills and Administrations) 1858-1966, Death: 17 Mar 1902 Merionethshire, Probate: 12 Aug 1902 St Asaph	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=UKProbateCal&h=15921778
Rees Jones Owen	1871 Census Returns (PRO: RG10): RG10/5700, f. 116, p. 41	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=uki1871wales&h=3535314
	1891 Census Returns (PRO: RG12): RG12/2927, f. 67, p. 19	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=uki1891&h=13453403
	1901 Census Returns (PRO: RG13): RG13/5261, f. 33, p. 27	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=uki1901wales&h=33200645
	Birth Index 1837-1915, Oct-Nov-Dec 1867, Festiniog, Merionethshire, vol. 11b, p. 420	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=freebmdbirth&h=25915323
	Death Index 1916-2007, Jun 1936, Pwllheli, Caernarvonshire, vol. 11a, p. 478	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=onsdeath93&h=22440715
Reginald Graham Clark	1881 Census Returns (PRO: RG11): RG11/30, f. 85, p. 2	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1881&indiv=try&h=13160017

	1911 Census Returns (PRO: RG14): RG14/12153, Sch. 14	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=1911England&indiv=try&h=44167681
	Birth Index 1837-1915, Jul-Aug-Sep 1879, Blean, Kent, vol. 2a, p. 792	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=freebmdbirth&h=37898046
	London Births and Baptisms 1813-1906, 17 Jan 1880, P84/JN 003	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=lmabirths&h=3920111
	Death Index 1916-2007, Dec 1959, Folkestone, Kent, vol. 5b, p. 528	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=onsdeath93&h=39064338
	National Probate Calendar (Index of Wills and Administrations) 1858-1966, Death: 27 Oct 1959 Folkestone, Probate: 23 Dec 1959 London	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=ukprobatecal&h=19430542
	The Queen's Royal Surrey Regiment	http://www.queensroyalsurreys.org.uk/colonels_and_co/commanding_officers/queens_west_surrey/003.html
Richard Astley	1871 Census Returns (PRO: RG10): RG10/5691, f. 58, p. 14	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1871wales&indiv=try&h=3510920
	1881 Census Returns (PRO: RG11): RG11/5547, f. 4, p. 2	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1881wales&indiv=try&h=12978648
	1891 Census Returns (PRO: RG12): RG12/5547, f. 4, p. 2	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1881wales&indiv=try&h=12978648
	1901 Census Returns (PRO: RG13): RG13/5254, f. 76, p. 25	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1901wales&indiv=try&h=33170123
	1911 Census Returns (PRO: RG14): RG14/34360, Sch. 426	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=1911Wales&indiv=try&h=2354005
	National Probate Calendar (Index of Wills and Administrations) 1858-1966, Death: 5 Jul 1957 Caernarvonshire, Probate: 29 Jul 1957 Bangor	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=UKProbateCal&h=17041740
Richard Ellis Lloyd	1881 Census Returns (PRO: RG11): RG11/5545, f. 76, p. 13	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1881wales&indiv=try&h=12972884
	1891 Census Returns (PRO: RG12): RG12/4641, f. 159, p. 12	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=uki1891wales&h=1439765

Richard Lewis	1861 Census Returns (PRO: RG9): RG9/4320, f. 31, p. 5	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=uki1861wales&h=15531701
	1881 Census Returns (PRO: RG11): RG11/5546, f. 147, p. 35	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1881wales&indiv=try&h=12978608
	1891 Census Returns (PRO: RG12): RG12/4642, f. 119, p. 20	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=uki1891wales&h=1667334
	Death Index 1837-1915, Apr-May-Jun 1895, Dolgelly, Merionethshire, vol. 11b, p. 294	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=freebmddeath&h=20917925
	National Probate Calendar (Index of Wills and Administrations) 1858-1966, Death: 25 May 1895 Merionethshire, Probate: 22 May 1896 St Asaph	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=UKProbateCal&h=1567821
Richard Lloyd Jones	1861 Census Returns (PRO: RG9): RG9/4290, f. 62, p. 2	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=uki1861wales&h=15471648
	1871 Census Returns (PRO: RG10): RG10/3819, f. 34, p. 11	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=uki1871&h=16089076
	1881 Census Returns (PRO: RG11): RG11/5578, f. 95, p. 2	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=uki1881wales&h=765764
	1891 Census Returns (PRO: RG12): RG12/4643, f. 12, p. 18	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=uki1891wales&h=1677839
	1901 Census Returns (PRO: RG13): RG13/3484, f. 139, p. 11	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=uki1901&h=20881915
	1911 Census Returns (PRO: RG14): RG14/29724	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=1911England&indiv=try&h=36406424
	Birth Index 1837-1915, Jan-Feb-Mar 1850, Ruthin, Denbighshire, vol. 27, p. 189	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=freebmdbirth&h=15842324
	Marriage Index 1837-1915, Jul-Aug-Sep 1878, Llanrwst, Denbighshire, vol. 11b, p. 452	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=FreeBMDMarriage&indiv=try&h=16255562
	Marriage Index 1837-1915, Jan-Feb-Mar 1891, Dolgelly, Merionethshire, vol. 11b, p. 498	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=FreeBMDMarriage&indiv=try&h=16255564

	Death Index 1916-2007, Mar 1938, Merioneth East, Merionethshire, vol. 11b, p. 421	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=onsdeath93&h=25566451
	National Probate Calendar (Index of Wills and Administrations) 1858-1966, Death: 9 Feb 1938 Merionethshire, Probate: 22 Aug 1938 London	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=ukprobatecal&h=1662198
Richard Owen	1871 Census Returns (PRO: RG10): RG10/5692, f. 15, p. 22	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1871wales&indiv=try&h=3511322
	1881 Census Returns (PRO: RG11): RG11/5547, f. 16, p. 26	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1881wales&indiv=try&h=12979090
	1891 Census Returns (PRO: RG12): RG12/4642, f. 116, p. 13	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1891wales&indiv=try&h=1636388
	1901 Census Returns (PRO: RG13): RG13/5254, f. 73, p. 19	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1901wales&indiv=try&h=33169947
	Marriage Index 1837-1915, Oct-Nov-Dec 1868, Dolgelly, Merionethshire, vol. 11b, p. 659	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=FreeBMDMarriage&indiv=try&h=21534092
	Marriage Index 1837-1915, Jan-Feb-Mar 1885, Dolgelly, Merionethshire, vol. 11b, p. 453	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=FreeBMDMarriage&indiv=try&h=21534284
	National Probate Calendar (Index of Wills and Administrations) 1858-1966, Death: 18 Dec 1903 Merionethshire, Probate: 10 May 1904 St Asaph	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=ukprobatecal&h=3785238
Richard Powell	1851 Census Returns (PRO: HO107): HO107/2504, f. 299, p. 9	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1851wales&indiv=try&h=16146232
	1881 Census Returns (PRO: RG11): RG11/5546, f. 123, p. 1	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1881wales&indiv=try&h=12977629
	1891 Census Returns (PRO: RG12): RG12/4643, f. 24, p. 3	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1891wales&indiv=try&h=1686192
	1901 Census Returns (PRO: RG13): RG13/5255, f. 55, p. 5	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1901wales&indiv=try&h=33173080
	1911 Census Returns (PRO: RG14): RG14/34300, Sch. 24	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=1911Wales&indiv=try&h=880706

	Birth Index 1837-1915, Apr-May-Jun 1845, Ruthin, Denbighshire, vol. 27	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=freebmdbirth&h=28845474
	Death Index 1916-2007, Mar 1924, Dolgelly, Merionethshire, vol. 11b, p. 513	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=onsdeath93&h=19708783
	National Probate Calendar (Index of Wills and Administrations) 1858-1966, Death: 19 Feb 1924 Merionethshire, Probate: 19 May 1924 St Asaph	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=ukprobatecal&h=2592344
Richard Richards	1851 Census Returns (PRO: HO107): HO107/2512, f. 145, p. 2	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1851wales&indiv=try&h=16231640
	1861 Census Returns (PRO: RG9): RG9/4325, f. 57, p. 7	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1861wales&indiv=try&h=15545089
	1881 Census Returns (PRO: RG11): RG11/5550, f. 98, p. 22	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1881wales&indiv=try&h=12991963
	1891 Census Returns (PRO: RG12): RG12/4643, f. 16, p. 26	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=uki1891wales&h=1683656
	1901 Census Returns (PRO: RG13): RG13/5196, f. 136, p. 3	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1901wales&indiv=try&h=32953605
	1911 Census Returns (PRO: RG14): RG14/34399, Sch. 121	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=1911Wales&indiv=try&h=937253
	Marriage Index 1837-1915, Oct-Nov-Dec 1872, Dolgelly, Merionethshire, vol. 11b, p. 839	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=FreeBMDMarriage&indiv=try&h=24058933
	Death Index 1916-2007, Dec 1920, Festiniog, Merionethshire, vol. 11b, p. 464	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=onsdeath93&h=18844538
Richard Roberts	1871 Census Returns (PRO: RG10): RG10/5692, f. 15, p. 22	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1871wales&indiv=try&h=3511338
	1881 Census Returns (PRO: RG11): RG11/5547, f. 12, p. 18	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1881wales&indiv=try&h=12979160
	1891 Census Returns (PRO: RG12): RG12/2993, f. 46, p. 38	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1891&h=26071775

	1901 Census Returns (PRO: RG13): RG13/3462, f. 74, p. 11	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1901&indiv=try&h=20691952
	Birth Index 1837-1915, Jan-Feb-Mar 1870, Festiniog, Merionethshire, vol. 11b, p. 442	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=freebmdbirth&h=46889833
Richard Roberts Stevenson	1861 Census Returns (PRO: RG9): RG9/420, f. 87, p. 22	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1861&indiv=try&h=6724802
	1871 Census Returns (PRO: RG10): RG10/801, f. 16, p. 26	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1871&indiv=try&h=9874538
	1881 Census Returns (PRO: RG11): RG11/482, f. 81, p. 20	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1881&indiv=try&h=15386188
	1891 Census Returns (PRO: RG12): RG12/4643, f. 18, p. 29	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1891wales&indiv=try&h=1683566
	Marriage Index 1837-1915, Oct-Nov-Dec 1875, St George Hanover Square, London, vol. 1a, p. 694	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=FreeBMDMarriage&indiv=try&h=27494360
	Marriage Index 1837-1915, Apr-May-Jun 1891, Carnarvon, Caernarvonshire, vol. 11b, p. 683	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=FreeBMDMarriage&indiv=try&h=27494359
	Death Index 1837-1915, Jan-Feb-Mar 1895, South Stoneham, Hampshire, vol. 2c, p. 59	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=freebmddeath&h=32228019
	National Probate Calendar (Index of Wills and Administrations) 1858-1966, Death: 19 Mar 1895 Southampton, Probate: 27 Apr 1895 London	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=ukprobatecal&h=62688
Richard Roberts	1871 Census Returns (PRO: RG10): RG10/5691, f. 54, p. 6	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1871wales&indiv=try&h=3510747
	1881 Census Returns (PRO: RG11): RG11/5546, f. 139, p. 20	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1881wales&indiv=try&h=12978327
	1891 Census Returns (PRO: RG12): RG12/4642, f. 117, p. 16	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1891wales&indiv=try&h=1663933
	1901 Census Returns (PRO: RG13): RG13/5254, f. 65, p. 3	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1901wales&indiv=try&h=33169470

	1911 Census Returns (PRO: RG14): RG14/34329, Sch. 30	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=1911Wales&indiv=try&h=2117156
	Birth Index 1837-1915, Oct-Nov-Dec 1865, Dolgelly, Merionethshire, vol. 11b, p. 403	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=freebmdbirth&h=46889668
	Marriage Index 1837-1915, Apr-May-Jun 1903, Dolgelly, Merionethshire, vol. 11b, p. 691	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=FreeBMDMarriage&indiv=try&h=24411375
	Death Index 1916-2007, Dec 1924, Dolgelly, Merionethshire, vol. 11b, p. 415	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=onsdeath93&h=17517553
Richard Thomas	1891 Census Returns (PRO: RG12): RG12/4643, f. 13, p. 19	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=uki1891wales&h=1680711
	Marriage Index 1837-1915, Jan-Feb-Mar 1861, Dolgelly, Merionethshire, vol. 11b, p. 527	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=FreeBMDMarriage&indiv=try&h=28589673
	Death Index 1837-1915, Jul-Aug-Sep 1897, Dolgelly, Merionethshire, vol. 11b, p. 259	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=freebmddeath&h=33508803
	National Probate Calendar (Index of Wills and Administrations) 1858-1966, Death: 2 Sep 1897 Merionethshire, Probate: 12 Oct 1897 London	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=UKProbateCal&h=1203877
Richard Williams	1911 Census Returns (PRO: RG14): RG14/343299, Sch. 101	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=1911Wales&indiv=try&h=2064168
	Birth Index 1837-1915, Apr-May-Jun 1853, Dolgelly, Merionethshire, vol. 11b, p. 4009	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=freebmdbirth&h=60767322
	Death Index 1916-2007, Jun 1937, Merioneth South, Merionethshire, vol. 11b, p. 410	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=onsdeath93&h=33473626
	National Probate Calendar (Index of Wills and Administrations) 1858-1966, Death: 30 Apr 1937 Merionethshire, Probate: 24 Aug 1937 Cheshire	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=ukprobatecal&h=4302493
Robert Davies	1871 Census Returns (PRO: RG10): RG10/5691, f. 28, p. 14	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1871wales&indiv=try&h=7730451

	1901 Census Returns (PRO: RG13): RG13/5254, f. 87, p. 1	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1901wales&indiv=try&h=33170556
	1911 Census Returns (PRO: RG14): RG14/34299, Sch. 41	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=1911Wales&indiv=try&h=2063903
Robert Evans	1881 Census Returns (PRO: RG11): RG11/5546, f. 119, p. 9	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1881wales&indiv=try&h=12977703
	1891 Census Returns (PRO: RG12): RG12/4643, f. 4, p. 1	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=uki1891wales&h=1677877
	1901 Census Returns (PRO: RG13): RG13/5254, f. 105, p. 37	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=uki1901wales&h=33171521
Robert Evans	1851 Census Returns (PRO: HO107): HO107/1999, f. 235, p. 1	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1851&indiv=try&h=8226661
	1861 Census Returns (PRO: RG9): RG9/1907, f. 40, p. 1	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1861&indiv=try&h=19869520
	1891 Census Returns (PRO: RG12): RG12/4642, f. 117, p. 16	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=uki1891wales&h=1663957
	1901 Census Returns (PRO: RG13): RG13/5145, f. 26, p. 15	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1901wales&indiv=try&h=32820862
	1911 Census Returns (PRO: RG14): RG14/16000, Sch. 52	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=1911England&indiv=try&h=43273228
Robert Griffith	1881 Census Returns (PRO: RG11): RG11/5546, f. 134, p. 9	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1881wales&indiv=try&h=12978037
	1891 Census Returns (PRO: RG12): RG12/4643, f. 11, p. 16	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=uki1891wales&h=1680810
	1901 Census Returns (PRO: RG13): RG13/5254, f. 99, p. 25	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1901wales&indiv=try&h=33171183
	1911 Census Returns (PRO: RG14): RG14/34299, Sch. 145	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=1911Wales&indiv=try&h=2064347

	Marriage Index 1837-1915, Jan-Feb-Mar 1884, Festiniog, Merionethshire, vol. 11b, p. 474	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=FreeBMDMarriage&indiv=try&h=11811158
	Death Index 1916-2007, Dec 1918, Dolgelly, Merionethshire, vol. 11b, p. 693	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=onsdeath93&h=19963873
	National Probate Calendar (Index of Wills and Administrations) 1858-1966, Death: 26 Dec 1918 Merionethshire, Probate: 29 Jan 1919 London	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=ukprobatecal&h=2070366
Robert Griffith	1871 Census Returns (PRO: RG10): RG10/5727, f. 12, p. 15	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1871wales&indiv=try&h=3602854
	1881 Census Returns (PRO: RG11): RG11/5572, f. 120, p. 8	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1881wales&indiv=try&h=7910
	1891 Census Returns (PRO: RG12): RG12/4642, f. 127, p. 35	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=uki1891wales&h=1663886
	1901 Census Returns (PRO: RG13): RG13/5259, f. 11, p. 13	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1901wales&indiv=try&h=33282911
	1911 Census Returns (PRO: RG14): RG14/34496, Sch. 165	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=1911Wales&indiv=try&h=1062877
Robert Griffith	1881 Census Returns (PRO: RG11): RG11/5546, f. 144, p. 30	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1881wales&indiv=try&h=12978504
	1891 Census Returns (PRO: RG12): RG12/4643, f. 5, p. 3	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=uki1891wales&h=1675294
	Birth Index 1837-1915, Jan-Feb-Mar 1874, Dolgelly, Merionethshire, vol. 11b, p. 406	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=freebmdbirth&h=7253491
Robert John Thomas	1881 Census Returns (PRO: RG11): RG11/5546, f. 135, p. 11	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1881wales&indiv=try&h=12978084
	1891 Census Returns (PRO: RG12): RG12/4642, f. 122, p. 26	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1891wales&indiv=try&h=1639644
	1901 Census Returns (PRO: RG13): RG13/5198, f. 16, p. 23	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=uki1901wales&h=32957254

	1911 Census Returns (PRO: RG14): RG14/18224	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=1911England&indiv=try&h=25111468
	Birth Index 1837-1915, Jul-Aug-Sep 1879, Dolgelly, Merionethshire, vol. 11b, p. 422	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=freebmdbirth&h=54914256
Robert Laurie	1841 Census Returns, Biggar, ED3, p. 5, ln. 490	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=1841Scotland&indiv=try&h=36583
	1851 Census Returns, Cambusnethan, ED6, p. 22, ln. 13	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=1851Scotland&indiv=try&h=1900852
	1881 Census Returns, Cambusnethan, ED13, p. 35, ln. 7	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=1881Scotland&indiv=try&h=1373978
	1891 Census Returns (PRO: RG12): RG12/4643, f. 18, p. 30	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=uki1891wales&h=1683578
	1901 Census Returns (PRO: RG13): RG13/4006, p. 12	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=uki1901&h=25629596
Robert Lloyd Williams	1891 Census Returns (PRO: RG12): RG12/4642, f. 128, p. 37	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=uki1891wales&h=1663867
	1901 Census Returns (PRO: RG13): RG13/5254, f. 66, p. 5	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1901wales&indiv=try&h=33169547
	1911 Census Returns (PRO: RG14): RG14/34298, Sch. 114	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=1911Wales&indiv=try&h=894082
	National Probate Calendar (Index of Wills and Administrations) 1858-1966, Death: 5 Jan 1963 Merioneth, Probate: 22 Jul 1964 Birmingham	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=UKProbateCal&h=19395232
Robert Lloyd	1901 Census Returns (PRO: RG13): RG13/5254, f. 77, p. 27	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1901wales&indiv=try&h=33170162
	1911 Census Returns (PRO: RG14): RG14/34298, Sch. 53	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=1911Wales&indiv=try&h=893835
Robert Morris	1871 Census Returns (PRO: RG10): RG10/5691, f. 59, p. 15	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1871wales&indiv=try&h=3510942

	1881 Census Returns (PRO: RG11): RG11/5546, f. 144, p. 29	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1881wales&indiv=try&h=12978562
	1891 Census Returns (PRO: RG12): RG12/4642, f. 117, p. 15	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=uki1891wales&h=1656526
	1901 Census Returns (PRO: RG13): RG13/5254, f. 89, p. 5	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1901wales&indiv=try&h=33170658
	1911 Census Returns (PRO: RG14): RG14/34298, Sch. 1	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=1911wales&h=893647
	Death Index 1916-2007, Sep 1931, Dolgelly, Merionethshire, vol. 11b, p. 387	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=onsdeath93&h=26634895
Robert Pugh Evans	1881 Census Returns (PRO: RG11): RG11/5546, f. 136, p. 13	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1881wales&indiv=try&h=12978139
	1891 Census Returns (PRO: RG12): RG12/4642, f. 81, p. 3	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1891wales&indiv=try&h=1462331
	1911 Census Returns (PRO: RG14): RG14/34298, Sch. 166	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=1911Wales&h=894321
	Marriage Index 1837-1915, Oct-Nov-Dec 1888, Dolgelly, Merionethshire, vol. 11b, p. 655	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=FreeBMDMarriage&indiv=try&h=9315043
	Death Index 1916-2007, Sep 1920, Dolgelly, Merionethshire, vol. 11b, p. 408	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=onsdeath93&h=19142869
	National Probate Calendar (Index of Wills and Administrations) 1858-1966, Death: 23 Jul 1920 Merionethshire, Probate: 5 Oct 1920 London	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=ukprobatecal&h=2173199
Robert Roberts	1871 Census Returns (PRO: RG10): RG10/5684, f. 60, p. 24	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1871wales&indiv=try&h=2281546
	1881 Census Returns (PRO: RG11): RG11/5478, f. 30, p. 12	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1881wales&indiv=try&h=12950897
	1891 Census Returns (PRO: RG12): RG12/4642, f. 10, p. 14	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1891wales&indiv=try&h=1442678

Robert Roberts	1871 Census Returns (PRO: RG10): RG10/5720, f. 58, p. 6	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1871wales&indiv=try&h=3580364
	1881 Census Returns (PRO: RG11): RG11/5546, f. 137, p. 15	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1881wales&indiv=try&h=12978237
	1891 Census Returns (PRO: RG12): RG12/4643, f. 10, p. 14	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=uki1891wales&h=1675243
Robert Simpson Brutey	1881 Census Returns (PRO: RG11): RG11/5478, f. 30, p. 12	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1881&indiv=try&h=3188443
	1891 Census Returns (PRO: RG12): RG12/899, f. 76, p. 27	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1891&indiv=try&h=24932764
	1901 Census Returns (PRO: RG13): RG13/200, f. 153, p. 1	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1901&indiv=try&h=21401716
	1911 Census Returns (PRO: RG14): RG14/13707, Sch. 112	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=1911England&indiv=try&h=54849740
	Birth Index 1837-1915, Jan-Feb-Mar 1853, Islington, London, vol. 1b, p. 180	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=freebmdbirth&h=34878504
	Marriage Index 1837-1915, Jan-Feb-Mar 1881, Edmonton, Middlesex, vol. 3a, p. 219	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=FreeBMDMarriage&indiv=try&h=3978225
	London Marriages and Banns 1754-1921, 17 Mar 1881, Hornsey Rise, Islington, DRO/020/A/01, 017	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=lmamarriages&h=4128578
	Death Index 1916-2007, Jun 1920, Bodmin, Cornwall, vol. 5c, p. 89	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=onsdeath93&h=21752347
Robert William Foulkes	1871 Census Returns (PRO: RG10): RG10/5691, f. 24, p. 4	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1871wales&indiv=try&h=3509953
	1881 Census Returns (PRO: RG11): RG11/5542, f. 80, p. 1	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1881wales&indiv=try&h=12962471
	1901 Census Returns (PRO: RG13): RG13/5254, f. 81, p. 36	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1901wales&indiv=try&h=33170448

	1911 Census Returns (PRO: RG14): RG14/34299, Sch. 81	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=1911Wales&indiv=try&h=2064090
	Birth Index 1837-1915, Apr-May-Jun 1863, Bala, Merionethshire, vol. 11b, p. 441	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=freebmdbirth&h=4064424
	Marriage Index 1837-1915, Oct-Nov-Dec 1896, Dolgelly, Merionethshire, vol. 11b, p. 665	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=FreeBMDMarriage&indiv=try&h=10159515
Robert Williams	1891 Census Returns (PRO: RG12): RG12/4643, f. 4, p. 2	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1891wales&indiv=try&h=1675368
	1901 Census Returns (PRO: RG13): RG13/5254, f. 105, p. 37	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1901wales&indiv=try&h=33171505
	1911 Census Returns (PRO: RG14): RG14/34300, Sch. 35	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=1911Wales&indiv=try&h=880800
Salmon Lewis	1871 Census Returns (PRO: RG10): RG10/5691, f. 52, p. 2	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1871wales&indiv=try&h=3510659
	1881 Census Returns (PRO: RG11): RG11/5546, f. 135, p. 11	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1881wales&indiv=try&h=12978026
	1891 Census Returns (PRO: RG12): RG12/4643, f. 14, p. 21	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1891wales&indiv=try&h=1678262
	Marriage Index 1837-1915, Jul-Aug-Sep 1864, Dolgelly, Merionethshire, vol. 11b, p. 582	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=FreeBMDMarriage&indiv=try&h=17808467
	Death Index 1837-1915, Oct-Nov-Dec 1894, Dolgelly, Merionethshire, vol. 11b, p. 253	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=freebmddeath&h=20920346
Sampson Howard Fisher	1871 Census Returns (PRO: RG10): RG10/3094, f. 118, p. 30	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1871&indiv=try&h=2851007
	1881 Census Returns (PRO: RG11): RG11/2955, f. 92, p. 45	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1881&indiv=try&h=22235871
	1891 Census Returns (PRO: RG12): RG12/2374, f. 100, p. 23	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1891&indiv=try&h=26357046

	1901 Census Returns (PRO: RG13): RG13/2806, p. 22	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1901&indiv=try&h=15323713
	1911 Census Returns (PRO: RG14): RG14/17855, Sch. 127	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=1911England&indiv=try&h=57955135
	Birth Index 1837-1915, Jul-Aug-Sep 1868, Birmingham, Warwickshire, vol. 6d, p. 19	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=freebmdbirth&h=3402818
	Birmingham Baptisms 1813-1912, 9 Sep 1868, Ladywood, St John, Warwickshire, DRO 82	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=birminghamparishbaptisms&h=4207602
	Marriage Index 1837-1915, Jan-Feb-Mar 1896, King's Norton, Worcestershire, vol. 6c, p. 551	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=FreeBMDMarriage&indiv=try&h=9816166
	Death Index 1916-2007, Jun 1931, Bromyard, Herefordshire, vol. 6a, p. 576	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=onsdeath93&h=29140835
	National Probate Calendar (Index of Wills and Administrations) 1858-1966, Death: 16 Apr 1931 Herefordshire, Probate: 8 May 1931 Birmingham	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=ukprobatecal&h=2880001
Samuel Henry Sandbach	1861 Census Returns (PRO: RG9): RG9/2738, f. 102, p. 16	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1861&indiv=try&h=23276040
	1871 Census Returns (PRO: RG10): RG10/2796, f. 58, p. 25	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1871&indiv=try&h=6517995
	1881 Census Returns (PRO: RG11): RG11/2670, f. 18, p. 30	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1881&indiv=try&h=18362219
	1891 Census Returns (PRO: RG12): RG12/2126, f. 78, p. 9	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1891&indiv=try&h=3193024
	1911 Census Returns (PRO: RG14): RG14/16245, Sch. 59	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=1911England&indiv=try&h=43451673
	Birth Index 1837-1915, Jan-Feb-Mar 1846, Clifton, Gloucestershire, vol. 11, p. 288	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=freebmdbirth&h=48402800
	Death Index 1916-2007, Sep 1927, Whitechurch, Shropshire, vol. 6a, p. 682	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=onsdeath93&h=20368491

	National Probate Calendar (Index of Wills and Administrations) 1858-1966, Death: 27 Aug 1927 Cheshire, Probate: 8 Feb 1928 Cheshire	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=ukprobatecal&h=5863008
Samuel Jones	1881 Census Returns (PRO: RG11): RG11/5547, f. 11, p. 15	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=uki1881wales&h=12978999
	1891 Census Returns (PRO: RG12): RG12/4642, f. 128, p. 38	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1891wales&indiv=try&h=1667662
	1901 Census Returns (PRO: RG13): RG13/5254, f. 72, p. 18	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1901wales&indiv=try&h=33169925
	1911 Census Returns (PRO: RG14): RG14/34298, Sch. 37	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=1911Wales&indiv=try&h=893778
	Birth Index 1837-1915, Oct-Nov-Dec 1874, Dolgelly, Merionethshire, vol. 11b, p. 395	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=freebmdbirth&h=15867176
	Death Index 1916-2007, Dec 1948, Merioneth South, Merionethshire, vol. 8c, p. 31	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=onsdeath93&h=26395544
Sarah Anne Jones	1891 Census Returns (PRO: RG12): RG12/4643, f. 11, p. 15	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1891wales&indiv=try&h=1675310
	1901 Census Returns (PRO: RG13): RG13/5254, f. 92, p. 11	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1901wales&indiv=try&h=33170784
	National Probate Calendar (Index of Wills and Administrations) 1858-1966, Death: 22 Jan 1902 Merionethshire, Probate: 12 Feb 1902 St Asaph	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=ukprobatecal&h=19192282
Selina Jones	1871 Census Returns (PRO: RG10): RG10/2779, f. 8, p. 5	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1871wales&indiv=try&h=2181962
	1881 Census Returns (PRO: RG11): RG11/2656, f. 5, p. 1	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1881&indiv=try&h=18319466
	1891 Census Returns (PRO: RG12): RG12/4642, f. 128, p. 38	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1891wales&indiv=try&h=1671045
Simion Thomas	1871 Census Returns (PRO: RG10): RG10/3741, f. 44, p. 29	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1871&indiv=try&h=15775477

Hardy	1881 Census Returns (PRO: RG11): RG11/2920, f. 12, p. 18	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1881&indiv=try&h=23511196
	1891 Census Returns (PRO: RG12): RG12/4642, f. 123, p. 27	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=uki1891wales&h=1667294
	Death Index 1837-1915, Jan-Feb-Mar 1895, Dolgelly, Merionethshire, vol. 11b, p. 319	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=freebmddeath&h=14774909
Stanley James Stevenson	1891 Census Returns (PRO: RG12): RG12/936, f. 134, p. 26	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1891&indiv=try&h=24977718
	UK Incoming Passenger Lists 1878-1960, 26 Jan 1917, Departure: Bombay, Arrival: London, Ship: Nagoya, No. 135323, BT26/639, 59	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=bt26&h=29058571
	UK Outward Passenger Lists 1890-1960, 14 Mar 1919, Departure: London, Destination: Mombasa, Ship: Japan, No. 983119, BT26	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=ukoutwardpassengerlists&h=49164182
	UK Outward Passenger Lists 1890-1960, 10 Apr 1913, Departure: Liverpool, Destination: Calcutta, Ship: Maidan, No. 131421, BT26	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=ukoutwardpassengerlists&h=41754896
	West Yorkshire Non-Conformist Records 1646-1985, 5 Feb 1913, Newton Park Union, WYL859/NCR25/1	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=wyorknonconformistbaptism&h=108080
	Death Index 1916-2007, Jun 1929, Wandsworth, Greater London, vol. 1d, p. 651	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=onsdeath93&h=18802306
Thomas George Garnett	1871 Census Returns (PRO: RG10): RG10/5692, f. 15, p. 22	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1871wales&indiv=try&h=3511328
	1881 Census Returns (PRO: RG11): RG11/5547, f. 10, p. 13	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1881wales&indiv=try&h=12978993
	1891 Census Returns (PRO: RG12): RG12/4642, f. 121, p. 24	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1891wales&indiv=try&h=1663493
	1901 Census Returns (PRO: RG13): RG13/5254, f. 80, p. 33	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1901wales&indiv=try&h=33170352

	Marriage Index 1837-1915, Oct-Nov-Dec 1893, Dolgelly, Merionethshire, vol. 11b, p. 650	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=FreeBMDMarriage&indiv=try&h=10655323
	Death Index 1916-2007, Jun 1938, Merioneth South, Merionethshire, vol. 11b, p. 425	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=onsdeath93&h=23898443
Thomas Garnett	1851 Census Returns (PRO: HO107): HO107/2511, f. 440, p. 9	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1851wales&indiv=try&h=16225520
	1861 Census Returns (PRO: RG9): RG9/4507, f. 130	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1861&indiv=try&h=14026061
	1871 Census Returns (PRO: RG10): RG10/5692, f. 15, p. 22	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1871wales&indiv=try&h=3511325
	1881 Census Returns (PRO: RG11): RG11/5547, f. 10, p. 13	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1881wales&indiv=try&h=12979018
	1891 Census Returns (PRO: RG12): RG12/4642, f. 121, p. 24	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1891wales&indiv=try&h=1663489
	1901 Census Returns (PRO: RG13): RG13/5253, f. 127, p. 10	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1901wales&indiv=try&h=33166725
	Birth Index 1837-1915, Apr-May-Jun 1845, Dolgelly, Merionethshire, vol. 27, p. 151	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=freebmdbirth&h=5018375
	Death Index 1837-1915, Oct-Nov-Dec 1910, Dolgelly, Merionethshire, vol. 11b, p. 247	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=freebmddeath&h=12509959
	National Probate Calendar (Index of Wills and Administrations) 1858-1966, Death: 2 Nov 1910 Merionethshire, Probate: 6 Dec 1910 London	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=ukprobatecal&h=13640732
Thomas Jones	1841 Census Returns (PRO: HO107): HO107/1427, bk. 4, f. 26, p. 11, ln. 3	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1841wales&indiv=try&h=14266903
	1871 Census Returns (PRO: RG10): RG10/5692, f. 74, p. 16	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1871wales&indiv=try&h=3513027
	1891 Census Returns (PRO: RG12): RG12/4642, f. 121, p. 24	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1891wales&indiv=try&h=1660331

	1901 Census Returns (PRO: RG13): RG13/5254, f. 73, p. 19	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=uki1901wales&h=33169928
	Death Index 1837-1915, Apr-May-Jun 1904, Dolgelly, Merionethshire, vol. 11b, p. 277	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=freebmddeath&h=19157563
	National Probate Calendar (Index of Wills and Administrations) 1858-1966, Death: 14 Apr 1904 Merionethshire, Probate: 6 May 1904 London	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=UKProbateCal&h=4665485
Thomas Jones	1871 Census Returns (PRO: RG10): RG10/5692, f. 74, p. 16	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=uki1871wales&h=3513031
	1881 Census Returns (PRO: RG11): RG11/5547, f. 10, p. 14	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1881wales&indiv=try&h=12979047
	1891 Census Returns (PRO: RG12): RG12/4642, f. 121, p. 24	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1891wales&indiv=try&h=1660334
	1901 Census Returns (PRO: RG13): RG13/5254, f. 73, p. 19	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1901wales&indiv=try&h=33169929
	1911 Census Returns (PRO: RG14): RG14/34350, Sch. 136	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=1911Wales&indiv=try&h=938340
	Birth Index 1837-1915, Apr-May-Jun 1865, Dolgelly, Merionethshire, vol. 11b, p. 456	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=freebmdbirth&h=15912497
	Marriage Index 1837-1915, Oct-Nov-Dec 1904, Corwen, Merionethshire, vol. 11b, p. 619	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=FreeBMDMarriage&indiv=try&h=14825276
Thomas Kyrke Penson	1861 Census Returns (PRO: RG9): RG9/2625, f. 44, p. 14	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1861&indiv=try&h=22806468
	1871 Census Returns (PRO: RG10): RG10/5662, f. 26, p. 10	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1871wales&indiv=try&h=27247673
	1881 Census Returns (PRO: RG11): RG11/5567, f. 102, p. 9	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1881&indiv=try&h=6367154
	1891 Census Returns (PRO: RG12): RG12/4643, f. 17, p. 28	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1891wales&indiv=try&h=1683665

	Birth Index 1837-1915, Apr-May-Jun 1857, Great Boughton, Cheshire, vol. 8a, p. 355	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=freebmdbirth&h=27442041
	Marriage Index 1837-1915, Jul-Aug-Sep 1879, Clun, Shropshire, vol. 6a, p. 961	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=FreeBMDMarriage&indiv=try&h=22331684
	Death Index 1837-1915, Oct-Nov-Dec 1894, Totnes, Devonshire, vol. 5b, p. 108	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=freebmddeath&h=26227086
Thomas Martin Williams	1871 Census Returns (PRO: RG10): RG10/5692, f. 6, p. 7	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1871wales&indiv=try&h=3511141
	1881 Census Returns (PRO: RG11): RG11/5547, f. 14, p. 21	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1881wales&indiv=try&h=12979177
	1891 Census Returns (PRO: RG12): RG12/4643, f. 16, p. 26	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1891wales&indiv=try&h=1683757
	1901 Census Returns (PRO: RG13): RG13/5254, f. 64, p. 2	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=uki1901wales&h=33169443
	1911 Census Returns (PRO: RG14): RG14/34298, Sch. 29	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=1911Wales&indiv=try&h=893752
	Birth Index 1837-1915, Jan-Feb-Mar 1865, Dolgelly, Merionethshire, vol. 11b, p. 444	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=freebmdbirth&h=60827705
	Marriage Index 1837-1915, Apr-May-Jun 1892, Dolgelly, Merionethshire, vol. 11b, p. 685	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=FreeBMDMarriage&indiv=try&h=31677860
	National Probate Calendar (Index of Wills and Administrations) 1858-1966, Death: 3 Nov 1938 Merionethshire, Probate: 5 Jan 1939 Bangor	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=UKProbateCal&h=3265721
Thomas Morris	1851 Census Returns (PRO: HO107): HO107/2515, f. 142, p. 13	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1851wales&indiv=try&h=16269453
	1881 Census Returns (PRO: RG11): RG11/5562, f. 74, p. 29	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1881wales&indiv=try&h=708290
	1891 Census Returns (PRO: RG12): RG12/4643, f. 15, p. 23	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=uki1891wales&h=1680669

	1901 Census Returns (PRO: RG13): RG13/5254, f. 97, p. 21	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=uki1901wales&h=33171083
	1911 Census Returns (PRO: RG14): RG14/34299, Sch. 174	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=1911Wales&h=2064614
	Marriage Index 1837-1915, Oct-Nov-Dec 1874, Dolgelly, Merionethshire, vol. 11b, p. 694	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=FreeBMDMarriage&indiv=try&h=20341432
Thomas Morris	1851 Census Returns (PRO: HO107): HO107/2506, f. 251, p. 32	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=uki1851wales&h=16162480
	1871 Census Returns (PRO: RG10): RG10/5669, f. 18, p. 26	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=uki1871wales&h=7723776
	1881 Census Returns (PRO: RG11): RG11/5546, f. 130, p. 2	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=uki1881wales&h=12977686
	1891 Census Returns (PRO: RG12): RG12/4643, f. 4, p. 1	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=uki1891wales&h=1677882
	1901 Census Returns (PRO: RG13): RG13/5254, f. 103, p. 33	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=uki1901wales&h=33171392
	1911 Census Returns (PRO: RG14): RG14/34299, Sch. 278	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=1911Wales&h=2065529
	Marriage Index 1837-1915, Apr-May-Jun 1870, St Asaph, Merionethshire, vol. 11b, p. 629	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=FreeBMDMarriage&indiv=try&h=20341245
	Death Index 1916-2007, Dec 1927, Dolgelly, Merionethshire, vol. 11b, p. 416	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=onsdeath93&h=17434111
	National Probate Calendar (Index of Wills and Administrations) 1858-1966, Death: 19 Nov 1927 Merionethshire, Probate: 13 Feb 1928 St Asaph	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=UKProbateCal&h=1384416
Thomas Owen	1871 Census Returns (PRO: RG10): RG10/5691, f. 60, p. 17	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=uki1871wales&h=3510988
	1881 Census Returns (PRO: RG11): RG11/5546, f. 134, p. 10	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=uki1881wales&h=12977921

	1891 Census Returns (PRO: RG12): RG12/4642, f. 110, p. 1	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=uki1891wales&h=1466622
	1901 Census Returns (PRO: RG13): RG13/5254, f. 80, p. 34	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=uki1901wales&h=33170372
	1911 Census Returns (PRO: RG14): RG14/34298, Sch. 249	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=1911Wales&h=894619
	Birth Index 1837-1915, Oct-Nov-Dec 1860, Dolgelly, Merionethshire, vol. 11b, p. 386	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=freebmdbirth&h=25923605
	Death Index 1916-2007, Mar 1940, Merioneth South, Merionethshire, vol. 11b, p. 1518	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=onsdeath93&h=24973861
	National Probate Calendar (Index of Wills and Administrations) 1858-1966, Death: 18 Jan 1940 Merionethshire, Probate: 8 Jul 1940 Bangor	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=UKProbateCal&h=1827784
Thomas Parry	1881 Census Returns (PRO: RG11): RG11/5546, f. 137, p. 16	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=uki1881wales&h=12978128
	1891 Census Returns (PRO: RG12): RG12/4643, f. 10, p. 13	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=uki1891wales&h=1678177
	1911 Census Returns (PRO: RG14): RG14/34299, Sch. 4	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=1911Wales&h=2063746
	Marriage Index 1837-1915, Oct-Nov-Dec 1907, Festiniog, Merionethshire, vol. 11b, p. 729	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=FreeBMDMarriage&indiv=try&h=21919192
Thomas Pierce	1871 Census Returns (PRO: RG10): RG10/5672, f. 41, p. 13	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1871wales&indiv=try&h=7734077
	1881 Census Returns (PRO: RG11): RG11/5532, f. 91, p. 41	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1881wales&indiv=try&h=2507572
	1891 Census Returns (PRO: RG12): RG12/4629, f. 93, p. 12	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1891wales&indiv=try&h=686861
	1901 Census Returns (PRO: RG13): RG13/5239, f. 110, p. 14	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1901wales&indiv=try&h=33140496

	1911 Census Returns (PRO: RG14): RG14/34154, Sch. 14	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=1911Wales&indiv=try&h=2060043
	Birth Index 1837-1915, Oct-Nov-Dec 1856, St Asaph, Denbighshire, vol. 11b, p. 346	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=freebmdbirth&h=28037237
William Henry Reed	1881 Census Returns (PRO: RG11): RG11/5545, f. 85, p. 8	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1881wales&indiv=try&h=12973279
	1891 Census Returns (PRO: RG12): RG12/4641, f. 168, p. 10	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=uki1891wales&h=1432070
	1901 Census Returns (PRO: RG13): RG13/2726, f. 38, p. 29	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1901&indiv=try&h=35209818
	1911 Census Returns (PRO: RG14): RG14/18513	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=1911England&indiv=try&h=20513521
	Birth Index 1837-1915, Oct-Nov-Dec 1875, Dolgelly, Merionethshire, vol. 11b, p. 401	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=freebmdbirth&h=30278102
	Marriage Index 1837-1915, Oct-Nov-Dec 1899, West Bromwich, Staffordshire, vol. 6b, p. 1495	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=FreeBMDMarriage&indiv=try&h=23820641
	Death Index 1916-2007, Mar 1953, Coventry, Warwickshire, vol. 9c, p. 1020	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=onsdeath93&h=29249541
	Death Index 1916-2007, Dec 1963, Nuneaton, Warwickshire, vol. 9c, p. 905	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=onsdeath93&h=43846442
	National Probate Calendar (Index of Wills and Administrations) 1858-1966, Death: 18 Jun 1952 Birmingham, Probate: 13 Aug 1952 Birmingham	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=ukprobatecal&h=16345287
Thomas Rooke	1851 Census Returns (PRO: HO107): HO107/1643, f. 219, p. 7	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1851&indiv=try&h=1768588
	1861 Census Returns (PRO: RG9): RG9/585, f. 87, p. 5	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1861&indiv=try&h=7605946
	1871 Census Returns (PRO: RG10): RG10/1066, f. 88, p. 5	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1871&indiv=try&h=14115521

	1881 Census Returns (PRO: RG11): RG11/1039, f. 124, p. 36	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1881&indiv=try&h=21810487
	1891 Census Returns (PRO: RG12): RG12/4643, f. 33, p. 7	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=uki1891wales&h=1663842
	Birth Index 1837-1915, Jul-Aug-Sep 1847, Lewes, Sussex, vol. 7, p. 374	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=freebmdbirth&h=47520660
	Marriage Index 1837-1915, Jan-Feb-Mar 1882, Ticehurst, Sussex, vol. 2b, p. 133	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=FreeBMDMarriage&indiv=try&h=24740070
Walter Morrison Pothecary	1841 Census Returns (PRO: HO107): HO107/383, bk. 7, f. 10, p. 14, ln. 23	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=uki1841&h=2250671
	1851 Census Returns (PRO: HO107): HO107/1667, f. 48, p. 52	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=uki1851&h=5903968
	1861 Census Returns (PRO: RG9): RG9/687, f. 85, p. 4	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=uki1861&h=10846366
	1871 Census Returns (PRO: RG10): RG10/3686, f. 277, p. 1	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1871&indiv=try&h=24732040
	1881 Census Returns (PRO: RG11): RG11/3509, f. 80, p. 48	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1881&indiv=try&h=1389852
	1891 Census Returns (PRO: RG12): RG12/4643, f. 32, p. 5	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=uki1891wales&h=1689048
	Birth Index 1837-1915, Apr-May-Jun 1840, Andover, Hampshire, vol. 7, p. 40	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=freebmdbirth&h=28654984
	Marriage Index 1837-1915, Jan-Feb-Mar 1863, Andover, Hampshire, vol. 2c, p. 275	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=FreeBMDMarriage&indiv=try&h=22970516
	Death Index 1837-1915, Apr-May-Jun 1992, Dolgelly, Merionethshire, vol. 11b, p. 282	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=freebmddeath&h=26954892
	National Probate Calendar (Index of Wills and Administrations) 1858-1966, Death: 10 May 1892 Merionethshire, Probate: 22 Jul 1892 London	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=ukprobatecal&h=4629526

Walter Summers Loxton	1871 Census Returns (PRO: RG10): RG10/225, f. 24, p. 41	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1871&indiv=try&h=27459572
	1891 Census Returns (PRO: RG12): RG12/4642, f. 118, p. 18	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1891wales&indiv=try&h=1637057
	1901 Census Returns (PRO: RG13): RG13/5254, f. 105, p. 38	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1901wales&indiv=try&h=33171544
	1911 Census Returns (PRO: RG14): RG14/34298, Sch. 126	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=1911Wales&indiv=try&h=894144
	Birth Index 1837-1915, Apr-May-Jun 1866, Pancras London, vol. 1b, p. 110	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=freebmdbirth&h=19780688
	London Births and Baptisms 1813-1906, 10 Feb 1868, St Pancras Old St Pancras, Camden, P90/PAN1, 038	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=lmabirths&h=1707798
	Marriage Index 1837-1915, Jul-Aug-Sep 1891, Dolgelly, Merionethshire, vol. 11b, p. 493	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=FreeBMDMarriage&indiv=try&h=18314213
	Death Index 1916-2007, Dec 1930, Dolgelly, Merionethshire, vol. 11b, p. 423	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=onsdeath93&h=17513676
	National Probate Calendar (Index of Wills and Administrations) 1858-1966, Death: 28 Oct 1930 Merionethshire, Probate: 18 Nov 1930 Cheshire	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=ukprobatecal&h=5334846
William Batty Mapplebeck	1851 Census Returns (PRO: HO107): HO107/2060, f. 507, p. 13	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1851&indiv=try&h=9263650
	1861 Census Returns (PRO: RG9): RG9/2173, f. 8, p. 10	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1861&indiv=try&h=21133528
	1871 Census Returns (PRO: RG10): RG10/3080, f. 136, p. 49	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1871&indiv=try&h=2772759
	1891 Census Returns (PRO: RG12): RG12/2447, f. 33, p. 19	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=uki1891&h=16869380
	1901 Census Returns (PRO: RG13): RG13/2895, p. 12	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=uki1901&h=16749372

	1911 Census Returns (PRO: RG14): RG14/7725, Sch. 68	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=1911England&h=41107568
	Birth Index 1837-1915, Oct-Nov-Dec 1843, Aston, Warwickshire, vol. 16, p. 171	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=freebmdbirth&h=20517902
	Death Index 1916-2007, Dec 1926, Kensington, London, vol. 1a, p. 4163	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=onsdeath93&h=16698739
	National Probate Calendar (Index of Wills and Administrations) 1858-1966, Death: 16 Nov 1926 Middlesex, Probate: 28 Feb 1927 London	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=ukprobatecal&h=2809861
William Charles Thomas	1871 Census Returns (PRO: RG10): RG10/5475, f. 45, p. 11	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=uki1871wales&h=7141526
	1891 Census Returns (PRO: RG12): RG12/4643, f. 18, p. 29	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=uki1891wales&h=1683582
	1901 Census Returns (PRO: RG13): RG13/5010, f. 14, p. 20	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=uki1901wales&h=32061126
	1911 Census Returns (PRO: RG14): RG14/32312, Sch. 29	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=1911Wales&h=1395717
William D. Herapath	1891 Census Returns (PRO: RG12): RG12/4642, f. 118, p. 17	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=uki1891wales&h=1660328
William Davies	1881 Census Returns (PRO: RG11): RG11/5546, f. 136, p. 14	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=uki1881wales&h=12977959
	1891 Census Returns (PRO: RG12): RG12/4643, f. 9, p. 11	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=uki1891wales&h=1675380
	1901 Census Returns (PRO: RG13): RG13/5254, f. 89, p. 6	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=uki1901wales&h=33170686
	1911 Census Returns (PRO: RG14): RG14/34299, Sch. 39	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=1911Wales&h=2063885

William Edwin Walton	1861 Census Returns (PRO: RG9): RG9/4020, f. 57, p. 14	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=uki1861wales&h=13497393
	1871 Census Returns (PRO: RG10): RG10/5337, f. 64, p. 26	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1871wales&indiv=try&h=7065740
	1891 Census Returns (PRO: RG12): RG12/4642, f. 110, p. 1	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=uki1891wales&h=1466596
	Birth Index 1837-1915, Jan-Feb-Mar 1851, Newport, Monmouthshire, vol. 26, p. 138	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=freebmdbirth&h=57837584
William Edwin Jones	1881 Census Returns (PRO: RG11): RG11/5546, f. 141, p. 23	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=uki1881wales&h=12978392
	1891 Census Returns (PRO: RG12): RG12/4642, f. 118, p. 17	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=uki1891wales&h=1660321
	1901 Census Returns (PRO: RG13): RG13/5254, f. 65, p. 4	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=uki1901wales&h=33169496
	1911 Census Returns (PRO: RG14): RG14/34539, Sch. 297	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=1911Wales&h=2110803
	Birth Index 1837-1915, Oct-Nov-Dec 1880, Dolgelly, Merionethshire, vol. 11b, p. 359	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=freebmdbirth&h=15978238
William Garnett	1881 Census Returns (PRO: RG11): RG11/5547, f. 10, p. 13	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=uki1881wales&h=12978882
	1891 Census Returns (PRO: RG12): RG12/4642, f. 121, p. 24	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=uki1891wales&h=1663495
	1901 Census Returns (PRO: RG13): RG13/5254, f. 82, p. 37	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=uki1901wales&h=33170469
	1911 Census Returns (PRO: RG14): RG14/34298, Sch. 90	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=1911Wales&indiv=try&h=893989
	Birth Index 1837-1915, Jul-Aug-Sep 1872, Dolgelly, Merionethshire, vol. 11b, p. 423	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=freebmdbirth&h=5010326

	Marriage Index 1837-1915, Oct-Nov-Dec 1894, Dolgelly, Merionethshire, vol. 11b, p. 678	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=FreeBMDMarriage&indiv=try&h=10655590
	Death Index 1916-2007, Mar 1916, Dolgelly, Merionethshire, vol. 11b, p. 526	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=onsdeath93&h=20458726
William H. B. Clark	1881 Census Returns (PRO: RG11): RG11/30, f. 85, p. 2	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1881&indiv=try&h=13160094
	1891 Census Returns (PRO: RG12): RG12/619, f. 8, p. 9	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=uki1891&h=18224951
William Henry Moore	1861 Census Returns (PRO: RG9): RG9/2630, f. 71, p. 40	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=uki1861&h=22832945
	1871 Census Returns (PRO: RG10): RG10/3723, f. 15, p. 23	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=uki1871&h=24894428
	1881 Census Returns (PRO: RG11): RG11/3555, f. 38, p. 19	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=uki1881&h=1593875
	1891 Census Returns (PRO: RG12): RG12/4643, f. 5, p. 3	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=uki1891wales&h=1675322
	1901 Census Returns (PRO: RG13): RG13/3405, p. 24	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=uki1901&h=33730457
	Marriage Index 1837-1915, Apr-May-Jun 1899, Birkenhead, Cheshire, vol. 8a, p. 980	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=FreeBMDMarriage&indiv=try&h=20129654
William Howells	1841 Census Returns (PRO: HO107): HO107/1433, bk. 8, f. 24, p. 10, ln. 23	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1841wales&indiv=try&h=14293299
	1851 Census Returns (PRO: HO107): HO107/2498, f. 476, p. 15	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1851wales&indiv=try&h=16037315
	1861 Census Returns (PRO: RG9): RG9/4258, f. 32, p. 25	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1861wales&indiv=try&h=15378427
	1871 Census Returns (PRO: RG10): RG10/5695, f. 56, p. 12	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=uki1871wales&h=3518858

	1881 Census Returns (PRO: RG11): RG11/5545, f. 85, p. 7	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1881wales&indiv=try&h=12973328
	1891 Census Returns (PRO: RG12): RG12/4641, f. 168, p. 10	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=uki1891wales&h=1429495
	Death Index 1837-1915, Jan-Feb-Mar 1897, Dolgelly, Merionethshire, vol. 11b, p. 280a	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=freebmddeath&h=17236893
William Hughes	1871 Census Returns (PRO: RG10): RG10/5691, f. 57, p. 12	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=uki1871wales&h=3510855
	1881 Census Returns (PRO: RG11): RG11/5546, f. 142, p. 26	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=uki1881wales&h=12978370
	1891 Census Returns (PRO: RG12): RG12/4645, f. 114, p. 9	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=uki1891wales&h=1659973
	Birth Index 1837-1915, Apr-May-Jun 1866, Dolgelly, Merionethshire, vol. 11b, p. 475	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=freebmdbirth&h=13189763
William Herbert Durst	1881 Census Returns (PRO: RG11): RG11/1245, f. 92, p. 27	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1881&indiv=try&h=7020035
	1891 Census Returns (PRO: RG12): RG12/937, f. 45, p. 1	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=uki1891&h=25957815
	1901 Census Returns (PRO: RG13): RG13/1059, f. 24, p. 22	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1901&indiv=try&h=1106584
	Birth Index 1837-1915, Jul-Aug-Sep 1880, Alton, Hampshire, vol. 2c, p. 167	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=freebmdbirth&h=973315
	Marriage Index 1837-1915, Jan-Feb-Mar 1912, East Preston, Sussex, vol. 2b, p. 473	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=FreeBMDMarriage&indiv=try&h=8553934
	Death Index 1916-2007, Mar 1964, Droxford, Hampshire, vol. 6b, p. 326	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=onsdeath93&h=41703916
	National Probate Calendar (Index of Wills and Administrations) 1858-1966, Death: 29 Feb 1964 Southampton, Probate: 10 Apr 1964 Peterborough	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=ukprobatecal&h=17030706

William Ireland	1891 Census Returns (PRO: RG12): RG12/4643, f. 8, p. 9	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=uki1891wales&h=1678175
William Jones	1891 Census Returns (PRO: RG12): RG12/249, f. 90, p. 19	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=uki1891&h=20279727
	1911 Census Returns (PRO: RG14): RG14/34299, Sch. 61	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=1911Wales&h=2064000
	Birth Index 1837-1915, Apr-May-Jun 1867, Aberystwyth, Cardiganshire, vol. 11b, p. 61	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=freebmdbirth&h=15960380
William Jones	1881 Census Returns (PRO: RG11): RG11/5546, f. 141, p. 23	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=uki1881wales&h=12978248
	1891 Census Returns (PRO: RG12): RG12/4692, f. 118, p. 17	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=uki1891wales&h=1663514
	1901 Census Returns (PRO: RG13): RG13/5254, f. 65, p. 4	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=uki1901wales&h=33169493
	1911 Census Returns (PRO: RG14): RG14/34298, Sch. 111	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=1911Wales&h=894066
	Marriage Index 1837-1915, Jul-Aug-Sep 1873, Dolgelly, Merionethshire, vol. 11b, p. 536	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=FreeBMDMarriage&indiv=try&h=16321780
William Jones	1841 Census Returns (PRO: HO107): HO107/1427, bk. 4, f. 25, p. 9, ln. 22	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=uki1841wales&h=14266872
	1851 Census Returns (PRO: HO107): HO107/2511, f. 441, p. 11	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1851wales&indiv=try&h=16225555
	1871 Census Returns (PRO: RG10): RG10/5715, f. 22, p. 23	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=uki1871wales&h=3562403
	1891 Census Returns (PRO: RG12): RG12/4643, f. 13, p. 19	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=uki1891wales&h=1680754
	1901 Census Returns (PRO: RG13): RG13/5254, f. 82, p. 37	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=uki1901wales&h=33170477

	1911 Census Returns (PRO: RG14): RG14/34298, Sch. 89	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=1911Wales&h=893986
	Death Index 1916-2007, Dec 1916, Dolgelly, Merionethshire, vol. 11b, p. 478	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=onsdeath93&h=18990120
	National Probate Calendar (Index of Wills and Administrations) 1858-1966, Death: 26 Nov 1916 Merionethshire, Probate: 2 Jan 1917 St Asaph	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=UKProbateCal&h=555215
William Jones Morris	1851 Census Returns (PRO: HO107): HO107/2511, f. 426, p. 12	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=uki1851wales&h=16225102
	1861 Census Returns (PRO: RG9): RG9/4320, f. 42, p. 11	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=uki1861wales&h=15532070
	1871 Census Returns (PRO: RG10): RG10/5640, f. 26, p. 19	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=uki1871wales&h=27182193
	1881 Census Returns (PRO: RG11): RG11/5546, f. 139, p. 19	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1881wales&indiv=try&h=12978282
	1891 Census Returns (PRO: RG12): RG12/4642, f. 128, p. 38	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=uki1891wales&h=1671027
	1901 Census Returns (PRO: RG13): RG13/5254, f. 66, p. 5	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=uki1901wales&h=33169526
	Marriage Index 1837-1915, Jul-Aug-Sep 1847, Dolgelly, Merionethshire, vol. 27, p. 159	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=FreeBMDMarriage&indiv=try&h=20349506
	Death Index 1837-1915, Oct-Nov-Dec 1906, Dolgelly, Merionethshire, vol. 11b, p. 247	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=freebmddeath&h=23919053
	National Probate Calendar (Index of Wills and Administrations) 1858-1966, Death: 3 Dec 1905 Merionethshire, Probate: 25 Feb 1907 St Asaph	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=UKProbateCal&h=3573495
William Jones	1881 Census Returns (PRO: RG11): RG11/5547, f. 11, p. 15	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1881wales&indiv=try&h=12979036

	1891 Census Returns (PRO: RG12): RG12/4642, f. 128, p. 38	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1891wales&indiv=try&h=1667648
	1901 Census Returns (PRO: RG13): RG13/5254, f. 72, p. 18	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=uki1901wales&h=33169923
William Jones	1881 Census Returns (PRO: RG11): RG11/5547, f. 11, p. 15	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1881wales&indiv=try&h=12979025
	1891 Census Returns (PRO: RG12): RG12/4642, f. 128, p. 38	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1891wales&indiv=try&h=1667656
William Latham Whitehouse	1861 Census Returns (PRO: RG9): RG9/3205, f. 38, p. 17	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=uki1861&h=16390041
	1871 Census Returns (PRO: RG10): RG10/2986, f. 142, p. 41	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=uki1871&h=15020198
	1881 Census Returns (PRO: RG11): RG11/2841, f. 60, p. 1	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1881&indiv=try&h=23320003
	1891 Census Returns (PRO: RG12): RG12/4643, f. 18, p. 29	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1891wales&indiv=try&h=1683585
	1901 Census Returns (PRO: RG13): RG13/5289, f. 157, p. 25	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1901wales&indiv=try&h=33329643
	Birth Index 1837-1915, Apr-May-Jun 1860, Knaresborough, Yorkshire West Riding, vol. 9a, p. 100	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=freebmdbirth&h=59717898
	Marriage Index 1837-1915, Apr-May-Jun 1884, Cannock, Staffordshire, vol. 6b, p. 706	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=FreeBMDMarriage&indiv=try&h=31099710
	Death Index 1916-2007, Jun 1931, Conway, Caernarvonshire, vol. 11b, p. 606	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=onsdeath93&h=22344428
	National Probate Calendar (Index of Wills and Administrations) 1858-1966, Death: 19 May 1931 Denbighshire, Probate: 18 Jul 1931 Birmingham	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=ukprobatecal&h=2428946
William Owen	1861 Census Returns (PRO: RG9): RG9/4320, f. 39, p. 5	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=uki1861wales&h=15531924

	1871 Census Returns (PRO: RG10): RG10/5690, f. 8, p. 7	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=uki1871wales&h=3506727
	1881 Census Returns (PRO: RG11): RG11/5546, f. 64, p. 21	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=uki1881wales&h=12976110
	1891 Census Returns (PRO: RG12): RG12/4642, f. 127, p. 36	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=uki1891wales&h=1667293
	1901 Census Returns (PRO: RG13): RG13/5254, f. 87, p. 1	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=uki1901wales&h=33170559
	1911 Census Returns (PRO: RG14): RG14/34299, Sch. 264	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=1911Wales&h=2065388
	Birth Index 1837-1915, Apr-May-Jun 1855, Dolgelly, Merionethshire, vol. 11b, p. 417	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=freebmdbirth&h=25927968
	Death Index 1916-2007, Dec 1920, Dolgelly, Merionethshire, vol. 11b, p. 446	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=onsdeath93&h=17998259
	National Probate Calendar (Index of Wills and Administrations) 1858-1966, Death: 19 Nov 1920 Merionethshire, Probate: 4 Feb 1921 London	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=UKProbateCal&h=1434084
William Patchett	1851 Census Returns (PRO: HO107): HO107/1992, f. 259, p. 1	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1851&indiv=try&h=8098648
	1861 Census Returns (PRO: RG9): RG9/1869, f. 51, p. 1	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1861&indiv=try&h=19721424
	1881 Census Returns (PRO: RG11): RG11/2651, f. 132, p. 2	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1881&indiv=try&h=18299462
	Marriage Index 1837-1915, Jul-Aug-Sep 1844, Bromsgrove, Worcestershire, vol. 18, p. 265	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=FreeBMDMarriage&indiv=try&h=21996006
	Death Index 1837-1915, Apr-May-Jun 1900, Atcham, Shropshire, vol. 6a, p. 452	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=freebmddeath&h=25844178

	National Probate Calendar (Index of Wills and Administrations) 1858-1966, Death: 29 Jun 1900 Shrewsbury, Probate: 2 Oct 1900 London	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=UKProbateCal&h=18759360
William Pritchard Williams	1891 Census Returns (PRO: RG12): RG12/4666, f. 68, p. 32	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1891wales&indiv=try&h=584342
	1901 Census Returns (PRO: RG13): RG13/5279, f. 86, p. 45	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=uki1901wales&h=33286504
	1911 Census Returns (PRO: RG14): RG14/34492, Sch. 280	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=1911Wales&h=1919139
	National Probate Calendar (Index of Wills and Administrations) 1858-1966, Death: 31 Jul 1916 Bangor, Probate: 5 May 1925 Bangor	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=UKProbateCal&h=3664737
William Richards	1871 Census Returns (PRO: RG10): RG10/5700, f. 135, p. 15	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=uki1871wales&h=3536083
	1881 Census Returns (PRO: RG11): RG11/5308, f. 115, p. 35	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=uki1881wales&h=5570468
	1911 Census Returns (PRO: RG14): RG14/34299, Sch. 270	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=1911Wales&h=2065437
William Robert Weston	1851 Census Returns (PRO: HO107): HO107/1603, f. 247, p. 48	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1851&indiv=try&h=1306715
	1861 Census Returns (PRO: RG9): RG9/455, f. 94, p. 61	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1861&h=6925280
	1871 Census Returns (PRO: RG10): RG10/4717, f. 81, p. 4	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1871&indiv=try&h=28567928
	1881 Census Returns (PRO: RG11): RG11/4686, f. 90, p. 56	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1881&indiv=try&h=25790031
	1891 Census Returns (PRO: RG12): RG12/3859, f. 62, p. 37	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=uki1891&h=5565319
	London Births and Baptisms 1813-1906, 21 Jul 1833, Kingston Upon Thames All Saints, Kingston Upon Thames, DW/T, 6130	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=lmabirths&h=6441024

	Marriage Index 1837-1915, Jul-Aug-Sep 1856, Kingston, Surrey, vol. 2a, p. 293	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=FreeBMDMarriage&indiv=try&h=30828709
	Death Index 1837-1915, Jul-Aug-Sep 1896, Doncaster, Yorkshire West Riding, vol. 9c, p. 429	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=freebmddeath&h=36145650
	National Probate Calendar (Index of Wills and Administrations) 1858-1966, Death: 27 Aug 1896 Yorkshire, Probate: 9 Oct 1896 Wakefield	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=ukprobatecal&h=3169063
William Roberts	1841 Census Returns (PRO: HO107): HO107/1427, bk. 4, f. 29, p. 17, ln. 10	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=uki1841wales&h=14267060
	1861 Census Returns (PRO: RG9): RG9/4320, f. 44, p. 16	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=uki1861wales&h=15532192
	1871 Census Returns (PRO: RG10): RG10/5691, f. 54, p. 6	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=uki1871wales&h=3510745
	1881 Census Returns (PRO: RG11): RG11/5546, f. 139, p. 20	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=uki1881wales&h=12978255
	1891 Census Returns (PRO: RG12): RG12/4642, f. 117, p. 16	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=uki1891wales&h=1663931
	1901 Census Returns (PRO: RG13): RG13/5254, f. 65, p. 3	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=uki1901wales&h=33169468
	Marriage Index 1837-1915, Apr-May-Jun 1888, Dolgelly, Merionethshire, vol. 11b, p. 571	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=FreeBMDMarriage&indiv=try&h=24436166
	Marriage Index 1837-1915, Oct-Nov-Dec 1864, Dolgelly, Merionethshire, vol. 11b, p. 797	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=FreeBMDMarriage&indiv=try&h=24433966
	Death Index 1837-1915, Jan-Feb-Mar 1910, Dolgelly, Merionethshire, vol. 11b, p. 276	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=freebmddeath&h=28676369
	National Probate Calendar (Index of Wills and Administrations) 1858-1966, Death: 22 Feb 1910 Merionethshire, Probate: 17 May 1910 St Asaph	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=UKProbateCal&h=18355377

William Robinson	1891 Census Returns (PRO: RG12): RG12/4642, f. 121, p. 23	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=uki1891wales&h=1663857
	1901 Census Returns (PRO: RG13): RG13/5254, f. 79, p. 31	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=uki1901wales&h=33170307
	1911 Census Returns (PRO: RG14): RG14/34298, Sch. 138	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=1911Wales&h=894203
William Thomas Parker Douglas	1851 Census Returns (PRO: HO107): HO107/1734, f. 334, p. 9	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1851&indiv=try&h=4224946
	1861 Census Returns (PRO: RG9): RG9/105, f. 87, p. 1	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1861&indiv=try&h=8635042
	1871 Census Returns (PRO: RG10): RG10/848, f. 101, p. 20	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1871&indiv=try&h=13535434
	1881 Census Returns (PRO: RG11): RG11/1271, f. 32, p. 5	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1881&indiv=try&h=221376
	1891 Census Returns (PRO: RG12): RG12/970, f. 25, p. 4	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1891&indiv=try&h=2265784
	1901 Census Returns (PRO: RG13): RG13/1122, f. 14, p. 19	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1901&indiv=try&h=1396455
	1911 Census Returns (PRO: RG14): RG14/6376, Sch. 127	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=1911England&indiv=try&h=44386459
	Birth Index 1837-1915, Apr-May-Jun 1845, Banbury, Oxfordshire, vol. 16, p. 5	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=freebmdbirth&h=347931
	Marriage Index 1837-1915, Jul-Aug-Sep 1873, Whitby, Yorkshire North Riding, vol. 9d, p. 667	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=FreeBMDMarriage&indiv=try&h=8225969
	Death Index 1916-2007, Jun 1927, Isle of Wight, Hampshire, vol. 2b, p. 706	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=onsdeath93&h=16749195
	National Probate Calendar (Index of Wills and Administrations) 1858-1966, Death: 17 Apr 1927 Isle of Wight, Probate: 1 Jun 1927 Winchester	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=ukprobatecal&h=3592176

	Cambridge University Alumni 1261-1900, Caius, Mich. 1864	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=alumni6&h=111559
William Williams Morris	1861 Census Returns (PRO: RG9): RG9/4320, f. 42, p. 11	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=uki1861wales&h=15532073
	1891 Census Returns (PRO: RG12): RG12/4642, f. 128, p. 38	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=uki1891wales&h=1671033
	1901 Census Returns (PRO: RG13): RG13/5254, f. 66, p. 5	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1901wales&indiv=try&h=33169527
	Death Index 1837-1915, Oct-Nov-Dec 1906, Dolgelly, Merionethshire, vol. 11b, p. 245	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=freebmddeath&h=23919420
	National Probate Calendar (Index of Wills and Administrations) 1858-1966, Death: 29 Sep 1906 Merionethshire, Probate: 22 Jan 1907 London	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=UKProbateCal&h=3573497
William Williams	1891 Census Returns (PRO: RG12): RG12/4643, f. 15, p. 23	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=uki1891wales&h=1681118
	1901 Census Returns (PRO: RG13): RG13/5254, f. 89, p. 6	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=uki1901wales&h=33170690
	1911 Census Returns (PRO: RG14): RG14/34298, Sch. 38	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=1911Wales&h=893782
	Marriage Index 1837-1915, Jul-Aug-Sep 1897, Festiniog, Merionethshire, vol. 11b, p. 592	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=FreeBMDMarriage&indiv=try&h=31691438
William Wynne	1881 Census Returns (PRO: RG11): RG11/5546, f. 70, p. 4	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=uki1881wales&h=12976267
	1891 Census Returns (PRO: RG12): RG12/4642, f. 128, p. 38	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=uki1891wales&h=1671019
	1901 Census Returns (PRO: RG13): RG13/5253, f. 126, p. 7	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=uki1901wales&h=33166648
	1911 Census Returns (PRO: RG14): RG14/34290, Sch. 6	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=1911Wales&h=1041842

	Birth Index 1837-1915, Jul-Aug-Sep 1875, Dolgelly, Merionethshire, vol. 11b, p. 410	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=freebmdbirth&h=62522932
	Death Index 1916-2007, Dec 1950, Merioneth South, Merionethshire, vol. 8c, p. 27	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=onsdeath93&h=27939236
	National Probate Calendar (Index of Wills and Administrations) 1858-1966, Death: 1 Dec 1950 Merionethshire, Probate: 5 Feb 1951 Bangor	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=ukprobatecal&h=14871090
Zachariah Mather	1851 Census Returns (PRO: HO107): HO107/2505, f. 366	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=uki1851wales&h=16566492
	1881 Census Returns (PRO: RG11): RG11/5550, f. 31, p. 33	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=uki1881wales&h=12988937
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	Death Index 1837-1915, Jan-Feb-Mar 1891, Sunderland, Durham, vol. 10a, p. 384	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=freebmddeath&h=29956660
George Wetwan	1841 Census Returns (PRO: HO107): HO107/1213, bk. 7, f. 5, p. 2, ln. 22	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1841&indiv=try&h=11612953
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George William Collins Jackson	1851 Census Returns (PRO: HO107): HO107/2455, f. 41, p. 4	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1851wales&indiv=try&h=15412034
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	Death Index 1837-1915, Apr-May-Jun 1870, Chorlton, Lancashire, vol. 8c, p. 417	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=freebmddeath&h=25151836
	National Probate Calendar (Index of Wills and Administrations) 1858-1966, Death: 31 May 1870 Manchester, Probate: 24 Jun 1870 Manchester	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=ukprobatecal&h=702434
	<i>London Gazette</i> , 5 July 1870, Issue 23631, p. 3286, col. 1-2	http://www.london-gazette.co.uk/issues/23631/pages/3286/page.pdf
Henry Cooke	1841 Census Returns (PRO: HO107): HO107/503, bk. 7, f. 10, p. 13, ln. 12	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1841&indiv=try&h=3369954
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	1871 Census Returns (PRO: RG10): RG10/4007, f. 124, p. 41	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1871&indiv=try&h=17558919
	1881 Census Returns (PRO: RG11): RG11/3940, f. 122, p. 3	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1881&indiv=try&h=10478463
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	Death Index 1837-1915, Jul-Aug-Sep 1884, Beverley, Yorkshire East Riding, vol. 9d, p. 80	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=freebmddeath&h=30617069
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Henry William Fife	1851 Census Returns (PRO: HO107): HO107/2421, f. 474, p. 14	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=uki1851&h=15040273
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Henry Hassall	1841 Census Returns (PRO: HO107): HO107/129, bk. 2, f. 5, p. 4, ln. 20	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1841&indiv=try&h=254442
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	<i>London Gazette</i> , 4 October 1853, Issue 21482, p. 2691, col. 2	http://www.london-gazette.co.uk/issues/21482/pages/2691/page.pdf
Henry John Barker	1841 Census Returns (PRO: HO107): HO107/902, bk. 12, f. 15, p. 23, ln. 19	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1841&indiv=try&h=9486821
	1851 Census Returns (PRO: HO107): HO107/1995, f. 70, p. 20	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1851&indiv=try&h=8154237

	1861 Census Returns (PRO: RG9): RG9/1886, f. 42, p. 38	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1861&indiv=try&h=19785831
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Henry John Brown	1851 Census Returns (PRO: HO107): HO107/1517, f. 210, p. 1	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1851&indiv=try&h=16515590
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James Whitley	1851 Census Returns (PRO: HO107): HO107/1686, f. 34, p. 29	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1851&indiv=try&h=3586500

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	National Probate Calendar (Index of Wills and Administrations) 1858-1966, Death: 4 Feb 1864 Middlesex, Probate: 1 Mar 1864 Principal Registry	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=ukprobatecal&h=4833016
John Bond	1841 Census Returns (PRO: HO107): HO107/793, bk. 3, f. 41, p. 28, ln. 15	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1841&indiv=try&h=8696842
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John Booth	1841 Census Returns (PRO: HO107): HO107/418, bk. 8, p. 1, ln. 20	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1841&indiv=try&h=4556470
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John Brande Morris	1851 Census Returns (PRO: HO107): HO107/1942, f. 156, p. 7	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1851&indiv=try&h=17654011
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	National Probate Calendar (Index of Wills and Administrations) 1858-1966, Death: 7 Sep 1859 Buckinghamshire, Probate: 6 Oct 1859 Principal Registry	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=ukprobatecal&h=16998663
John Harley	1841 Census Returns (PRO: HO107): HO107/744, bk. 4, f. 24, p. 39, ln. 15	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1841wales&indiv=try&h=8280209

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John Hill	1841 Census Returns (PRO: HO107): HO107/939, bk. 18, f. 19, p. 31, ln. 12	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1841&indiv=try&h=13388151
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	National Probate Calendar (Index of Wills and Administrations) 1858-1966, Death: 8 Aug 1883 Cheshire, Probate: 14 Sep 1883 Cheshire	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=ukprobatecal&h=56535
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	Death Index 1837-1915, Jul-Aug-Sep 1891, Paddington, London, vol. 1a, p. 55	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=freebmddeath&h=12260988
	National Probate Calendar (Index of Wills and Administrations) 1858-1966, Death: 27 Sep 1891 Middlesex, Probate: 31 Oct 1891 Principal Registry	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=ukprobatecal&h=4611198
William Nottidge Ripley	1851 Census Returns (PRO: HO107): HO107/1748, f. 703, p. 21	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1851&indiv=try&h=6180375
	1861 Census Returns (PRO: RG9): RG9/1220, f. 181, p. 3	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1861&indiv=try&h=17369585
	1871 Census Returns (PRO: RG10): RG10/1822, f. 102, p. 3	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1871&indiv=try&h=373790
	1881 Census Returns (PRO: RG11): RG11/1953, f. 122, p. 5	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1881&indiv=try&h=16489031
	1891 Census Returns (PRO: RG12): RG12/1532, f. 124, p. 4	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1891&indiv=try&h=317147
	1901 Census Returns (PRO: RG13): RG13/1847, p. 2	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1901&indiv=try&h=10559250
	1911 Census Returns (PRO: RG14): RG14/11324	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=1911England&indiv=try&h=26696592
	London Births and Baptisms 1813-1906, Baptism: 25 Sep 1824, St. Marylebone, Westminster, P89/MRY1/025	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=lmabirths&h=1218402
	Marriage Index 1837-1915, Jan-Feb-Mar 1859, Marylebone, London, vol. 1a, p. 663	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=FreeBMDMarriage&indiv=try&h=24264918
	London Marriages and Banns 1754-1921, Marriage: 25 Jan 1859, St Marylebone, Westminster, P89/MRY1/231	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=lmamarriages&h=1947661

	Death Index 1837-1915, Jan-Feb-Mar 1912, Norwich, Norfolk, vol. 4b, p. 223	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=freebmddeath&h=28467332
	National Probate Calendar (Index of Wills and Administrations) 1858-1966, Death: 4 Feb 1912 Norwich, Probate: 12 Apr 1912 London	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=ukprobatecal&h=950705
	Cambridge University Alumni 1261-1900, Caius, Michs. 1844	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=alumni6&h=145269
William Peter Nichols	1841 Census Returns (PRO: HO107): HO107/791, bk. 4, f. 9, p. 11, ln. 24	http://search.ancestry.co.uk/cgi-bin/sse.dll?indiv=1&db=uki1841&h=8683887
	1851 Census Returns (PRO: HO107): HO107/1815, f. 280, p. 34	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1851&indiv=try&h=5163919
	1861 Census Returns (PRO: RG9): RG9/1217, f. 117, p. 32	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1861&indiv=try&h=17346105
	1871 Census Returns (PRO: RG10): RG10/1817, f. 12, p. 18	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1871&indiv=try&h=1827279
	Death Index 1837-1915, Oct-Nov-Dec 1878, Norwich, Norfolk, vol. 4b, p. 108	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=freebmddeath&h=24657251
	National Probate Calendar (Index of Wills and Administrations) 1858-1966, Death: 22 Dec 1878 Norwich, Probate: 9 Apr 1879 Norwich	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=ukprobatecal&h=2267689
William Raven Robinson	1841 Census Returns (PRO: HO107): HO107/6, bk. 4, f. 2, p. 1, ln. 7	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1841&indiv=try&h=3319188
	1851 Census Returns (PRO: HO107): HO107/1754, f. 207, p. 12	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1851&indiv=try&h=4425186

	1861 Census Returns (PRO: RG9): RG9/130, f. 22, p. 41	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1861&indiv=try&h=5057092
	1871 Census Returns (PRO: RG10): RG10/265, f. 13, p. 19	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1871&indiv=try&h=11387214
	1881 Census Returns (PRO: RG11): RG11/241, f. 46, p. 18	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1881&indiv=try&h=14204611
	Death Index 1837-1915, Oct-Nov-Dec 1889, Islington, London, vol. 1b, p. 219	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=freebmddeath&h=28846764
William Robert Clarke	1851 Census Returns (PRO: HO107): HO107/1223, f. 111, p. 10	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1851&indiv=try&h=5196406
	1861 Census Returns (PRO: RG9): RG9/130, f. 22, p. 41	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1861&indiv=try&h=17381752
	1871 Census Returns (PRO: RG10): RG10/1825, f. 5, p. 1	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1871&indiv=try&h=14574932
	Death Index 1837-1915, Apr-May-Jun 1880, Forehoe, Norfolk, vol. 4b, p. 118	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=freebmddeath&h=6509546
	National Probate Calendar (Index of Wills and Administrations) 1858-1966, Death: 27 May 1880 Norfolk, Probate: 22 Jun 1880 Principal Registry	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=ukprobatecal&h=3770262
William Taprell	1851 Census Returns (PRO: HO107): HO107/1864, f. 411, p. 23	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1851&indiv=try&h=5662122
	1861 Census Returns (PRO: RG9): RG9/7, f. 101, p. 30	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1861&indiv=try&h=268957

	Marriages 1538-1940, 11 Jan 1828, Bristol, Gloucestershire	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=bivri_englandmarriages&h=854305
	Death Index 1837-1915, Jul-Aug-Sep 1864, Kensington, London, vol. 1a, p. 31	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=freebmddeath&h=32938363
	National Probate Calendar (Index of Wills and Administrations) 1858-1966, Death: 23 Jul 1864 Middlesex, Probate: 31 Aug 1864 Principal Registry	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=ukprobatecal&h=4813052
William Trotter	1841 Census Returns (PRO: HO107): HO107/307, bk. 9, f. 39, p. 20, ln. 12	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1841&indiv=try&h=16221733
	1851 Census Returns (PRO: HO107): HO107/2385, f. 224, p. 2	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1851&indiv=try&h=14472547
	1861 Census Returns (PRO: RG9): RG9/3705, f. 50, p. 37	http://search.ancestry.co.uk/cgi-bin/sse.dll?db=uki1861&indiv=try&h=12363550
	Death Index 1837-1915, Jan-Feb-Mar 1866, Auckland, Furham, vol. 10a, p. 105	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=freebmddeath&h=34248492
	National Probate Calendar (Index of Wills and Administrations) 1858-1966, Death: 6 Feb 1866 Durham, Probate: 14 Apr 1866 Durham	http://search.ancestry.co.uk/cgi-bin/sse.dll?ti=5538&indiv=try&db=ukprobatecal&h=3953132