

THE WOMEN OF RED CLYDESIDE

THE WOMEN OF RED CLYDESIDE:  
WOMEN MUNITIONS WORKERS IN THE WEST OF SCOTLAND  
DURING THE FIRST WORLD WAR

By

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## ABSTRACT

During World War One, the Clydeside region became one of the most important centres of war production in Britain. It also had one of the most volatile male workforces, earning it the reputation 'Red' Clydeside. Previous historical accounts have focussed on the skilled workers, debating the extent to which they were red-hot revolutionaries or narrow craft conservatives. To date, there has been no study of the region's large, capable, hard-working female workforce. This thesis traces the experience of the tens of thousands of women employed in the Clydeside munitions industry, paying particular attention to the working conditions in local factories.

This thesis contributes to the long-standing historiographical arguments over the nature of Red Clydeside by offering a new view of the dilution crisis which stands at the epicentre of the debate. It finds more cooperation between male and female munitions workers than has previously been recognized, and suggests that class confrontation, not craft conservatism, was at the root of the deportation of the shop steward leaders in March 1916. Although women did not participate in industrial disputes to the extent of the male workforce, they nevertheless contributed to the industrial unrest on the Clyde by joining trade unions and engaging in spontaneous strike activity. In addition, the significant presence of middle class women in positions of authority within the factories generated class hostility, turning munitions factories into breeding grounds of class tension.

This study offers a further contribution to the historical knowledge of women workers in the First World War by conducting a searching investigation into the oppressive working

conditions in munitions factories and their impact on the health of the female workforce. It disputes the view that munitions women were healthy, robust creatures, arguing that working conditions were particularly harsh in Clydeside factories, with women working longer hours and undertaking heavier work than women in other industrial areas of Britain. In addition, the much-lauded new welfare measures in the factories had little impact in mitigating the debilitating effects of munitions work on women's health.

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## ABBREVIATIONS IN TEXT

<b>ASE</b>	<b>Amalgamated Society of Engineers</b>
<b>BWTA</b>	<b>British Women's Temperance Association</b>
<b>CWC</b>	<b>Clyde Workers' Committee</b>
<b>EEF</b>	<b>Engineering Employers' Federation</b>
<b>GUWW</b>	<b>Glasgow Union of Women Workers (philanthropic body)</b>
<b>HMWC</b>	<b>Health of Munition Workers Committee</b>
<b>IFRB</b>	<b>Industrial Fatigue Research Board</b>
<b>MOH</b>	<b>Medical Officer of Health</b>
<b>MRC</b>	<b>Medical Research Committee</b>
<b>NFWW</b>	<b>National Federation of Women Workers (trade union)</b>
<b>NUWW</b>	<b>National Union of Women Workers (philanthropic body)</b>
<b>SSFA</b>	<b>Soldiers' and Sailors' Families Association</b>
<b>STUC</b>	<b>Scottish Trades Union Congress</b>
<b>WSPU</b>	<b>Women's Social and Political Union</b>
<b>WU</b>	<b>Workers' Union</b>

## ABBREVIATIONS IN NOTES

<b><i>ASEMJR</i></b>	<b><i>The ASE Monthly Journal and Report</i></b>
<b>CAB</b>	<b>Cabinet Papers</b>
<b>GCA</b>	<b>Glasgow City Archives</b>
<b>GCUA</b>	<b>Glasgow Caledonian University Archives</b>
<b>GGHBA</b>	<b>Greater Glasgow Health Board Archives</b>
<b>GML</b>	<b>Glasgow Mitchell Library</b>
<b>GTCM</b>	<b>Glasgow Trades Council Minute Book</b>
<b>GUABRC</b>	<b>Glasgow University Archives and Business Records Centre</b>
<b>GWSCDS</b>	<b>Glasgow and the West of Scotland College of Domestic Science</b>
<b>HC Deb.</b>	<b>Parliamentary Debates, House of Commons</b>
<b>IWM</b>	<b>Imperial War Museum</b>
<b>LGB(Sc)</b>	<b>Local Government Board for Scotland</b>
<b>MOH</b>	<b>Medical Officer of Health</b>
<b>MRC</b>	<b>Medical Research Committee</b>
<b>MRC, SRS</b>	<b>Medical Research Committee, Special Report Series</b>
<b><i>OHMM</i></b>	<b><i>Official History of the Ministry of Munitions</i></b>
<b><i>OHSFF</i></b>	<b><i>Official History of the Scottish Filling Factory, Georgetown</i></b>
<b>PRO</b>	<b>Public Record Office</b>
<b>RTCM</b>	<b>Minute Book of the Royal Technical College, Glasgow</b>
<b>SBU</b>	<b>Scottish Brassmoulders' Union</b>
<b>SRO</b>	<b>Scottish Record Office</b>
<b>STUC</b>	<b>Scottish Trades Union Congress</b>

**SUA**

**Strathclyde University Archives**

**WCCWI**

**War Cabinet Committee on Women in Industry**

## **Introduction**

In the first place, the issue of the war is dependent on a sufficiency of munitions.

Secondly, the duration of the war is dependent on the rate of supply of such munitions.

Thirdly, the industrial and economic future of the Empire is dependent on the duration of the war.

Fourthly, the rate of supply of munitions, which is the governing factor for the issue and the duration of the war and for the future well being of the Empire, is dependent on the efficiency and co-operation of all skilled labour and the successful initiation and use of unskilled and female labour.<sup>1</sup>

Thus wrote William Weir, Scotland's Director of Munitions during the First World War, while preparing his notes to present to Lloyd George during his visit to Glasgow in late December 1915. Weir's comments underlined the great importance that he placed on the successful introduction of female labour in the rapidly expanding munitions industry: not only the successful prosecution of the war, but the fate of the very Empire depended, in a large part, on the work of women munitions workers.

In mid-May 1915, the shortage of shells on the Western Front had hit the headlines of British newspapers, causing public outrage at the thought of British soldiers wounded and dying because of an insufficiency of armaments. The 'Shell Scandal' was a key element in the collapse of the Asquith Liberal government, the last Liberal government to hold power in Britain. It heralded the formation of the First Coalition Government under the leadership of Asquith in late May 1915, and the creation of the Ministry of Munitions under the control of Lloyd George as Minister of Munitions in June 1915. Lloyd George managed the Ministry with great effectiveness, overseeing the creation of a massive new industry which churned out millions of

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<sup>1</sup> Glasgow University Archives and Business Records Centre [GUABRC], DC 96/17/58, Notes written by William Weir, and given to Lloyd George on his visit to Glasgow on Christmas Day 1915.

tons of artillery and shells to supply not only the British soldiers in the field, but also those of the Allied Forces.

Part of Lloyd George's success lay in his strategy of recruiting, for the duration of the war, leading businessmen into key positions in the Ministry. Certainly, his appointment of William Weir as Scotland's Director of Munitions bode well for the development of Scotland's new industry. Weir's intelligence, dynamism and business acumen contributed in no small part to Clydeside becoming one of the most important centres of munitions production in Britain. In addition, the area contained valuable resources that made it an ideal location for industrial expansion including large supplies of coal, iron and steel, a concentration of experienced engineering firms, and a skilled male workforce. It also had a large reserve of female labour.

While Clydeside industry before the war had overwhelmingly employed male labour, during the war tens of thousands of women worked in the region's burgeoning munitions industry. By late 1914, the government confronted the reality that the war would not be over by Christmas, and that it would have to make extensive use of female labour to produce ever-increasing supplies of armaments to feed the armies at the front. The government's imposition of conscription in January 1916 further emphasized the urgent need to employ women in place of the men drafted into the armed forces. The government adopted a plan to 'dilute' skilled labour by introducing unskilled men and women to do work which had previously been the preserve of skilled workmen. For the first time, significant numbers of women entered the engineering workshops of the Clyde.

Women in the west of Scotland made all manner of *materiel* crucial to the war effort including aeroplanes, tanks, howitzers, sea mines, cartridges, fuses and shells of all sizes from small 2-pounder naval shells to massive 15-inch high explosive projectiles. They participated in all the processes of shell making, from forging the steel in the foundry to polishing and packing

the finished product, and they performed a broad spectrum of work, ranging from highly skilled tasks to heavy manual labour. Throughout the course of the war, as the munitions industry expanded and as the army conscripted more men, women increasingly took on more strenuous work and performed more skilled processes. The successful operation and prodigious output of Clydeside's munitions industry depended to an extraordinarily large degree on the hard work and ability of thousands of Scottish women.

Yet, until now, there has been no history of Clydeside's remarkable female workforce. The aim of this thesis is to recover the wartime working experience of these women as far as is possible from the surviving records. Through a detailed investigation of local factory conditions, this study will examine the characteristics of women's employment, and explore the nature of the new female workforce. Were Clydeside women docile workers, contentedly performing dull, repetitive tasks? Or is there evidence of militancy and assertiveness, rebellion and insubordination? These are important questions, especially considering the highly charged nature of industrial relations among the region's male workforce. By examining a wide range of archival material and contemporary printed sources, this thesis aims to narrate the story of Clydeside's women munitions workers. In so doing, it offers contributions to two distinct historiographies: the study of women workers in the First World War, and the contentious debate over the nature of 'Red Clydeside.'

There is a valuable body of historical knowledge of British women workers during the First World War. Early works tended to be celebratory accounts which concentrated on the wartime achievements of outstanding middle class women and their post war 'reward' of political enfranchisement.<sup>2</sup> In the 1970's, feminist historians began to extend the parameters of study to uncover the experiences of working class women. At the same time, they built upon Arthur

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<sup>2</sup> David Mitchell, *Monstrous Regiment: the Story of the Women of the First World War* (New York, 1965); Arthur Marwick, *Women at War, 1914-1918* (London, 1977).

Marwick's work examining war as an agent of social change, and began to probe the ways in which the war had changed women's lives.<sup>3</sup> They looked at the expansion of women's employment opportunities, the shifting perceptions of 'women's work,' and they asked pointed questions on the nature and extent of women's 'gains' as a result of their wartime experience.

In her fine survey of working class women's wartime employment, Gail Braybon takes a socialist feminist view, arguing that the patriarchal system and the capitalist system combine to perpetuate women's status as second-class workers and citizens. By investigating attitudes towards women's work, she finds a high degree of male prejudice and concludes there was little difference between the patriarchal discrimination of employers and that of male trade unionists.<sup>4</sup> Laura Lee Downs continues the discussion of patriarchy under capitalism, arguing that at the same time that the war was opening up new fields to women workers, employers were restricting their opportunities by reorganizing work processes and confining women to the realm of light, repetitive task work. Through a comparison of the British and French metalworking industries, Downs shows that gender-based job discrimination transcended national boundaries.<sup>5</sup>

In an unpublished doctoral thesis, Marion Kozak focuses exclusively on women as munitions workers. Making extensive use of archival sources, Kozak provides an excellent overview of women's work which reinforces the findings of Braybon and Downs. Although women demonstrated the ability to master machine work and produce impressive quantities of munitions, their achievements were credited to the new machinery and not to their aptitude or skill.<sup>6</sup> Deborah Thom brings fresh insight to the discussion through her use of oral history. Wary of the bias contained in official records of the war and the middle class perspective of

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<sup>3</sup> Arthur Marwick, *The Deluge: British Society and the First World War* (New York, 1965).

<sup>4</sup> Gail Braybon, *Women Workers in the First World War: The British Experience* (London, 1981).

<sup>5</sup> Laura Lee Downs, *Manufacturing Inequality: Gender Division in the French and British Metalworking Industries, 1914-1939* (Ithaca, 1995).

<sup>6</sup> Marion Kozak, 'Women Munitions Workers During the First World War,' Ph.D. thesis, Hull University, 1976.

contemporary newspapers, Thom sought to uncover munitions workers' own experiences by interviewing former workers at the Woolwich Arsenal in London. Throughout her extensive writing on the subject, Thom keeps her focus firmly on the factory woman.<sup>7</sup> Angela Woollacott's *On Her Their Lives Depend* provides a good, but largely uncritical, overview of the work and experience of munitions women. She asserts that women came out of the war stronger, more confident, and with a heightened sense of self worth, but omits an account of their post war position when women suffered mass unemployment and even public disparagement.<sup>8</sup>

Braybon, Kozak and Thom have engaged in a discussion of women's post war position, probing the extent to which war brought permanent change. Although Marwick argues that the war was a watershed in the social history of British women, feminist historians provide a corrective, arguing convincingly that the experience of war was different for working class women than it was for middle class women, who were more likely to reap post war benefits. Feminist studies concur in the conclusion that although the war had shown that women were capable of a broad range of work, it had not challenged the gender division of labour. The war had brought short-term gains to working class women, but in the long term had done little to alter their unequal position in society.

Although this study touches upon the areas of discussion mentioned above, its primary contribution is an investigation into the health of the women workers. Historians are in general agreement that the war brought an overall improvement in the health of the women workers. The

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<sup>7</sup> Deborah Thom, 'Women at the Woolwich Arsenal, 1915-1919,' *Oral History* 6 (1978): 58-73; 'The Bundle of Sticks: Women, Trade Unionists and Collective Organization before 1918,' in *Unequal Opportunities: Women's Employment in England, 1800-1918*, ed. Angela John, 261-89 (Oxford, 1986); Antonia Ineson and Deborah Thom, 'TNT Poisoning and the Employment of Women Workers in the First World War,' in *The Social History of Occupational Health*, ed. Paul Weindling, 89-107, (London, 1985). Some of the above have been reprinted in *Nice Girls and Rude Girls: Women Workers in World War One* (London, 1998).

<sup>8</sup> Angela Woollacott, *On Her Their Lives Depend: Munitions Workers in the Great War* (Berkeley, California, 1994).



high wages they earned at munitions work allowed them to buy better quality food and the innovation of factory canteens provided them with regular nourishing meals. While readily acknowledging that women worked long hours under arduous conditions, and that many were exposed to dangerous substances such as the high explosive trinitrotoluene (TNT), historians feel that, on balance, women enjoyed a better standard of living and better health than in the pre war years.

This thesis questions the 'better health' argument by conducting a thorough study of factory conditions in the west of Scotland and their impact on the health of the female workforce. The urgent need to equip the fighting forces meant that many munitions factories operated twenty-four hours a day which resulted in women working unconscionably long hours. In a number of Glasgow area factories, including those considered 'model' establishments by historians, women were incarcerated within the factory walls for seventy five hours a week. In addition, the mass introduction of new workers, many of them young girls of sixteen and seventeen, unaccustomed to workshop conditions, combined with a great sense of urgency to maximize output, made munitions factories hazardous places for many women. The wartime press continually portrayed munitions manufacturing as an attractive form of war work, fired by patriotic impulse, and performed by fit, lively, and healthy young women. However, when we look behind the propaganda we find that the hardships and difficulties of munitions factories were so great that a large number of women could not tolerate the work for any length of time. High wages came at a high price in terms of the deterioration in women workers' state of health.

By examining the health of the women war workers, this study also challenges J.M. Winter's thesis of the 'Paradox of the Great War' in which he claims that, despite the hardships and deprivations of wartime, there was an improvement in the health and life expectancy of the

civilian population, which was most marked in the country's poorest pre-war regions.<sup>9</sup> Linda Bryder has questioned parts of Winter's thesis, pointing to his inadequate explanation for the rise in the death rate due to respiratory tuberculosis, and claiming that he has underestimated the influence of malnutrition in the spread of the disease. She also criticises his use of national statistics which ignores regional variations. Bryder suggests that studies of local conditions would provide a more accurate picture of the true state of health of the working class during the war.<sup>10</sup>

By using Clydeside as a regional case study, this thesis evaluates the validity of the 'better health' argument. As a centre of appalling urban deprivation, Clydeside provides an excellent example to test Winter's hypothesis that it was the poorest areas in Britain which made the most gains from wartime prosperity. As well as investigating the daily grind of munitions factory life, this thesis extends its scope of study beyond the factory walls to look briefly at the wider Clydeside community to examine the influence of other factors such as housing conditions and food supply on the general health and well being of working class families in Glasgow during the war.

Up until now, studies of women munitions workers have been national in scope, drawing upon information from all areas of Britain. This thesis concentrates exclusively on women employed in the Clydeside region. Although there are limitations inherent in the narrow focus of a local study, there are also advantages. A concentration on a relatively small group of factories in a defined geographical area allows a fuller understanding of the conditions and circumstances within these factories. In this way, we are able to avoid serious errors of interpretation. For example, Claire Culleton has tried to find the voice of working class women workers through an

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<sup>9</sup> J.M. Winter, *The Great War and the British People* (London, 1986), 103-245.

<sup>10</sup> Linda Bryder, 'The First World War: Healthy or Hungry?' *History Workshop Journal*, 24 (1987): 141-57.

examination of a variety of sources including factory newspapers.<sup>11</sup> Among the newspapers Culleton studies is *The Cardonald News*, a publication of Cardonald National Projectile Factory in Glasgow. Culleton is quite mistaken in her assumption that the paper was the organ and genuine expression of the women workers. Cecil Walton, general manager of Cardonald and arch patriot, was the instigator and editor of *The Cardonald News* as well as the author of many of its articles. Walton's stated purpose in starting up the newspaper was to facilitate communication with the factory workforce. In the notice he posted announcing its launch, Walton wrote: 'On many occasions, points arise which I should like to bring before the whole of the workers, but it is difficult, owing to the numbers, and I propose therefore that this should be done by the means of a weekly news.' Although Walton accepted articles from Cardonald workers, he maintained tight editorial control over them. In the posted notice he made clear his intention: 'All items of interest will be welcomed, and should be dropped in one of the post-boxes in the factory. These will come forward to me and be edited and made use of, if found desirable.'<sup>12</sup> What Culleton interprets as the 'historically vital working class voices' of women, who 'became their own publicists... and championed their own heroicism and exploits in their service publications,' was actually Walton writing articles specifically crafted to maintain morale, instil patriotism, and inspire the women to intensify their efforts to increase production.<sup>13</sup> This knowledge undermines Culleton's method of inquiry and invalidates her arguments. A regional study therefore allows the researcher to build a solid knowledge of a particular area which decreases the likelihood of misinterpretation of evidence.

Another reason why a study of women workers in the Clydeside region is of historical significance is that it can contribute to the long-standing historiographical debate over the nature

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<sup>11</sup> Claire A. Culleton, *Working-Class Culture, Women, and Britain, 1914-1921* (New York, 2000), chapter 4.

<sup>12</sup> PRO MUN, 5/278.

<sup>13</sup> Culleton, 134, 177. For a description of Walton and Cardonald Factory, see Chapter Four.

of 'Red Clydeside.' In 1915-1916, the region was the scene of intense social and industrial unrest, gaining it the reputation of 'Red Clydeside.' Thousands of workmen in the shipyards and engineering shops struck work for higher wages, impeding the production of warships and armaments. Marxist activists addressed demonstrations to protest against the capitalist war, and the local socialist newspaper *Forward* kept up a weekly barrage of criticism against the government's handling of the war. Housewives in Glasgow tenements, irate at wartime rent increases, organized rent strikes. Skilled workmen, incensed over the restrictions on their freedoms, especially the hated 'leaving certificate' clause of the Munitions of War Act, gave Lloyd George a raucous and hostile reception when he addressed them on Christmas Day 1915. A week later, the military authorities seized and suppressed *Forward* for reporting the meeting as it happened, rather than printing the Press Bureau's sanitized version. The agitation and seething unrest continued until the spring of 1916, when the government cracked down on a strike of engineers, deporting the leaders from the city, and arresting and imprisoning the hard core of socialist agitators. In their accounts of these events, historians have come up with very different views, some claiming that Clydeside was a centre of potential revolution, while others take a more moderate view.

In the early 1970's, neo-Marxist historian James Hinton opened the debate with his study of the growth of the shop steward movement in Britain and its challenge to the capitalist state. The movement originated on the Clyde where radical shop stewards in local engineering firms opposed their trade union officials and formed the Clyde Workers' Committee (CWC), a revolutionary body which in 1915-1916 challenged the authority of the British government. It was the government's policy of dilution of labour which spurred the shop floor militants to confront the state and make their revolutionary demand for worker control of industry. In the spring of 1916, the government mounted a deliberate offensive to crush the militants by

imprisoning or deporting their leaders, and effectively broke the CWC. Nevertheless, Hinton claims, a genuine revolutionary element had existed on the Clyde.<sup>14</sup>

In 1983, the liberal revisionist Iain McLean's *Legend of Red Clydeside* launched a serious challenge to Hinton's interpretation. McLean claims that the craftsmen on the Clyde were not potential revolutionaries, but rather a group of disgruntled engineers whose primary concerns were wages, working conditions, and the defence of their craft privileges. Narrow craft conservatism, McLean asserts, was at the heart of the 'Red' Clyde, a myth which had its roots in the post war memoirs of some key players in the conflict.<sup>15</sup> While Hinton sees radical shop stewards challenging the state by demanding worker control of industry, McLean sees craftsmen engaged in a narrow defence of their privileges and skilled position.

Subsequent works have tended to take the middle ground. They acknowledge that fierce industrial disputes took place, but have discounted the notion that the Clyde was on the verge of revolution. At the same time, however, they affirm that the region was a centre of spontaneous working class grievances. In doing so, they have shifted the emphasis from the spreading of revolutionary ideology to the protection of working class rights and standard of living. R.J. Morris was among the first to respond to McLean's work, acknowledging that it provided an important corrective to Hinton's account of a missed revolutionary opportunity. Nevertheless, he feels that McLean's revisionism obscured the highly developed sense of working class identity in Glasgow during the war. Morris argues for a different interpretation of 'craft conservatism.' While McLean's version implied narrowness, exclusion, sectionalism and rigidity, Morris interprets it as 'the moral economy of the skilled man' whose right to control his own pace of work in a rapidly changing workplace was paramount in his defence against 'the power of

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<sup>14</sup> James Hinton, *The First Shop Stewards' Movement* (London, 1973).

<sup>15</sup> Iain McLean, *The Legend of Red Clydeside* (Edinburgh, 1983). See, for example, William Gallacher, *Revolt on the Clyde: an Autobiography* (London, [1936]).

capital.’ In Morris’s version, ‘craft conservatism’ does not preclude a vibrant working class consciousness. Morris concludes that although there may not have been a revolution on the Clyde, significant ‘fundamental shifts in the distribution of power’ took place.<sup>16</sup>

John Foster also makes an important contribution to the critique of McLean’s interpretation. While most accounts of Red Clydeside finish in April 1916 with the deportation of the shop stewards and the crushing of the CWC, Foster extends the scope of the investigation to 1919. By conducting a statistical reconstruction and analysis of strike activity in the years following 1916, he demonstrates that industrial militancy actually increased in the latter years of the war and peaked during the ‘Forty Hours Strike’ of January 1919. Foster emphasises the role of government censorship in obscuring the true picture of industrial militancy on the Clyde, an approach which this thesis also adopts. Foster concludes that Clydeside did not become Britain’s Petrograd, but nevertheless, a process of ‘limited but significant radicalization occurred.’<sup>17</sup>

The most significant contribution to the recent rethinking of Red Clydeside came in 1991 with the publication of *The ILP on Clydeside* in which Joseph Melling argues that it was the Independent Labour Party (ILP), not the CWC, which was the main socialist body organizing wartime agitation in the west of Scotland. The Scottish ILP experienced a tremendous surge of support during the war, tripling its membership between 1916 and 1918. While the CWC was preoccupied with shop floor disputes, the ILP networks encompassed both industrial and non-industrial concerns, from the campaign for better housing to John Wheatley’s influence in the dilution crisis as the author of the Parkhead Dilution Agreement. ILP campaigns moved far beyond the concerns of skilled workmen, emphasising ‘not narrow work questions but general principles of libertarian rights during the war.’ In Melling’s account, Red Clydeside lay not in the

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<sup>16</sup> R.J. Morris, ‘Skilled Workers and the Politics of the ‘Red’ Clyde: a Discussion Paper,’ *Journal of the Scottish Labour History Society*, 19 (1984): 6-17.

<sup>17</sup> John Foster, ‘Strike Action and Working-Class Politics on Clydeside, 1914-1919,’ *International Review of Social History*, 35 (1990): 33-70.

(real or imagined) revolutionary impulse of the CWC, but in the radical reformist policies and actions of the ILP which brought about the growth of political consciousness in the west of Scotland.<sup>18</sup>

In his recent authoritative work, *Industrial Nation*, W.W. Knox refers to wartime Clydeside as the area ‘most debated and researched by historians of modern Scotland.’ Knox believes that there is ‘little that can be added to the empirical knowledge amassed by historians concerning the events on Clydeside during the war years.’<sup>19</sup> There nevertheless remains one area of historiographical neglect: the position of women munitions workers on Clydeside during the war.

To date, accounts of the industrial struggles on the Clyde have been overwhelmingly male-centred. Yet, not only did women form a considerable part of the Clyde munitions labour force, they were also central to the areas of greatest controversy: the dilution and deportation crises. Although historians have accepted that the dilution struggle concerned the skilled men’s resistance to the introduction of women into the engineering workshops, they have paid surprisingly little attention to the women workers themselves. Interestingly, the omission of women from the historical literature mirrors their absence from the top-level talks which took place in 1915-1916, between Ministry officials, trade union leaders, and employers’ representatives when the discussions were *about* women, but never *included* women.

Women were also central to the April 1916 deportation crisis. It was after David Kirkwood, the convenor of the shop stewards at Parkhead Forge, approached the women starting work in the Howitzer Shop that the firm, Beardmore’s, revoked his privilege of free access round

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<sup>18</sup> Joseph Melling, ‘Work, Culture and Politics on ‘Red Clydeside’: the ILP during the First World War,’ in *The ILP on Clydeside: From Foundation to Disintegration*, ed. Alan McKinlay and R.J. Morris (Manchester, 1991): 83-122, at p. 111.

<sup>19</sup> W.W. Knox, *Industrial Nation: Work, Culture and Society in Scotland, 1800-Present* (Edinburgh, 1999), 216.

the shops at Parkhead, thereby sparking the strike which culminated in the deportation of Kirkwood and other shop steward leaders from the area. Historians remain puzzled at Beardmore's timing and that such a small incident could have had such momentous consequences. By examining the presence of women workers at Parkhead Forge, and their relationship with the shop stewards, this thesis suggests an explanation for Beardmore's revocation of Kirkwood's rights. It also reconsiders, from the women workers' point of view, the dilution struggle and deportation crisis that took place on Clydeside in the winter of 1915 - 1916.

There are historical studies examining the role of women in the west of Scotland during the war but they concentrate exclusively on women's political activity and protest movements. Joseph Melling documents the role of Glasgow housewives in their fiery rent strikes against housing factors and landlords who tried to impose wartime rent increases in the city's overcrowded tenements. With the support of the skilled men's unions, the women forced the government to pass the Rent Restriction Act of 1915, which froze rent increases for the duration of the war.<sup>20</sup> Jill Liddington has written a short history of the Women's Peace Crusade (WPC) in Britain during the war. Although informative, Liddington's account seriously underestimates the role of Glasgow women, in particular Helen Crawford, as the leaders and instigators of the WPC, and indeed, the role of Glasgow as the WPC's centre of greatest activity.<sup>21</sup> J.J. Smyth has shown that women were an integral part in the political struggles of the Clydeside community during the

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<sup>20</sup> Joseph Melling, *Rent Strikes; People's Struggle for Housing in West Scotland, 1890-1916* (Edinburgh, 1983).

<sup>21</sup> Jill Liddington, *The Long Road to Greenham: Feminism and Anti-Militarism in Britain since 1820* (London, 1989), chapter 6; 'The Women's Peace Crusade: the History of a Forgotten Campaign,' in *Over Our Dead Bodies: Women against the Bomb*, ed. Dorothy Thompson (London, 1983), 180-198. A perusal through the wartime issues of *The Herald* and *Forward* confirms that in no other centre in Britain was the WPC so active and successful as in Glasgow where a group of Scottish women peace activists held numerous meetings and rallies, indoor and outdoor, summer and winter.



war. As well as covering rent strikers and peace crusaders, he also examines women's increasing membership and role in the ILP.<sup>22</sup>

There has, however, been no comprehensive study of Clydeside's women munitions workers. The only account so far is a chapter in Gerry Rubin's Ph.D. thesis on the Munitions of War Act, in which he provides valuable insight on the appearance of women workers before the Glasgow munitions tribunal.<sup>23</sup> This thesis aims to fill the gap in the historiography of wartime Clydeside by conducting an extensive examination of the region's large female munitions workforce. In doing so, we hope to address what R.J. Morris has called an 'apparent paradox' in the history of Clydeside women: why were Glasgow women so prominent as leaders in the rent strikes of 1915, which he considers 'without doubt the most important and far-reaching achievement of the Glasgow working class' during the war, and yet so conspicuously absent from the area's industrial disputes?<sup>24</sup> The question gains more resonance when considered in the light of the belligerent industrial action of the city's skilled male workforce. What, therefore, can explain the high degree of anger and activism in Glasgow's housewives and working men, but the apparent docility of its women workers?

This thesis will consider these and other questions in its examination of the nature of Clydeside's new munitions factory woman. Did she conform to the rosy public image of a smiling, contented worker, happy to 'do her bit' for the men at the Front? Or, is there an alternative picture, hidden from public view by high factory walls and heavy government censorship, of militant women, aggrieved by oppressive working conditions, and ready to

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<sup>22</sup> James J. Smyth, 'Rents, Peace, Votes: Working-Class Women and Political Activity in the First World War,' in *Out of Bounds: Women in Scottish Society, 1800-1945*, ed. Esther Breitenbach and Eleanor Gordon (Edinburgh, 1992), 174-96.

<sup>23</sup> Gerry Rubin, 'The Enforcement of the Munitions of War Act, 1915-1917, with Particular Reference to Proceedings before the Munitions Tribunal in Glasgow, 1915-1921' (Ph.D. thesis, Warwick University, 1984), chapter 10.

<sup>24</sup> R.J. Morris, 'The ILP, 1893-1932: Introduction,' in *The ILP on Clydeside: From Foundation to Disintegration*, ed. Alan McKinlay and R.J. Morris (Manchester, 1991), 1-19, at p. 12, 11.

complain and stand up for their rights? Did women join trade unions and participate in strikes? Did they contribute to the radicalism on the Clyde?

This thesis will also consider the prickly issue of gender relations. Eleanor Gordon has shown that there were deep gender divisions within the Scottish working class in the decades before the war. Strict demarcations existed between ‘men’s work’ and ‘women’s work,’ with women confined to low paid, menial jobs which reinforced societal perceptions of their inferiority. In addition, trade unions did not support women’s concerns, leading to the further social and economic marginalisation of women in Scottish society. Gender divisions were an important factor contributing to the fragmentation of the Scottish working class.<sup>25</sup> This thesis will take a brief look at the effect of the war on workplace gender relations, examining the consequences of women’s intrusion into workshops long considered the preserve of male labour. Did the war bind working women and men closer together, or did it act as an agent in the further fragmentation of the Scottish working class?

This thesis opens for examination a number of previously neglected issues in the history of the women of Red Clydeside. We hope to address another observation of W.W. Knox on the historiography of Red Clydeside where he points out that historians have tended ‘to highlight moments of heroic class struggle... at the expense of the mundane.’<sup>26</sup> As we attempt to recreate the experience of Clydeside munitions women, we ground this study firmly in the mundane, looking at quotidian details such as the hours they worked, the uniforms they wore, and the food they ate in the new factory canteens. By taking this approach, we hope to achieve a small part of what Knox calls ‘a wider, more discreet’ narrative of Scottish working class history.

There are almost no surviving records of working class women themselves, making it difficult to recover their voice and lived experience. We have tried to surmount this difficulty by

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<sup>25</sup> Eleanor Gordon, *Women and the Labour Movement in Scotland, 1850-1914* (Oxford, 1991).

<sup>26</sup> Knox, *Industrial Nation*, 25.

gleaning fragments of information from a broad range of sources, which were intended for different purposes from which we have used them. We have trawled a number of local newspapers and other contemporary British periodicals, as well as searching through relevant parliamentary papers. We have also made extensive use of archival material in Scotland, including the records of William Weir and the minutes of the Glasgow Trades Council. Among the most fruitful source of evidence are confidential reports and verbatim minutes of evidence to government commissions of inquiry, which are housed in the Public Record Office in London, and in the Women's War Work Collection of the Imperial War Museum.

In chapter one, we describe the munitions industry that mushroomed on Clydeside during the war, and provide a general overview of the women workers. Chapter two discusses the presence of middle class women in munitions factories, examining their impact on class relations. Chapter three re-examines the dilution and deportation crises which took place on Clydeside by inserting women into the discussion. It also investigates munitions women's membership in trade unions and their participation in industrial action, as well as the issue of gender relations on the factory shop floor. In chapter four, we address the issue of health by investigating the day-to-day working conditions in local factories. Chapter five examines the welfare measures instituted in munitions factories and assesses their effectiveness for women in the west of Scotland. We also broaden the scope of our inquiry beyond the factory walls and subject to critical analysis J.M. Winter's 'better health' hypothesis. Finally, we look at the post war position of the former women munitions workers who quickly fell from public favour, and were no longer regarded as saviours of the Empire and heroines of the nation.

## Chapter One

### 'I will be an engineer before long':

#### Women Munitions Workers on Clydeside

In March 1916, Jeanie Riley, a small, slender, attractive woman who lived in the Gallowgate district of Glasgow with her two year old daughter, Maggie, wrote to her husband, Private James Riley, who was stationed with the Cameronians (Scottish Rifles) in France:

Dear Jamie, I am still sticking in at my work. I will be an engineer before long.... There are 25 more women coming in on Monday... and we were told that the amount of work we do in three weeks would have taken the men three years and Jamie the men are quite mad at us.... I am up at half past four every morning so I will have you up at the same time when you come back if God spares you. It will be a right laugh in the mornings when we start narking at each other you will be flinging me out to work.<sup>1</sup>

A year before she wrote the letter, neither Jeanie nor her husband could have imagined that she would be working in one of the many engineering workshops on the Clyde. The war years witnessed the unprecedented spectacle of women and girls flocking to work in the metal, chemical, engineering and shipbuilding firms on Clydeside, which had long been considered the hallowed preserve of skilled workmen. Jeanie Riley is unique to this study because her letters survive as testimony to her experience as a woman munitions worker, but she was only one of tens of thousands of Scottish women who worked in the new munitions industry on Clydeside during the Great War.

There was no shortage of Scottish women willing and anxious to get into munitions work. 'Armament work preferred' was the most common request of thousands of wartime women

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<sup>1</sup>Letter courtesy of People's Palace Museum, Glasgow.

applicants at Clydeside labour exchanges. In June 1916, of the 3650 women's names on the register at one Glasgow labour exchange, over 75% were 'for munition work.'<sup>2</sup> In the autumn of 1915, when Glasgow's Royal Technical College offered free training courses to encourage people into munitions work, they received between 1200 and 1300 applicants in the first week of advertising, half of whom were women.<sup>3</sup> Throughout the course of the war, upper and middle class women loudly lamented the loss of their domestic servants to munitions work, and textile manufacturers complained bitterly about the depletion of their workforce to the new munitions factories.

The primary attraction of munitions work for the majority of women was undoubtedly the opportunity it afforded them to earn very high wages. For the first time in the history of female employment, the government regulated women's wage rates, stipulating a minimum rate of 20s. per week for women engaged in munitions work. With wartime bonuses and long hours of overtime, most women earned considerably more than the minimum rate, often doubling, tripling, and even quadrupling their pitifully low, pre-war wages. In addition, the commonly held perception that munitions work could be easily learned was a further inducement for women to seek munitions employment. In early 1916, one young woman from Shawlands wrote to a local engineering firm:

I hear there are several unskilled women workers to be employed in the Munitions factories shortly to be started, and I shall be very glad if I can get employment in one of them. I do not think I would take long to understand the work. A young lady friend only took four days to learn and is now doing splendidly.<sup>4</sup>

Furthermore, munitions work was closely identified with patriotism. By making shells some women felt they were 'doing their bit' for the war effort, a view which found particular resonance among

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<sup>2</sup> Tuckwell Collection, 665I/117; Scottish Record Office [SRO], HH31/27/1/19, Glasgow's Advisory Committee on Women's War Employment.

<sup>3</sup> *Partick and Maryhill Press*, 1 Oct. 1915, p. 4; 8 Oct. 1915, p. 2.

<sup>4</sup> GUABRC, DC 96/1/42, letter from Margaret Munro to William Weir, 27 Jan. 1916.

soldiers' wives, and which newspapers and government propaganda actively fostered. For reasons both patriotic and pecuniary, tens of thousands of women on Clydeside embarked on the new wartime industry of munitions manufacturing.

The twin phenomena of women not only producing instruments of war but also invading the traditional male territories of metal and engineering work generated much public interest, and there was extensive coverage of Glasgow's new 'shell makers' in local newspapers. They regularly featured photographs of neat, smiling, bob-capped women sitting smartly in rows or standing attentively at machines, and they ran eulogistic reports of their 'enthusiasm,' 'diligence,' and 'nimble-fingered work.' For many Scottish women, however, the work was neither neat nor nimble. They often worked in ill-ventilated, poorly-lit workshops, at all hours of the day and night, enduring extremes of temperature, and carrying out dirty, heavy, dangerous and disagreeable tasks. Indeed, a distinctive characteristic of the Clydeside munitions industry was the large extent to which women were employed in heavy manual labour. The majority of the women worked on the manufacture of shell, performing almost all the processes from foundry to the finished product, which they packed in wooden crates, loaded into trolleys, pushed along miles of narrow track, and lifted onto railway carriages ready for transportation to the Ministry's stores, which were also staffed by women.

Munitions work, moreover, extended far beyond the manufacture of shell. The term 'munitions work', generally referring to the manufacture of ordnance, guns and ammunition, became a flexible term, which was constantly changing and expanding to include a wider and more diverse range of material deemed necessary for the prosecution of the war. On Clydeside, women were involved in the manufacture of aeroplanes, airships, tanks, field guns, howitzers, sea mines, torpedoes, cartridges, fuses, and shell of all sizes from small 2-pounder naval shells to massive

12.5-inch and 15-inch high explosive projectiles. They also worked on the shipyards as red leaders, furniture upholsterers, and labourers, and they formed a large part of the workforce of Glasgow's new Trench Warfare Supplies department, where they were trained 'to do a class of work which had previously only been done by male labour' in the making of bombs, grenades, gas cylinders and steel helmets.<sup>5</sup> In addition, women were a vital component in the many industries and occupations peripheral to the production of munitions. They worked in the foundries that forged the steel bars from which the shells were made; in the sawmills and box factories that constructed the wooden crates to transport the shells to the battlefield; and in the Glasgow Corporation electricity generating stations that provided the power to the new munitions factories. Women were also employed in the brick works, cement works, steel mills, boiler works, concrete factories, iron foundries, chemical works, and a multitude of other manufacturing concerns in the west of Scotland which contributed directly or indirectly to the production of war *materiel*.<sup>6</sup>

It is the purpose of this chapter to present a broad, general picture of the west of Scotland's women munitions workers. Who were they, and what kind of jobs did they do? Were they previously employed, and if so, what were their former occupations? We will examine the

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<sup>5</sup> W.R. Scott and R. Cunnison, *The Industries of the Clyde Valley during the War* (Oxford, 1934), 107-8; Public Record Office [PRO], MUN 5/364/1121.3/1, Memorandum on Scotland's War Activities, 1915-1918, appendix 3; *War Cabinet Committee on Women in Industry, Appendices, Summaries of Evidence, etc.*, Cmd. 167 (1919), 26-7.

<sup>6</sup> Sources of information on Scottish women's wartime work include: Margaret Irwin's detailed report in *War Cabinet Committee on Women in Industry, Appendices, Summaries of Evidence, etc.*, Cmd. 167 (1919), 18-34; H.E.R. Highton's reports on female labour in the Clyde district: 'Report on the Employment of Women in the Engineering and Shipbuilding Trades, Glasgow and the Clyde,' in *Labour, Finance and the War*, ed. A.W. Kirkaldy (London, 1917), 99-141; and 'Report on Engineering Industry, Clyde District,' in Barbara Drake, *Women in the Engineering Trades* (London, 1917), 113-33; SRO HH31/27/1, records of the Scottish Advisory Committee on Women's Wartime Employment. There is also valuable photographic evidence; the Imperial War Museum has a particularly rich photograph collection of Scottish women's work, a number of which are reproduced in Diana Condell and Jean Liddiard, *Working for Victory: Images of Women in the First World War, 1914-1918* (London, 1987); and Gareth Griffiths, *Women's Factory Work in World War One* (Stroud, 1991). In addition, Glasgow's picture newspaper, *The Bulletin*, which started publication in June 1915, is an excellent visual source of the wide range of work undertaken by Scottish women.

nature, range and diversity of the work they did and discuss the level of skill that they acquired. However, before we undertake a detailed study of the women workers, it is instructive first to examine the new munitions industry which mushroomed on Clydeside during the war.

### **The Munitions Industry on Clydeside: 'One Vast Seething Workshop'**<sup>7</sup>

Before the outbreak of the war, the manufacture of munitions in the Glasgow area was largely confined to the production of naval guns at Sir William Beardmore's<sup>8</sup> plants at Parkhead Forge and Dalmuir Naval Dockyards. The Clydeside area, however, with its concentration of heavy industry, numerous engineering establishments, steel and pig-iron producing plants, coal mines, and skilled labour, was ideally suited to the extensive development of munitions. In addition, there were excellent facilities in the region for the supply of explosive material as Nobel's Ardeer factory, one of the largest explosives factories in the world, was situated near Irvine, about 30 miles down the Ayrshire coast from Glasgow.<sup>9</sup> By the end of the war, a 'new industry' had been established on the Clyde, where almost every engineering establishment, ranging from massive, custom-built munitions factories to small bicycle repair shops, was contributing in some way to the production of war *materiel*.<sup>10</sup>

The output was prodigious. In early 1919, Sir Frederick Lobnitz,<sup>11</sup> the Director of Munitions in Scotland, 1917-1919, wrote a report, *Memorandum on Scotland's War Activities, 1915-1918*, for the Historical Records Branch of the Ministry of Munitions, in which he proudly

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<sup>7</sup> George A.B. Dewar, *The Great Munitions Feat, 1914-1918* (London, 1921), 140.

<sup>8</sup> **Sir William Beardmore** (1856-1936) leading Clydeside industrialist whose engineering, shipbuilding and aeronautical business ventures underwent tremendous expansion during the war, although they subsequently crumbled in the economic dislocation of the post-war era.

<sup>9</sup> GUABRC, UGD 89/4/3, *The Book of High Explosives* (s.l., 1907), 16.

<sup>10</sup> Scott and Cunnison, 93-8; see also chapters 1 and 5.

<sup>11</sup> **Sir Frederick Lobnitz** (1863-1932) chairman of Lobnitz, Engineers and Shipbuilders, Renfrew; Deputy Director of Munitions in Scotland, 1915-16, Director of Munitions, 1917-1919.



proclaimed Scotland's impressive output. Factories and foundries in Scotland produced a total of 12,000,000 shells, weighing 400,000 tons; 7,000,000 copper shell bands; 9,000 tons of rolled copper plate; 4,000,000 fuses; and 55,000,000 shell components.<sup>12</sup> In less than three years, the workers in the Scottish Filling Factory at Georgetown had filled 19,325,507 shells, and 26,842,346 cartridges; the total value of the finished ammunition handed over to the Army Ordnance Department was £66,556,053.<sup>13</sup>

Despite these impressive numbers, the munitions industry in the west of Scotland had a slow and stumbling beginning. In the first year of the war, most of the manufacturing industries on the Clyde, long renowned as an important shipbuilding centre, were busily engaged on new contracts for the Admiralty.<sup>14</sup> Beardmore's was the only Scottish armament firm that received contracts from the War Office for the supply of guns and shell.<sup>15</sup> Expectations that the war would be over by Christmas 1914 probably prevented most engineering employers on the Clyde from diversifying into an unknown line of production. The notable exception was William Weir,<sup>16</sup> who began in October 1914 to make technical inquiries about the manufacture of shells. By February 1915, he had visited the Royal Arsenal at Woolwich in London to see their methods, and was converting part of the Holm Foundry in Cathcart to shell production, writing optimistically 'we

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<sup>12</sup> PRO MUN 5/364/1121.3/1; Scott and Cunnison, 104-9.

<sup>13</sup> PRO MUN 5/364/1121.3/1, appendix 10, p. 5. According to the *Official History of the Ministry of Munitions [OHMM]*, the government's total expenditure on gun ammunition for the duration of the war was £900,000,000 (*OHMM*, 10, iii, 115).

<sup>14</sup> Scott and Cunnison, 93.

<sup>15</sup> *OHMM*, 1, i, 94; John R. Hume and Michael S. Moss, *Beardmore: the History of a Scottish Industrial Giant* (London, 1979), 105-6. The English armament manufacturers, Armstrong Whitworth, were also working on War Office contracts at their newly acquired premises in Alexandria, Dunbartonshire, where they had purchased the works of the Argyll Motor Company after it had gone into liquidation (*OHMM*, 1, ii, 13; *Times*, 5 Apr. 1915).

<sup>16</sup> **Sir William Weir** (1877-1959) chairman and managing director of G. and J. Weir Ltd. of Cathcart; Director of Munitions in Scotland, 1915-1916; Controller of Aeronautical Supplies and Director General of Aircraft Production, 1917-1918; subsequently Secretary of State for the RAF. Knighted in 1917, created a Baron in 1918, Weir received the title Viscount Weir of Eastwood in 1938.

have made very elaborate arrangements to organize the manufacture of those shells and we anticipate no delay whatsoever.’<sup>17</sup> Munitions output in Scotland during the first year of the war, however, was very sparse. The February 1915 engineers’ strike in Glasgow, which shut down both Weir’s and Beardmore’s for two weeks, further impeded production.<sup>18</sup> In addition, the Glasgow and West of Scotland Armaments Committee, formed in April 1915 under the chairmanship of Glasgow’s Lord Provost specifically to increase output, failed in its task.<sup>19</sup> It was not until the Shell Scandal of May 1915, the announcement of Lloyd George as the Minister of Munitions in the first Coalition Government, and the subsequent appointment of William Weir as the Director of Munitions in Scotland in June 1915, that the Scottish munitions industry started to take shape.

Brilliant, aggressive, dynamic, and enterprising, the scourge of trade unions, and an energetic promoter of female labour, William Weir sparked the Scottish munitions industry into action. Although the newly constituted Ministry advised him not to interfere with Beardmore’s existing armament contracts, it nevertheless gave him ‘a very free hand over the whole of Scotland.’ Operating from its headquarters at 39 Elmbank Crescent in Glasgow, the Scottish area office, under Weir’s direction, became a ‘miniature Ministry of Munitions,’ overseeing all aspects of munitions work in Scotland.<sup>20</sup> By the end of the war, the Scottish area office had expanded tremendously, reflecting the development of Scotland’s munitions industry.<sup>21</sup> Weir remained Director until January 1917, when he was called to London as Controller of Aeronautical Supplies. His successor, Frederick Lobnitz, who had held the position of assistant director during Weir’s tenure, remained in office as Scotland’s Director of Munitions until the cessation of hostilities.

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<sup>17</sup> GUABRC, DC 96/1/13; DC 96/1/39; DC 96/17/8.

<sup>18</sup> Hinton, 103-9.

<sup>19</sup> *OHMM*, 1, iii, 44, 141-8.

<sup>20</sup> *OHMM*, 2, ii, 132; PRO MUN 5/364/1121.3/2, History of Local Administration in Scotland.

<sup>21</sup> Between June 1915 and October 1918, the Edinburgh office increased its staff from 12 to 63, and the Glasgow office from 38 to 433 (PRO MUN 5/364/1121.3/1).

Although Scotland's munitions industry expanded at a great rate under the able directorship of Lobnitz, its difficult yet dynamic launch had undoubtedly been the work of Weir.<sup>22</sup>

In the summer of 1915, Weir's first priority in his position as Director of Munitions was to spearhead the development of shell production in Scotland. Within weeks of his appointment, he had contacted several large area firms to initiate an ambitious, cooperative project known as the Glasgow Shell Scheme, which proposed to provide the Ministry with a considerable number of large-sized, forged and machined shell.<sup>23</sup> Although the Ministry had initially considered building a new government-owned shell factory in the Glasgow area, Weir argued emphatically against the idea, pointing out the wisdom of expanding existing resources rather than creating new facilities. Rather than starting up a new factory, Weir insisted, the Ministry could stimulate shell production more quickly if it provided financial assistance to existing local firms to enable them to build new plant specifically for the production of shell. In his many letters and reports to the Ministry on the subject, Weir promoted Glasgow's 'very large engineering industry... wherein there exists sufficient energy, enterprise, and experience to greatly develop shell production,' pointing out that 'present producers... are in a position to go ahead and bring a plant to the producing stage much quicker than any new body of Directors appointed to initiate any new producing unit.'<sup>24</sup> Weir succeeded in swaying the Ministry and brought important contracts under the Glasgow Shell Scheme to a number of area firms, including Beardmore's, Babcock and Wilcox, Stewart and Lloyd's, the North British Locomotive Company, and to his own factory in Cathcart. Although he had resigned as managing director of his company on his appointment to the Ministry, Weir never

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<sup>22</sup> W.J. Reader, *Architect of Air Power* (London, 1968), chapter 2. Although Weir was central to the development of Scotland's munitions industry, it is doubtful if Christopher Harvie's description of him as the 'key figure' in wartime Clydeside is appropriate given that Weir spent 1917 and 1918, not in Scotland, but in London as Director of the Aeronautical Department (Christopher Harvie, *No Gods and Precious Few Heroes: Scotland, 1914-1980* [London, 1981], 17).

<sup>23</sup> *OHMM*, 2, ii, 134.

missed an opportunity to direct lucrative contracts toward his firm. His biographer points out that in May 1915, Weir handed over the profits of his shell contracts to the Red Cross, but he omits to mention that Weir's generous and patriotic gesture extended to current contracts only, and did not include the hugely profitable contracts negotiated after his Ministerial appointment.<sup>25</sup>

The Glasgow Shell Scheme operated under a system of 'assisted contracts' whereby the Ministry provided financial assistance to firms to develop munitions production. The government furnished the capital for the construction of new factories, the extension and adaptation of existing factories, and the provision of shell-making equipment. For their part, the firms managed the plant, agreed to provide a quantity of shell of a certain calibre within a specified time, and charged the Ministry a negotiated price for the finished products. When Ministry officials expressed concern that the terms of the Glasgow Shell Scheme were 'far too high', Weir coordinated the protests and position of the employers 'so that the scheme as a whole presented a united front.' Insisting that firms inexperienced in shell making needed to protect themselves against possible loss, the Glasgow employers stood their ground.<sup>26</sup> Although construction on the new shell producing plant began in the autumn of 1915, shortly after the initial negotiations, the final contracts were not signed until the spring of 1916. The lengthy process of rejecting, revising and amending contracts, schedules, and prices was an indication of the complicated and hard-headed business negotiations taking place between the Ministry and the employers.<sup>27</sup> The Ministry eventually authorized twenty assisted contracts in the Clydeside area at a cost of approximately £2,000,000 to the government.<sup>28</sup> When a Ministry official objected to a colleague about the costliness of the scheme, he was

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<sup>24</sup> GUABRC, DC 96/17/44; DC 96/17/34.

<sup>25</sup> Reader, *Architect of Air Power*, 41; *OHMM*, 1, iii, 145.

<sup>26</sup> *OHMM*, 10, ii, 136-9; 2, ii, 135-8.

<sup>27</sup> GUABRC, DC 96/17/43, *passim*.

<sup>28</sup> Scott and Cunnison, 103.

reminded that 'there is some difficulty in getting firms to undertake this work.'<sup>29</sup> The Glasgow employers were in a strong position, and they knew it.

The employers gave the Glasgow Shell Scheme a patriotic flavour by naming their new shell factories after famous battles of the war. For example, the North British Locomotive Company operated the 'Mons' and 'Marne' factories, Babcock and Wilcox ran the 'Ypres' and 'Aisne' factories, Weir's own works at Cathcart took the names 'Albert' and 'Flanders', and when Mechans erected a factory for the manufacture of bombs on the site of a skating rink belonging to Glasgow Corporation, they named it the 'Edith Cavell'.<sup>30</sup> Indeed, in their public statements, and in their dealings with trade unionists, the Glasgow employers never tired of proclaiming their purely patriotic motives for getting into the risky business of shell manufacturing. It should be borne in mind, however, that the employers, with Weir as their chief negotiator, drove very hard bargains. While berating the workers for demanding 'unpatriotic' pay rises, the employers themselves were equally guilty of wanting the maximum amount of money for meeting wartime exigencies. In Clydeside's munitions industry, huge profits ran hand in hand with patriotic motives.

Glasgow manufacturers were in a particularly strong position with the Ministry not just because of their powers of negotiation but also because of their experience as producers of heavy material. After the unsuccessful battles on the Western Front in the spring of 1915, the government realized that the Army needed enormous supplies of heavy artillery for the successful prosecution of the war. According to Lloyd George: 'It is the big gun and the big projectile that tells.... The Army is clamouring for them. They want them in order to hammer the hosts of the enemy and to destroy the barbed wire and the trenches in front of them.'<sup>31</sup> In July 1915, therefore, the Ministry

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<sup>29</sup> *OHMM*, 2, ii, 137, footnote 1.

<sup>30</sup> *OHMM*, 2, ii, 136; PRO MUN 5/364/1121.3/2, 44.

<sup>31</sup> *OHMM*, 10, iii, 21, 27.

instituted a system of National Projectile Factories (NPF) to produce large quantities of heavy shell of 6-inch calibre and over. In the case of National Projectile Factories, the word 'national' was somewhat misleading, for although the factories were government-owned, the profit motive still existed. The factories were built, equipped and operated entirely with public money, but managed by armament companies who received a fee for their services, based on a percentage of the cost of construction, as well as a commission for each shell produced.<sup>32</sup> As Dr. Christopher Addison, under secretary of the Ministry of Munitions, wryly remarked: 'the only 'national' feature of these factories... is that the Nation would find the money for them.... I don't quite see why we should find money for these people to make extra profit.'<sup>33</sup> Nevertheless, the pressing need for heavy shell drove the Ministry to give high priority to the National Projectile Factories, investing vast sums of public money in them, and pushing forward the building arrangements 'with all possible speed' as it was essential that the factories were in full productive capacity to provide shell for the 1916 campaigns.<sup>34</sup>

There was a very high proportion of National Projectile Factories in the Clydeside area. Of the fifteen National Projectile Factories built in Britain, six were located in the west of Scotland; of the nine British firms which received contracts for the factories, three were part of the Glasgow Shell Scheme: Beardmore's, Babcock and Wilcox, and Weir's. Beardmore's operated the Glasgow NPF out of three sites: Cardonald in Govan, Mile End in Bridgeton, and Moss End, adjacent to the firm's steelworks at Bellshill. Moss End forged the steel billets, which were dispatched to Cardonald for the machining of 9.2-inch shell, and to Mile End for the manufacture of 6-inch and

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<sup>32</sup> *OHMM*, 8, ii, 124-6. The cost of the National Projectile Factories was between £5,000,000 and £7,000,000 (*OHMM*, 10, iii, 10). For difficulties over the definition of 'national factory,' see *OHMM*, 8, ii, 1 (Prefatory note).

<sup>33</sup> Christopher Addison, *Four and a Half Years* (London, 1934), vol. 1, 89.

<sup>34</sup> *OHMM*, 10, iii, 10-28.

60-pounder shell. Babcock and Wilcox managed the Renfrew NPF from two sites: Aisne for the production of 60-pounder shrapnel, and Ypres for the production of 12-inch high explosive shell. Weir's managed the Cathcart NPF which produced 8-inch shell until May 1917 when the factory was converted to aeroplane manufacture shortly after Weir's appointment as Controller of Aeronautical Supplies.<sup>35</sup> Throughout 1916, the National Projectile Factories experienced difficulties in starting up production and the Ministry expressed considerable criticism when output fell far below expectation; by 1917, however, their output was 'generally regarded as satisfactory.'<sup>36</sup> For the purposes of this study, it is important to note that a distinctive feature of Clydeside's munitions industry was a high concentration of heavy shell. While women munitions workers in other industrial centres in Britain were likely to be engaged in the production of small to medium sized shell, or in small arms manufacture, their counterparts on Clydeside were more likely to be occupied on the production processes of heavy shell.

Running concurrently with the development of the Glasgow Shell Scheme and the National Projectile Factories was the construction of the Scottish Filling Factory at Georgetown. Situated on 540 acres of farmland ten miles from Glasgow and three miles from Paisley, Georgetown received from Glasgow the empty machined shell which their workers filled with explosives. In September 1915, construction began on the factory, and by early 1916, it was beginning operations, filling and assembling quick firing ammunition. In February 1916, the original plan was altered to handle the deliveries of large-sized shell from the National Projectile Factories in the area, and construction began on a second factory capable of filling shell from 4.5-inch to 9.2-inch calibre. Georgetown's original projected workforce of 4,000 quickly increased to 12,000 of whom

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<sup>35</sup> *OHMM*, 8, ii, 137, 143, 128, 133; R.J.Q. Adams, *Arms and the Wizard: Lloyd George and the Ministry of Munitions, 1915-1916* (London, 1978), 68-9.

<sup>36</sup> *OHMM*, 10, iii, 20-1, 27-9, 105; GUABRC, DC 96/17/43d.

approximately 90% were women. Of the seventeen National Filling Factories in Britain, Georgetown was the second largest in terms of staff size.<sup>37</sup> A Board of Management, appointed by Weir, supervised the administration of Georgetown, and the cost of constructing and equipping the two factories was £1,368,400. The Scottish Filling Factory was officially named Georgetown in honour of Lloyd George's visit to the site on 24 December 1915.<sup>38</sup>

We have outlined the principal features and the major players in Clydeside's munitions industry, but the picture is incomplete. There has been no mention of the many medium- and small-sized firms also busily engaged on munitions work, many of them on sub-contract work for the larger firms. After the Shell Scandal of May 1915, firms were eager to get into munitions work as shells were considered 'articles of the first importance over all else.'<sup>39</sup> In his position as Scotland's Director of Munitions, Weir received letters from numerous firms, volunteering their services and promising fast delivery, all of them clamouring for contracts. Establishments other than engineering firms also branched into shell production. The St. Andrew Golf Club Company of Glasgow converted its small business to munitions work;<sup>40</sup> Glasgow Corporation's Tramways Department transformed part of its Coplawhill Depot into a makeshift munitions factory;<sup>41</sup> and mechanics at Glasgow's Royal Technical College, when not instructing students on lathe work, were themselves operating the lathes during the night to manufacture munitions.<sup>42</sup> A visitor to wartime Clydeside remarked that the area appeared to be 'one vast seething workshop,' while Scott and Cunnison observed that: 'the whole Clyde area had become a vast machine for ministering to

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<sup>37</sup> Calculated from *OHMM*, 8, ii, chapter 5.

<sup>38</sup> *OHMM*, 8, ii, 163-5; PRO MUN 5/154/1122.3/35, Ministry of Munitions, *Official History of the Scottish Filling Factory, Georgetown* [*OHSFF*]. Lord Weir's own copy of the *Official History* is in the Glasgow City Archives.

<sup>39</sup> GUABRC, DC 96/17/28.

<sup>40</sup> PRO MUN 5/272.

<sup>41</sup> *Glasgow Herald*, 11 Sep. 1915, p. 8e.



the insatiable demand of the forces. New factories were constantly being erected and every place that could hold a lathe was “on munitions.”<sup>43</sup> It is not surprising that, with such high-pitched activity, munitions output increased rapidly. In 1916, when many new factories were starting production, there was an average of 54,000 shells produced per week in Scotland; in 1917, the figure had more than doubled to 125,000; and in 1918, till the Armistice, an average of 129,000 shells were produced in Scotland each week.<sup>44</sup>

The work of the Ministry’s stores and bonds in Scotland also reflected the huge increase in shell production. In 1916, there were 5 bonds storing and dispatching 2,400,000 shells, at a weight of 36,985 tons, and employing 598 people. In 1918, there were 18 bonds, handling 8,058,000 shells weighing 491,078 tons, and employing 1431 people.<sup>45</sup> Such rapid growth of a brand new industry was not, of course, achieved in a calm, rational manner with measured forethought and careful pre-planning. A sense of great urgency, almost chaotic at times, pervades the miscellaneous records of Scotland’s munitions industry. Working amidst unprecedented war conditions, and under tremendous government pressure to produce, Clydeside firms scrambled for contracts and responded to crises, experimenting with new methods, amending specifications, negotiating prices, wrestling with Ministry directives, and complaining about government restrictions. On top of all this they had to deal with the utilization of a brand new female labour force, and the control of an intractable male labour force, which, to Weir at least, seemed determined to disrupt production.

In summation, there are several distinctive features of the munitions industry on Clydeside: it sprang up in a short space of time, became a booming trade for the duration of the war, and

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<sup>42</sup> Strathclyde University Archives [SUA], *Roll of Honour: Sacrifice and Service in the Great War*, 12; Minutes of Governors and Committees, 1917-1919, Reports on Munitions Work, 9, 30, 51.

<sup>43</sup> Dewar, 140; Scott and Cunnison, 181.

<sup>44</sup> PRO MUN 5/364/1121.3/1, p. 3.

<sup>45</sup> PRO MUN 5/364/1121.3/1, p. 5.

produced a disproportionately large quantity of heavy shell. Unlike other industrial areas in Britain, which had established armaments industries, Scotland had very little previous experience in munitions work, thereby necessitating the creation of a brand new industry. There were excellent facilities for the large-scale production of munitions in the area: a skilled labour force; a plentiful supply of coal, iron, and steel; and engineering firms capable of being adapted to the wartime production of heavy munitions. The Ministry of Munitions found a brilliant administrator in William Weir, who forcefully steered the difficult launch of munitions production in Scotland, although his motives were not always as purely patriotic as he was wont to express. It is not our intention to undermine or devalue the achievement of Weir and the munitions industry in Scotland. The British army had a great need of munitions, especially of heavy artillery; the Clyde region had the resources to produce them; and Weir and his associates had the initiative, dynamism, confidence and resourcefulness to deliver the goods. Nevertheless, it is important to keep in mind that Weir's, Beardmore's, and other large Glasgow engineering firms made huge fortunes from the munitions industry. An additional distinctive feature, which we will now examine, is that, in order to function at full capacity, the Clydeside munitions industry relied to an enormous extent, on a very large, skilful, and hard-working female labour force.

### **Number of Women Munitions Workers**

Before the outbreak of the war, the only women in Scotland engaged in a munitions-related industry worked at Nobel's explosive factory in Ardeer, which had employed women workers since its foundation in 1873. By the turn of the century, the original workforce of 80 men and 30 women had grown to 1,100 men and 200 women, many of who worked in the 'danger area,' preparing gun

cotton, mixing nitroglycerin, and making dynamite cartridges.<sup>46</sup> A visitor described the work of the mixing house:

The runner sets the open box of the mixture down in the doorway. A girl hoists it up to a table, and flies at it with bare arms as if it contained only flour and water. She mixes it thoroughly. Then she takes a big wooden scoop, jabs it into the box, and dumps the scoopful into a box of the same size, with a brass sieve bottom. She then, as if the sieve bottom were a washing board, rubs the dynamite with all her strength against the sieve, forcing it through the small holes, a few of the girls use a leather hand-flap to rub with, but most of them prefer their bare hands. You view the process with consternation. Hitherto you have looked upon dynamite as something to be regarded politely from a safe distance, as if it were a rattlesnake. The girls handle it, however, as coolly as if it were the sand on the floor.<sup>47</sup>

In the years immediately prior to the war, Ardeer employed 596 women on a variety of tasks in the production of high explosives.<sup>48</sup> By contrast, there were very few women employed in the metal or engineering trades in the west of Scotland before the outbreak of the war.<sup>49</sup> The notable exception was Singer's factory in Clydebank, which employed 2,383 women before the war on the manufacturing of sewing machines.<sup>50</sup>

Women did, however, form a significant part of the labour force in the new munitions industry that sprang up on Clydeside during the war. The need for female labour was acute in all industrial areas of Britain during the war, but it was particularly acute in the west of Scotland where skilled workers had been heavily occupied on Admiralty contracts since the beginning of hostilities, leaving the new munitions factories to resort to female labour to a very large extent. As Lobnitz pointed out in his report, when the Glasgow Shell Scheme was designed:

It was expected that man labour would be available, it being anticipated that Admiralty work would slacken off. This assumption was found to be erroneous, as

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<sup>46</sup> GUABRC, UGD 89/4/2, T. Taylor, *Ardeer Factory: An Outline of its History, 1873-1923* (typescript, 1923), 15-27; UGD 89/4/3, *The Book of High Explosives*, 13-19, 21, 34.

<sup>47</sup> Taylor, *Ardeer Factory*, 22.

<sup>48</sup> *Report of the War Cabinet Committee on Women in Industry*, Cmd. 135 (1919), 38.

<sup>49</sup> Scott and Cunnison, 96; R.H. Campbell, *The Rise and Fall of Scottish Industry* (Edinburgh, 1980), 85, 93.

<sup>50</sup> IWM MUN 28/5.

the Admiralty ultimately required more men not fewer. The new factories accordingly had to employ chiefly women. Even for producing heavy shell, up to 15-inch inclusive, women successfully performed all the work in Scotland.<sup>51</sup>

The munitions firms relied on women workers to such an extent that their availability even determined the site of some factories. Beardmore's, for example, specifically chose Cardonald as the site of the new National Projectile Factory because the district had 'a plentiful supply of female labour by which the factory was to be run almost entirely.'<sup>52</sup>

It is difficult to quantify the women munitions workers in Glasgow and the west of Scotland. According to Scott and Cunnison, there were 18,825 women employed in munitions in October 1916; 24,523 in October 1917; and 28,087 in October 1918.<sup>53</sup> Although historians, one as recently as 1999, have regarded Scott and Cunnison's figures as authoritative, they fall far short of a realistic estimation in several respects.<sup>54</sup> First, the figures are derived from an appendix in Lobnitz's 1919 report to the Ministry which listed only the seventeen *principal* munitions plants in the west of Scotland, and omitted at least seventy other firms employing women on Ministry of Munitions contracts, which taken together, employed an additional 11,734 women.<sup>55</sup> Second, the appendix in Lobnitz's report, and the table in Scott and Cunnison's text, specifically state 'regular armament firms excluded'; the figures therefore did not include Armstrong Whitworth's works at Alexandria, which in 1915, boasted of having the 'greatest number of "war women" in Scotland.'<sup>56</sup> Third, the report excluded some of Beardmore's plants which had large female workforces: the shell shops in Parkhead Forge, which employed 3,494 women in 1918; and the Underwood works

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<sup>51</sup> PRO MUN 5/364/1121.3/1, 2.

<sup>52</sup> *OHMM*, 10, iii, 21.

<sup>53</sup> Scott and Cunnison, 98.

<sup>54</sup> Clive H. Lee, 'The Scottish Economy and the First World War,' in *Scotland and the Great War*, ed. Catriona M.M. MacDonald and E.W. McFarland (East Linton, 1999), 23.

<sup>55</sup> PRO MUN 5/364/1121.3/1, Memorandum of Scotland's War Activities, appendix 16, 'Approximate Proportion of Man and Woman Labour employed in the Principal Munitions Works in Scotland as at October, 1916, 1917, 1918.' The figure 11,734 is calculated from PRO MUN 5/272.

in Paisley, the Speedwell works in Coatbridge, and the Temple Fuse Factory at Anniesland, for which there are no figures available.<sup>57</sup> Fourth, the report referred only to contracts negotiated through the Ministry of Munitions area office in Glasgow and therefore excluded women working on contracts negotiated with other government departments.<sup>58</sup> Finally, some firms failed to submit figures to the Ministry, and other supplied faulty returns which did not enumerate male and female labour separately. Lobnitz himself reported that ‘the total number of women employed was about 100,000 in Scotland for all industries’ which contributed towards the manufacturing of munitions.<sup>59</sup> Although there were important munitions plants in Aberdeen, Dundee, Edinburgh and Falkirk, the great bulk of Scotland’s munitions were produced on Clydeside where the output was three to five times that of the rest of Scotland, depending on the type of product. Taking all these factors into account, it is reasonable to suggest that between 60,000 and 70,000 women were employed in the Clydeside munitions industry.<sup>60</sup>

There were several large concentrations of female workers on Clydeside. The largest was at Georgetown where the original workforce of 4,000 in early 1916 had tripled by the end of the war to 12,000, of whom approximately 90% were women.<sup>61</sup> There was also a vast increase in the female labour force at the Singer’s plant in Clydebank, which received over 5,000 contracts and produced over 300 million items for war production. The company’s pre-war workforce of 2,383

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<sup>56</sup> *The Bulletin*, 5 July 1915, p. 11.

<sup>57</sup> PRO MUN 5/272 for women at Parkhead. These plants may have been omitted from Lobnitz’s report because Beardmore negotiated several contracts directly with the Ministry of Munitions, and outwith the jurisdiction of the Scottish area office. It was a stated condition of Weir’s appointment that he would not interfere with Beardmore’s existing contracts (*OHMM*, 2, ii, 132).

<sup>58</sup> For example, appendix 16 states that Singer’s in Clydebank employed 6,560 women on munitions in October 1918. However, the total female workforce for Singer’s was 8,209 in 1918 (PRO MUN 5/272).

<sup>59</sup> PRO MUN 5/364/1121.3/1, Memorandum on Scotland’s War Activities, 6.

<sup>60</sup> Woollacott estimates that there were between 700,000 and 1 million women munitions workers in Britain (Woollacott, 17-19).

women more than doubled to 4,836 in 1916, and almost doubled again to 8,209 in 1918.<sup>62</sup> It is highly probable that Beardmore's far-reaching industrial empire had an even greater female labour force than Singer's. A dearth of material in the Beardmore archive prevents any solid estimation, but scattered evidence in other sources suggests a very large female workforce.<sup>63</sup> In addition, Weir's, Babcock and Wilcox, Stewart and Lloyd's, and the North British Locomotive Company all employed women in their thousands.

Another way of determining the extent of women's wartime employment is to look at the number of women employed as a percentage of the labour force in the metal and engineering industries in the west of Scotland. According to one contemporary estimate, the pre-war figure of one woman for every 43 men had risen by June 1916 to one woman for every 4.5 men.<sup>64</sup> But this figure ignores the great expansion of women into the munitions industry after June 1916, when, as we have seen, a number of new custom-built shell factories, and large additions to existing factories opened in the Glasgow area. Throughout 1917 and 1918, women formed over 60% of the almost 4,000 workforce at Cardonald NPF; between 75% and 82% of the 1400 workers at Babcock and Wilcox's 'Aisne' factory in Renfrew; and between 85% and 93% of Georgetown's 12,000 workers.<sup>65</sup> Moreover, an informal survey of national factories in Britain shows that the percentage of female labour in Scottish munitions factories was consistently higher than the

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<sup>61</sup> IWM MUN v/26-51, calculated from the Ministry of Munitions Intelligence and Record Section's monthly *Reports on Labour in Controlled Establishments*.

<sup>62</sup> IWM MUN 28/5; PRO MUN 5/272, report from Singer's to Lobnitz's office, 20 Mar. 1919.

<sup>63</sup> For the extent of Beardmore's industrial empire, see Hume and Moss, *passim*; and the *Beardmore News*, a full run of which is available in the Glasgow Room of the Mitchell Library. There are also numerous references to Beardmore's women workers in the records of the Ministry of Munitions at the PRO, in the *Official History of the Ministry of Munitions*, and in contemporary newspapers.

<sup>64</sup> Highton, in Kirkaldy, *Labour, Finance, and the War*, 100-1

<sup>65</sup> IWM MUN V/26-51, calculated from the Ministry of Munitions Intelligence and Record Section's monthly *Reports on Labour in Controlled Establishments*.

percentage in English factories.<sup>66</sup> In such a rapidly expanding, constantly changing and short-lived new industry it is impossible to state definitely the number of women munitions workers, but the available evidence strongly suggests that women formed a very large and highly significant part of Clydeside's munitions-producing labour force.

### Sources of Female Labour

Geographically, the vast majority of the women munitions workers came from the immediate Clydeside area, and a fair number came from the more remote regions of Scotland. For example, Georgetown drew its women workers mainly from Glasgow, Paisley and Greenock, but they also employed 'many workers' from the Highlands, Western Islands, and Ireland.<sup>67</sup> The wartime dislocation of trade in rural and coastal areas of Scotland forced many women to seek employment in munitions centres. For example, over 550 women from the north of Scotland who barreled fish in brine took up munitions work after the bombing of the North Sea fishing fleet.<sup>68</sup> In addition, Ministry of Munitions officials actively recruited women from the Highlands and Islands into munitions work.<sup>69</sup> The Scottish Advisory Committee of the National Relief Fund also encouraged 'able-bodied unemployed women' on the island of Lewis to take up employment in munitions factories on the mainland.<sup>70</sup> It is likely, however, that many of the Highland and Island recruits would work in the large munitions complex at Gretna on the border of Scotland and England. Nevertheless, in February 1916, there were at least 200 girls from the Highlands working in munitions factories in Glasgow, prompting some well-meaning citizens to found the Highland

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<sup>66</sup> Calculated from an overview of all national factories (*OHMM*, 8, ii).

<sup>67</sup> *OHSFF*, 145.

<sup>68</sup> *Factory Inspector's Report for 1914*, Cd. 8051 (1915), 35.

<sup>69</sup> *Oban Times*, 21 Oct. 1916, in Tuckwell Collection, 665II/120.

<sup>70</sup> GUABRC, DC 96/17/9, William Weir's correspondence file.

Girls' Club for Munitions Workers in West George Street which provided entertainment, companionship, and an opportunity to speak Gaelic.<sup>71</sup> However, the vast bulk of Clydeside's workers were residents of the immediate region. According to a 1916 inquiry of women munitions workers conducted by H.E.R. Highton for the British Association, 86.5% of the female workers surveyed came from Glasgow and suburbs, 7.7% came from the rest of Scotland, 1.3% came from Ireland, an additional 1.3% from England, and 3.2% came from overseas. Highton concluded that 'a comparatively small number of the women [were] incomers to the District.'<sup>72</sup> While the number of women participating in Highton's survey was very small, it is probable that the percentages are a fairly accurate reflection of the geographic origin of Clydeside's female munitions labour force.

### **Previous Occupations of Women Munitions Workers**

Women's work in the Glasgow area before the war was characterized by long hours, low wages and irregular work. Gender segregation of occupations was particularly marked in Glasgow because of the predominance of heavy industry which overwhelmingly employed male labour. There were few opportunities for women in the west of Scotland to acquire skilled training or to find regular waged work. According to the 1911 Census report, approximately one-third of females in Glasgow over the age of ten were active in a wide range of occupations, of which the largest were the textile and clothing industries and domestic service. The official Census figures, however, greatly underestimated the number of women in paid employment. Before the war, there was a large casual female labour market. Many women were sweated home workers in the needle trades, working up to sixteen hours a day to earn a few shillings a week. The sweated trades were mainly

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<sup>71</sup> *Glasgow Herald*, 26 Feb. 1916; 24 Mar. 1916; 7 Oct. 1916; GUABRC, UGC 21, Records of the Highland Girls' Club for Munitions Workers.

<sup>72</sup> Highton, in Kirkaldy, *Labour, Finance and the War*, 104, 131.



made up of widows, deserted wives, and married women whose husbands were sick or in irregular employment themselves. While some women did sweated work to supplement the family income by 'bringing in a few bob,' most depended on it for their livelihood.<sup>73</sup>

At the outbreak of the war, in the Clyde area, like other industrial areas in Britain, the uncertainty of the war caused a sudden contraction in women's industries, resulting in mass unemployment of female workers. Although the Scottish Council for Women's Trades (SCWT), under the leadership of Margaret Irwin, instituted a few workshops for women to learn new trades, such as toy making, the number of women finding employment in the workshops was relatively small, and made barely a dent in the large number of unemployed women in Clydeside in the winter of 1914-1915.<sup>74</sup> By early 1915, however, government contracts to supply the troops restored the female labour market, and within a few months there was even a shortage of female labour. From the spring of 1915, women began to find work in non-traditional trades, the largest of which was munitions manufacturing.

Three studies carried out at local munitions factories during the war provide information about the previous occupations and marital status of the new munitions workforce. The management at Georgetown carried out a study of 10,000 female operatives; Barr and Stroud, the scientific instrument makers at Anniesland Cross, conducted a similar study of 301 women workers; and H.E.R. Highton interviewed 156 women in three separate works.<sup>75</sup> All three studies showed that a large proportion, approximately one-third, had not been in formal paid employment

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<sup>73</sup> Gordon, *Women and the Labour Movement*, chapter 1; Alice Albert, 'Fit Work for Women: Sweated Home-workers in Glasgow c. 1875-1914,' in *The World is Ill-Divided*, ed. Eleanor Gordon and Esther Breitenbach (Edinburgh, 1990), 158-77; James H. Treble, 'The Characteristics of the Female Unskilled Labour Market and the Formation of the Female Casual Labour Market in Glasgow, 1891-1914,' *Scottish Economic and Social History* 6 (1986): 33-46.

<sup>74</sup> *Glasgow Herald*, 14 Nov. 1914, p. 10f.

<sup>75</sup> *OHSFF*, 145; GUABRC, UGD 295/26/1/14, Historical Notes Concerning Women Workers, Barr and Stroud papers; Highton, in Kirkaldy, *Labour, Finance and the War*, 102-3.

before the war. At Georgetown, over 3,000 (> 30 %); at Barr and Stroud, 83 (28 %); and in Highton's survey, 67 (43 %) of the women had not been formal wage earners prior to the war. It is highly likely therefore that these women had been part of Glasgow's large pre-war casual female labour force.

Many of the workers were married women or widows, including a large number of soldiers' wives. Employers were keen to hire working class married women with previous work experience, as they believed their familiarity with industrial conditions would allow them to adapt more successfully to the regimen of the factory. Barr and Stroud found that 'the best workers on the machines were women previously accustomed to work.'<sup>76</sup> In addition, the insufficiency of separation allowances made it necessary for many soldiers' wives to seek extra earnings. Two of the surveys showed that a small proportion were school leavers. Barr and Stroud's workforce included 12 (4 %) school leavers under the age of sixteen. Highton also noted the presence of young girls, who 'owing to the enlistment of brothers or other male relatives, have, by both the freedom from housekeeping duties and the need of augmenting the household income, entered into the labour market.'<sup>77</sup> Therefore, we can surmise that approximately one-third of the new female munitions labour force, consisting mainly of married women and a small number of school leavers, had previously not been in formal paid employment but now took up munitions work to contribute to the family income.

The remaining two-thirds of the women came from a widely varying range of jobs in which domestic servants and mill and factory workers were predominant. The Georgetown survey stated that the women had been engaged in 'over 130 different occupations,' of which the most common were:

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<sup>76</sup> GUABRC, UGD 295/26/1/14, p. 4; see also *Glasgow Herald*, 4 May 1916, p. 6g.

Domestic Servants (1064)  
 Mill workers (Hosiery, Spinning, Weaving, Woollen, Paper, etc.) (880)  
 Shop and Warehouse Assistants (822)  
 Machinists (475)  
 Printing trades (319)  
 Confectionery makers (317)  
 Engineering Labour (300)  
 Tailoresses (168)  
 General Labour (149)  
 Clerkesses (140)  
 Waitresses and Barmaids (134)  
 Boxmakers (133)  
 Dressmakers (125)

Other high-ranking occupations in the Georgetown survey included:

Actresses, Cigarette Makers, Dairymaids, Dental Assistants, French Polishers,  
 Film Repairers, Farm servants, Glass and Bottle Makers, Goldsmith Blockers,  
 Hair Factory workers, Hawkers, Milliners, Net Makers, Nurses, Postwomen,  
 Railway Porters, Skin-dressers, Teachers and Governesses, Toy-makers and  
 Typists.<sup>78</sup>

The principal occupations at Barr and Stroud's were:

Dressmakers (51)  
 Saleswomen (37)  
 Clerkesses (30)  
 Machinists (11)  
 Tailoresses (9)  
 Milliners (8)  
 Typists (7)  
 Domestic servants (5)

Barr and Stroud also employed women who had been laundry workers, book-keepers, tracers,  
 children's nurses, trained nurses, photographers, teachers, leather stitchers, dental mechanics,  
 fishing tackle makers, as well as one accountant, cashier, coverer of umbrellas, cook, design  
 copyist, watchmaker, laboratory worker, hairdresser, buttonmaker, librarian, carpet setter, school  
 teacher, domestic science teacher, feather dresser, bookfolder, art student and caterer's assistant.

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<sup>77</sup> Highton, in Kirkaldy, *Labour, Finance and the War*, 103.

<sup>78</sup> *OHSFF*, 145.

Given such a large, assorted list, which does not cover all 130 occupations in the Georgetown survey, it is highly likely that the women who took up munitions work came from almost every known female occupational category in Clydeside.

Such a massive transference of labour did not take place without raising the hackles of the district's pre-war employers of female labour. Losing their domestic staff to munitions work gave a new slant to leisured ladies' long-standing laments on 'the servant problem,' and *The Glasgow Herald* wryly observed: 'munitions are the lure which are dealing the final death blow...to the supply of maid servants.'<sup>79</sup> Of greater concern, however, was the large number of women flocking to munitions works from textile factories, many of which were engaged on Army clothing contracts. When the Liberal Member for Glasgow College questioned Lloyd George in the Commons on the depletion of women workers from the city's textile industry, the Minister's answer was to instruct munitions factories to engage their workers through the labour exchanges, rather than hiring women who applied directly to the factory office.<sup>80</sup> Although the government recommended that labour exchanges 'draw as much as possible on the unemployed, unoccupied and unessential classes,'<sup>81</sup> it was impossible to restrict the transference of labour especially when munitions firms were more interested in hiring women with previous work experience rather than those belonging to the 'unoccupied and unessential classes.' As Highton pointed out: 'where the wage attraction is so considerable on the one hand and the need for workers is so urgent on the other, the means taken could not prevent transfers in appreciable numbers taking place.'<sup>82</sup> Indeed, the wide range of pre-war occupations suggests that both workers and employers had no difficulty finding ways to circumvent the government's restrictive recommendations.

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<sup>79</sup> *Glasgow Herald*, 31 Jan. 1916, p. 9a.

<sup>80</sup> Tuckwell Collection, 6651/137; *Glasgow Herald*, 11 Dec. 1915, p. 6g.

<sup>81</sup> *OHMM*, 4, iv, 66.

Some women textile workers benefited indirectly from the lure of munitions work as the resulting shortage of labour in their trade prompted employers to offer inducements to retain their services. For example, Messrs. J and P. Coats, the large thread manufacturers in Paisley, offered their workers a war bonus in July 1915, a time when Beardmore's Underwood factory in Paisley was aggressively expanding its female workforce.<sup>83</sup> In addition, the depletion of textile labour may have placed the women in a stronger bargaining position as a number of strikes in the textile industry coincided with the expansion of munitions work. The women and girls of the Clyde Cotton Spinning Company, Bridgeton, struck for eight weeks in July and August 1915.<sup>84</sup> In addition, seventy women mantle makers struck work in October 1915; the workers at Templeton's Carpet Factory went on strike in February 1916; and 250 women and girls employed in the Scottish Cooperative Wholesale Society's shirt and underclothing factories struck in May 1916.<sup>85</sup> The workers of Templeton's and the Clyde Cotton Spinning Company were members of the Glasgow Textile Workers' Union whose feisty organizer, Bella Reilly, was active on their behalf, petitioning the Glasgow Trades Council for support, addressing the Scottish Trades Union Congress for strike funds, and keeping a close watch on the cost-cutting practices of the firms.<sup>86</sup> However, we must be careful not to exaggerate notions of 'women's empowerment' as in both disputes, the strikers returned to work pending the result of negotiations with Sir George Askwith, the Chief Industrial

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<sup>82</sup> Highton, in Kirkaldy, *Labour, Finance and the War*, 105.

<sup>83</sup> *Glasgow Herald*, 12 July 1915, p. 12g. See also William Knox and Helen Corr, "Striking women": Cotton workers and industrial unrest, c.1907-1914,' in *Roots of Red Clydeside, 1910-1914?* ed. William Kenefick and Arthur McIvor (Edinburgh, 1996), 107-128.

<sup>84</sup> *Glasgow Herald*, 1 July 1915, p. 12g; 5 July 1915, p. 7h; 28 July 1915, p. 10c; 30 July 1915, p. 10e; 3 Aug. 1915, p. 7b; Glasgow Mitchell Library [GML], Glasgow Trades Council Minutes [GTCM], 9 Jun. 1915, 4 Aug. 1915. See also the photograph of the jubilant women turning down the company's offer of 5% in *The Bulletin*, 28 July 1915, p. 9.

<sup>85</sup> GTCM, 6 Oct. 1915, 22 Dec. 1915, 15 Feb. 1916, 23 Feb. 1916; *Glasgow Herald*, 16 May 1916, p. 11e.

<sup>86</sup> GTCM, 14 Apr. 1915; *Glasgow Herald*, 5 July 1915, p. 7h; GTCM, 6 Oct. 1915.

Commissioner.<sup>87</sup> The women of the Clyde Spinning Company were subsequently dissatisfied with the Commissioner's findings and a month later, Bella Reilly reported to the Glasgow Trades Council that the firm was victimizing the women who had been on strike.<sup>88</sup> The appearance of a new, lucrative form of female employment on Clydeside created serious labour shortages in the area's clothing trades, but it did not cause textile employers to cave in to union demands, although it may have raised the confidence and assertiveness of a traditionally subordinate female workforce.

### **Women's Wartime Occupations**

The largest segment of the munitions industry to employ women was shell production. Women outnumbered men in the new custom-built shell factories which had been specially designed and equipped to produce very large quantities of shell in as short a time as possible. In Glasgow shell factories, women carried out virtually every process in the production of shell, working on all calibres, from the small 2-pounder naval shell to the massive 15-inch high explosive projectile.<sup>89</sup> Taking the 18-pounder high explosive shell as an example, the following description gives an idea of the nature, precision, and importance of the work:

The raw material comes on to the site in the form of short pieces of ...steel, 10½ in. in length and 3 5/8 in. diameter, weighing about 28 lb. These have to be finished to 9.59in. in length and 3.29in. external diameter, and bored out to 1.88in. internal diameter for a length of 8.82in.; the external part has to be nosed off and screwed at the open end and fitted with a driving band and base plug at the other end, the base of the shell being recessed and screwed to receive the latter. The

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<sup>87</sup> GTCM, 4 Aug. 1915, 15 Feb. 1916, 23 Feb. 1916.

<sup>88</sup> GTCM, 8 Sep. 1915, 22 Sep. 1915.

<sup>89</sup> Field guns, howitzers, and the shells they fired were referred to either by the weight of the shell in pounds or the diameter of the shell in inches. An 18-pounder field gun shell had a finished weight of 18.5 pounds, and a diameter of about three inches. A 4.5-inch howitzer shell had a diameter of 4.5 inches and weighed about 35 pounds. A 9.2-inch shell had a diameter of 9.2 inches and weighed 290 pounds, and a 15-inch shell, the largest projectile, had a diameter of 15 inches and weighed an astounding 1400 pounds. I am grateful to David Leeson for this information on shell types and weights.

object of the plug is to make quite sure that the base is absolutely non-porous, so that there may be no risk of the firing charge penetrating into the high explosive and causing a premature explosion in the base of the gun.<sup>90</sup>

The women worked in machine shops under the supervision of a skilled engineer who trained them to work on automatic or semi-automatic machines that had been specially designed to perform a single process in the making of shell. In his report for the British Association, Highton enumerated the series of small detailed operations that constituted shell production:

*On Shell body*

1. Cutting off open end
2. Centring
3. Rough turning
4. Transfer marks body to base
5. Rough face base leaving centre
6. Rough bore
7. Finish bore
8. Bore recess and finish face for nose
9. Bore and tap for fixing screw
10. Mill thread

*After nose fixed*

11. Finish, turn and form outside of complete shell
12. Weigh and mark excess weight
13. Groove and wave
14. Recess for base-plate
15. Rivet base-plate and skim base
16. Turn copper band

*On nose preparatory to fixing*

1. Cut off
  2. Rough bore
  3. Rough cup
  4. Finish, taper, bore, and face
  5. Turn and recess for screwing
  6. Rough form nose
- Examining in addition, and washing, polishing, and lacquering.<sup>91</sup>

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<sup>90</sup> 'The Employment of Women as Machinists,' *The Engineer*, 3 Sep. 1915.

<sup>91</sup>Highton, in Kirkaldy, *Labour, Finance and the War*, 139-140. For a detailed explanation of the subdivided tasks in shell making, see Ernest Pull, *The Munition Worker's Handbook* (London, 1916),

The simplification of the procedure through the use of automatic machinery and the subdivision of tasks enabled the operator to learn the process quickly, the period of learning varying from a few days for a simple ‘roughing’ operation to a few weeks for a delicate ‘turning’ operation.<sup>92</sup>

Not all women who worked in shell factories were machine operators. A large number worked as labourers, performing a variety of tasks. They assisted the machinists in lifting the shell in and out of the machines, carried shell from one machine or department to another, and transported miscellaneous material within the factory, pushing it in trucks or ‘bogies.’ Labourers did all the general lifting, carrying, packing, loading and unloading work of the factory, as well as cleaning and sweeping the shop and the yard. Another large category of female workers in shell factories were ‘viewers.’ As we have seen, precise measurements were vital in shell making, and at every step in the production process, women with micrometers and gauges measured and tested the shells before passing them onto the next stage of production.<sup>93</sup> Of the women employed in all National Projectile Factories in Britain, 46% were machine operators, 14% were labourers, and 13% were viewers.<sup>94</sup>

After the shell were completely machined, they went through the ‘finishing process’ in the varnish room, where women attached the shells to hoists, dipped them into vats of varnish, and baked them in drying stoves for two hours. The final destination was the bonding store, which was adjacent to the shell factory and designated private government property. Here government inspectors conducted the final scrupulous examination, their fastidiousness and frequent rejection

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chapters 7 and 12. The Glasgow Room of the Mitchell Library has an excellent set of photographs of women performing various machine operations at the North British Locomotive Works in Springburn.

<sup>92</sup> Barbara Drake, *Women in the Engineering Trades* (London, 1917), 43.

<sup>93</sup> Highton, in Kirkaldy, *Labour, Finance and the War*, 109.

<sup>94</sup> Calculated from *OHMM*, 5, ii, 101.



of work causing bitter resentment among workers and management alike.<sup>95</sup> Women predominated among Scotland's government inspectorate, constituting 88% of its 1,500-strong workforce at the beginning of 1917.<sup>96</sup> After passing the final inspection, the shells were dispatched to Georgetown for filling, thus completing the production and delivery processes of a shell factory.

Approximately 10,000 women worked on various shell and cartridge filling processes at Georgetown, the Scottish Filling Factory situated between Paisley and Greenock. Much of the work at Georgetown was unskilled and not as difficult as the work of machine operators in shell factories, but nevertheless there was the constant danger of explosion and the health risks associated with exposure to trinitrotoluene (TNT).<sup>97</sup> There were two factories at Georgetown. At Factory No. 1, the Cartridge Filling Factory, women did various light operations such as cutting and tying cordite, sewing and filling trotyl bags, and making up charges. At Factory No. 2, the Shell Filling Factory, the women did the more dangerous and heavy work of filling shells with amatol, a mixture of ammonium nitrate and TNT. At first the women filled the shell by hand-stemming and 'punching', and later by the use of purpose-built machines.<sup>98</sup> To minimize the danger of an accidental explosion causing widespread damage, each factory consisted of a large number of small, isolated, simply constructed wooden huts. The women worked in small groups of twenty to thirty in each hut or workroom, all engaged in the same process, and under the supervision of a female overlooker who was responsible for their timekeeping and output. Attached to each hut were a number of 'trolley girls' who kept the rooms supplied with material and removed the finished

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<sup>95</sup> *The Engineer*, 28 July 1916; Yates, *The Woman's Part* (New York, 1918), 22; Highton, in Kirkaldy, *Labour, Finance and the War*, 109. For vitriolic commentary of government inspectors, see *Beardmore News*, 13 Nov. 1918.

<sup>96</sup> PRO MUN 5/364/1121.3/1, Memorandum on Scotland's War Activities, appendix 15, 'The Work of the Inspection Department.'

<sup>97</sup> Antonia Ineson and Deborah Thom, 'TNT Poisoning and the Employment of Women,' in *The Social History of Occupational Health*, ed. Paul Weindling (London, 1985): 89-107.

<sup>98</sup> *OHMM*, 8, ii, 163-5.

products by loading and pushing trolleys over several miles of track which connected the buildings in Georgetown. Other female occupations at Georgetown included boxmakers, storewomen, painters, cleaners, laundry workers, and shifting house attendants.<sup>99</sup>

Shell fuzes, the small mechanisms that caused the shell to explode when it reached its target, were made in separate factories. Fuze making was much lighter than shell making, and not as hazardous as shell filling. It was considered ideal for the mass employment of female labour, as it involved the use of light machinery and the handling of small metal parts. Women performed over thirty operations in the machining, gauging and assembling of fuzes.<sup>100</sup> In the west of Scotland, there were two large fuze factories. Singer's, the sewing machine manufacturers in Clydebank, which already had extensive experience with female labour working on small, precision metal work, employed over 2,000 women in a new fuze factory, named 'Combles' following the Glasgow Shell Scheme's predilection for patriotic names.<sup>101</sup> In addition, Beardmore's had built a new factory, the Temple Fuze Factory at Anniesland Cross, where women made 'well over one million fuzes' in less than three years.<sup>102</sup> From the rough turning of raw steel bars to the delicate assembling of small metal parts, women in the west of Scotland were closely involved at all stages in the production of shell.

Scottish iron and steel works, which manufactured the raw steel bars from which the shell were machined, employed women on a number of heavy, dirty labouring jobs. At David Colville and Sons' Dalzell Steel and Iron Works in Motherwell, women cleaned and coated steel ingot moulds, and handled some of the waste material, emptying ash from railway wagons, and working

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<sup>99</sup> OHSFF, 47-9, 132, 148-50.

<sup>100</sup> Yates, *The Woman's Part*, 23-5; 'An Extemporized Munition Factory, No. II, Fuse Manufacture,' *The Engineer*, 19 Apr. 1918.

<sup>101</sup> PRO MUN 2/28, 10 Mar. 1917, p. 26; IWM MUN 28/5.

<sup>102</sup> *Beardmore News*, 6 Apr. 1918; 11 Dec. 1918, p. 4.

among the hot slag containers into which the waste slag was poured. They also handled cold steel bars, cutting them into lengths with a circular saw, and loading and unloading them onto trolleys that were so heavy it required three women to push them.<sup>103</sup> At Beardmore's Moss End NPF, which supplied the raw steel billets to Cardonald and Mile End NPF's, women also worked with heavy steel bars, cutting them into billets of 21 pounds, 43 pounds, and 56 pounds, and loading them into lorries, which, in the emphatic opinion of John Hodge, the future Minister of Labour, 'was not, and never had been, in his 45 years' experience, the work of either boys or women.'<sup>104</sup>

Very few iron and steel works employed women on forge and furnace work, which most observers considered 'too heavy and unsuitable for women.' Indeed, the authors of a British Association investigation into women's wartime labour eliminated iron and steel manufacture from their study because they found only 'rare cases' of women working in smelting, heavy iron founding and forging.<sup>105</sup> Fragmentary evidence reveals that Scottish women were among those 'rare cases.' Stewart and Lloyd's Tube Works employed women 'at an annealing furnace in rolling hot locomotive boiler tubes,'<sup>106</sup> and at Beardmore's Moss End NPF, 'women were employed on forging from the start.'<sup>107</sup> Moss End was the first steel works in Britain to employ women as 'tongers,' a physically demanding job where women, using tongs suspended from overhead wires, pulled white hot, molten billets out of the furnace and carried them over to the presses where they were

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<sup>103</sup> *War Cabinet Committee on Women in Industry, Appendices, Summaries of Evidence etc.*, Cmd. 167 (1919), 47-8; *The Bulletin*, 25 Sep. 1918, p. 4; Gertrude Tuckwell Collection, 665III/51. Some of the *Bulletin* photographs are reproduced in Griffiths, *Women's Factory Work in World War One*, 60-3.

<sup>104</sup> *OHMM*, 5, ii, 188.

<sup>105</sup> Kirkaldy, *British Labour, 1914-1921* (London, 1921), 20, 10. The authors included an example 'of women feeding a forge in Glasgow' where 'six women were doing the work of one man.'

<sup>106</sup> PRO MUN 2/28, 6 Oct. 1917.

<sup>107</sup> *OHMM*, 8, ii, 137. Beardmore's also employed women in the Smelting Shop at Parkhead Forge (*Beardmore News*, 13 Nov. 1918, p. 7).

hollowed, and lengthened to the required size.<sup>108</sup> The National Federation of Women Workers (NFWW), agitating on behalf of Beardmore's women furnace workers, demanded adequate compensation for their onerous work, and took the case to industrial arbitration where they gained a 2s. per week increase for the women.<sup>109</sup>

Scottish iron foundries had employed women on light tasks before the war, but greatly expanded the range of female work and the number of female workers during the war. For example, at a 'heavier class' iron foundry in Falkirk, over half of the workers were women, engaged in core-making and moulding, as well as 'dressing, inspecting, drilling, turning, screwing, and assembling' the iron mouldings.<sup>110</sup>

Women were also employed in general engineering works on a wide variety of tasks, although not to the large extent that they were employed in shell factories. For example, while women comprised over 60 % of the labour force at Cardonald NPF, they formed 15% of the labour force at Andrew Barclay and Sons, Locomotive Engineers, Kilmarnock, and only 10% at Dick Kerr and Company's Engineering Works, also in Kilmarnock. There were other differences. In shell factories, women were grouped together in one shop under the supervision of a skilled workman or foreman, whereas in general engineering works, women tended to be distributed in small numbers in various shops and departments throughout the works. The women at Andrew Barclay's performed various jobs in the pattern, paint, boiler, machine, erecting, brass finishing, and iron finishing shops, as well as doing light moulding and light core making in the foundry.<sup>111</sup>

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<sup>108</sup> PRO MUN 2/28, 20 Jan. 1917, p. 6. For a fuller description of the process, see 'Inside a National Projectile Factory,' *The Engineer*, 21 July 1916.

<sup>109</sup> *The Woman Worker*, May 1918; PP 1919, xiii, 391, (185), *Twelfth Report of the Arbitration and Conciliation Board*, 765; *OHMM*, 5, ii, 186, note 1.

<sup>110</sup> *War Cabinet Committee on Women in Industry, Appendices, Summaries of Evidence, etc* Cmd. 167 (1919), 50.

<sup>111</sup> *War Cabinet Committee on Women in Industry, Appendices, Summaries of Evidence etc.*, Cmd. 167(1919), 28-31.

Beardmore's Parkhead Works employed women 'to a very considerable extent' in the production and inspection of guns and gun carriages, carrying out 'accurate work' on 18-pounder field guns, 8-inch howitzer gun-carriages, and 6-inch and 8-inch howitzer parts.<sup>112</sup> In general engineering shops, women's work was less repetitive in nature than their work in shell factories, and, according to a confidential report of the Ministry, they 'were found to develop rapidly into efficient workers on processes within their physical powers.'<sup>113</sup>

Shipyard work was known as 'one of the hardest and roughest occupations in any branch of industry,' requiring a high degree of physical strength and stamina.<sup>114</sup> Nevertheless, women were employed in some of the famous Clyde shipyards, including Yarrow's in Scotstoun, John Brown's in Clydebank, Beardmore's in Dalmuir, and Fairfield's and Harland and Woolf in Govan.<sup>115</sup>

Women rarely worked on the actual ships, although a few functioned as riveters' assistants, heating and conveying the rivets to the men, which traditionally had been the work of apprentices. Women were more likely to be in the engineering section of the shipyards, working on machines, or doing bench work with hammers, chisels and files. At Harland and Woolf, they did mainly unskilled work such as helping in the sheet iron and tinsmith shops, although some also worked on machines, and in driving overhead electrical cranes.<sup>116</sup> At John Brown's, 110 women worked in the shipyard, and 270 in the engine department, many working on engraving machines in the brass finishing shop.<sup>117</sup> Beardmore's also employed a large number of women in the engine department at Dalmuir, one observer remarking that 'dressmakers and milliners...had become brass finishers, machinists, and

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<sup>112</sup> PRO MUN 2/27, 16 Dec. 1916, 6.

<sup>113</sup> Kirkaldy, *British Labour*, 27; PRO MUN 2/27, 26 Feb. 1916.

<sup>114</sup> Tuckwell Collection, 664eII/46.

<sup>115</sup> IWM MUN 35.2/4. The IWM Women at War Photograph Collection has photographs of women at the Govan yard of Harland and Woolf (v.110, Q110078-81), one of which is included in Condell, *Working for Victory*, 95.

<sup>116</sup> IWM MUN 35.1/2.

<sup>117</sup> IWM MUN 35.2/2.

gaugers, acquiring speedily the ability to work with the accuracy demanded by engineering today.'<sup>118</sup> Women also worked as assistants to the plumbers, electricians and joiners in the yards, and were extensively employed on red-leading and French polishing. Moreover, in the shipyards, as in all areas of industry, women did much of the cleaning, sweeping, and general labouring. According to one report: 'All over the shipyard they may be seen tidying up, shifting scrap iron, carrying baulks of timber, pieces of angle iron and iron bars. Girls unpack the huge cases of machine parts and gear, and frequently do the more arduous work of unloading bars of iron from railway wagons.'<sup>119</sup>

There was a rapid development of the aircraft industry during the war as the military possibilities of aeroplanes became apparent. The high demand for aircraft propelled what had been before the war a small experimental venture, into an industry of mass production during the war. As Barbara Drake noted about the aircraft industry in 1918: 'One hundred women are employed today on standardized parts, where one man was employed yesterday on experiments.'<sup>120</sup> The Clyde area was an important centre of aircraft production during the war, largely due to Weir's initiative and his position as Director of Aeronautical Supplies from January 1917. At least nine Clydeside engineering firms, which had no previous experience in aircraft manufacture, received contracts from the Ministry, of which Weir's was the largest. In May 1917, Weir's 'Albert' factory transferred from shell to aircraft production, and, in the eighteen months remaining of the war, it assembled 1,427 aircraft and employed two thousand women. At a time when airplanes were made of 'wood, wire and fabric,' much of women's work involved woodworking, welding,

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<sup>118</sup> *Beardmore News*, 26 Feb. 1918, p. 7. See also Ian Johnston, *Beardmore Built: the Rise and Fall of a Clydeside Shipyard* (Clydebank, 1993), 80-1.

<sup>119</sup> Quoted in *Beardmore News*, 10 July 1918.

<sup>120</sup> Barbara Drake, *Women in Engineering*, 65.

and treating the cloth wings of aeroplanes by applying coats of varnish to make them waterproof.<sup>121</sup> This process, known as ‘doping,’ was highly toxic as the varnish contained tetrachlorethane which caused serious health problems and even death until the government intervened to eliminate the toxic chemical and to modify the process.<sup>122</sup>

In the field of aviation, Beardmore was again on the cutting edge. In 1913, the company had begun construction of aero-engines at Arrol - Johnston’s in Dumfries, a Beardmore subsidiary, and at the outbreak of the war, Beardmore’s was among the first to receive contracts to build aircraft. Furthermore, in September 1915, when the government, with an anxious eye on German zeppelins, awarded contracts to three British firms to build rigid airships, Beardmore’s was one of the firms. In January 1916, construction began at Inchinnan in Renfrewshire on a massive airship shed, measuring 720-feet long by 150-feet wide and 100-feet high, in which three airships, the R24, R27, and R34 were built over a period of five years.<sup>123</sup> Beardmore’s employed women in the manufacture of aero-engines, aircraft frames, and in very large numbers in the construction of the new airships. For example, with the exception of a foreman and two male labourers, all of the employees in the rigid airship gasbag shop were women who scraped, cleaned and treated oxen skins that were used to line the gasbags fitted inside the framework of the airship. As it required 500,000 oxen skins to supply the lining for one airship, the number of women employed in this process must have been very large.<sup>124</sup> Sir William himself was particularly keen on the construction of rigid airships, considering it ‘the most interesting and important’ of all his many business

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<sup>121</sup> J.D. Gillies, and J. Wood, *Aviation in Scotland* (Glasgow, 1966), chapter 6; W.J. Reader, *The Weir Group: a Centenary History* (London, 1971), 76-9; *OHMM*, 5, ii, 89-94; 8, ii, 128; see also photographs of women assembling aircraft in *The Weir Group*, and in *The Bulletin*, 9 Aug. 1918, p. 1.

<sup>122</sup> Kirkaldy, *Labour, Finance and the War*, 128; *The Workers’ Dreadnought*, 15 July 1916, p. 511. The health risks associated with munitions work will be discussed in chapter 4.

<sup>123</sup> Gillies and Wood, 39-46; *Beardmore News*, 14 May 1919, p. 4.

<sup>124</sup> *PRO MUN 2/28*, 10 May 1917; *The Bulletin*, 19 Feb. 1919.

interests and enterprises.<sup>125</sup> Airship construction was also one of the few areas which continued to employ women after the war, although for a short time only as Inchinnan was closed in 1921 following the collapse of the airship industry.<sup>126</sup>

### **From Very Heavy to Highly Skilled**

Although Lloyd George had envisioned them performing 'light work which requires neither strength nor skill,'<sup>127</sup> Scottish women performed a broad spectrum of munitions work, ranging from highly skilled tasks to heavy manual labour. Indeed, a distinctive characteristic of women's munitions work on Clydeside was the extraordinary extent to which they were involved in strenuous work. The abeyance of the Factory Acts at the beginning of the war had removed legal restrictions on employers, and allowed them to put women on tasks which stretched them to the limit, and often beyond the limit, of their physical endurance. Although factories installed devices to assist the women, providing hoists to lift the shells into the machines, and magnetic chucks to hold them in place, the women often found the devices too awkward and cumbersome, and preferred to attempt the work themselves, which led to a high incidence of injury and accident.

The previous description of the principal occupational categories of Clydeside's wartime women gives a number of examples of women engaged in very heavy work, and there are numerous other references to the heavy physical labour undertaken by the women. As early as June 1916, William Weir was writing: 'unlike most districts and factories producing heavy shell, the Glasgow factories are employing female labour on all classes of shell up to 15-inch,' and a British Association survey noted several cases of Glasgow women doing 'exceptionally heavy work', some

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<sup>125</sup> *Beardmore News*, 14 May 1919, p. 4; 11 June 1919, p. 1.

<sup>126</sup> *The Bulletin*, 19 Feb. 1919; Gillies and Wood, 48.

<sup>127</sup> *Glasgow Herald*, 27 Dec. 1915, p. 4g.



of them handling up to nine tons daily.<sup>128</sup> Highton's report also contained many examples of Clydeside women doing strenuous manual labour. According to his report, one woman: 'rough-turned 100 shells, each weighting 32 lb., in a shift of 10 hours. In addition to lifting this weight in and out of the machine every six minutes, there was the heavy labour of tightening up the chuck which grips the shell.' Women packers also performed heavy work. Highton estimated that two packers working together 'gave 200 lifts up and 200 lifts down of boxes of shells weighing about 120 lb., between the floor and a table about 2ft. 6in. in height, during a day of 8 ¾ hours.'<sup>129</sup> Dr. Elizabeth Butler, the Medical Superintendent of Georgetown, described a similar situation at the Filling Factory, where girls worked in a room 'stacking boxes of shells up to the roof....Two girls stand on the platform and hoist them up to another lot beyond. Each box weighs 110 lbs. There are four filled 18-pounder shells in each box. Two girls swing a box of 110 lbs. up about 3 ½ feet or 4 feet.'<sup>130</sup> Indeed, the only limitation on women's labour at Georgetown was in carrying 'very heavy stores...over the weight of 112 lbs. where it was necessary to employ a man.'<sup>131</sup>

Throughout the course of the war, as the army conscripted more men, and as the munitions industry expanded, women increasingly did heavier work. Take for example, Babcock and Wilcox's 'Ypres' factory, which manufactured 9.2-inch high explosive shells weighing 290 pounds, where the relative proportion of women in the factory increased while that of the men diminished. In November 1916, no women were employed at 'Ypres', and by March 1917, they formed only 3.6% of the labour force. However, by January 1918, the percentage of women had

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<sup>128</sup> PRO MUN 5/364/1121.3/1, Memorandum on Scotland's War Activities, appendix 1, p. 6; Kirkaldy, *Industry and Finance* (1920), 50. According to Highton, women were not employed on 15-inch projectiles until August 1917 (Drake, *Women in Engineering*, 119).

<sup>129</sup>Highton, in Kirkaldy, *Labour, Finance and the War*, 107.

<sup>130</sup> PRO MUN 5/87/342/17, evidence of Dr. E. Butler to the War Cabinet Committee on Women in Industry, Physical Sub-Committee, 24 Oct. 1918, p. J5.

<sup>131</sup> PRO MUN 5/364/1121.3/1, Memorandum on Scotland's War Activities, appendix 10, p. 5.

risen to 27%, and by September 1918, to 52%.<sup>132</sup> While Ypres had started production using only male labour, by the end of the war, over half of its workforce were women. Adelaide Anderson, the chief lady inspector of factories, noted a 'very striking change' during 1917 and 1918 as women were put on 'many of the heavier processes... which were in our view too heavy.'<sup>133</sup> Certainly, the popular image of women munitions workers as neat, bob-capped females nimble-fingeredly performing delicate but dull operations did not apply in the Glasgow area where women shouldered a great deal of the burden of producing Scotland's prodigious munitions output.

What can account for the exceptionally heavy nature of the work performed by Clydeside's women munitions workers? We have already noted that the Clydeside munitions industry produced a disproportionately large quantity of heavy shell, and that a large part of the male workforce was already occupied on war work, especially Admiralty contracts, before the inauguration of the Glasgow Shell Scheme. It was therefore necessary to make extensive use of female labour to staff the new factories which had contracted to make heavy calibre shell.

Moreover, there was a tradition in Scotland of women doing heavy manual labour. Before the war, Scottish women were involved in two areas of heavy physical labour. Tom Devine has noted that a distinctive feature of the Scottish agricultural labour force in the nineteenth century was the widespread employment of women on strenuous work as farm servants where they 'carried out virtually every task on the farm' except the management of horses.<sup>134</sup> Another area of very

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<sup>132</sup> Calculated from IWM MUN V, Ministry of Munitions, Intelligence and Record Section, *Report on Labour in Controlled Establishments*, V/26, Nov. 1916; V/33, Apr. 1917; V/43, Jan. 1918; V/51, Oct. 1918.

<sup>133</sup> PRO MUN 5/88/342/17, evidence of Anderson to the Physical Sub-Committee of the War Cabinet Committee on Women in Industry, 21 Nov. 1918. See also *Forward*, 28 Sept. 1918.

<sup>134</sup> T.M. Devine, 'Women Workers, 1850-1914,' in *Farm Servants and Labour in Lowland Scotland, 1770-1914*, ed. T.M. Devine (Edinburgh, 1984), 98-123; see also Ian MacDougall, *Hard Work, ye Ken* (Edinburgh, 1996). Kirkaldy also talked about Scottish women 'doing really heavy labouring... Most of them are women who have long been accustomed to the heavy work of agriculture and fishing' (Kirkaldy, *Labour, Finance and the War*, 76-7).

heavy work undertaken by Scottish women was pit head work in coal mines. Before the war, approximately 6,000 women in Britain worked as ‘pit brow lasses,’ sorting the coal and separating it from the dirt, shale and stone. Of the 6,000 women, almost half (2684) were Scottish women from a number of coal districts throughout the country.<sup>135</sup> Dirty, heavy, exhausting work was a daily part of life for many Scottish women, and it may be argued that there were cultural expectations in Scotland that women were sturdy creatures who could and would perform hard physical manual labour.

While we are able to measure the heavy work of Scottish women by the weight of the boxes they lifted and the size of the steel bars that they cut, it is much more difficult to state with certainty the level of skill that the women acquired. Skill is a slippery concept, impossible to measure and difficult to assess. Historians have argued that skill is a social construction that reflects a worker’s power to get his job classified as ‘skilled’ rather than his ability to perform exclusively a certain body of work. During the war, women were able to undertake part of the work of skilled men because of the introduction of new, simplified, automatic machinery and the intensified sub-division of tasks, each of which was checked and gauged upon completion. Under these circumstances, it is difficult to know what degree of ‘skill’ the women acquired. According to Charles More, women did not do the complete work of a skilled man; they were able to work on machines in engineering workshops because of the radical changes in methods of production.<sup>136</sup>

During the war, commentators engaged in considerable argument about the ‘skill’ of the new female workforce. It seemed that almost everyone, from the writers in the professional journal *The Engineer* to the journalists of popular newspapers, had a strong opinion on ‘women in

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<sup>135</sup> Tuckwell Collection, 623/19, 623/21; *Glasgow Herald*, 10 Aug. 1911; Angela John, *By the Sweat of their Brow: Women Workers at Victorian Coal Mines* (London, 1980), 224-31.

<sup>136</sup> Charles More, *Skill and the English Working Class, 1870-1914* (London, 1980), 28-31.

engineering.’ On one side of the argument were those who heaped lavish praise on the women, marveling at their enormous output, remarking on their ‘special aptitude’ for machine work, and favourably comparing their output and productivity to that of the skilled men. While the *Glasgow Record* loudly trumpeted headlines such as: WOMEN AND GIRLS AS SHELL-MAKERS. OUTPUT DOUBLE THAT OF THE MEN, a special correspondent from *The Scotsman* made similar, but more sedate, observations:

I saw a girl doing a particular operation on a lathe which had been previously worked by a skilled man; she was turning 150 per shift against his 30. The champion of the factory is a girl who is machining the copper bands on shells; her ‘record’ is 1,014 in a 10-hour shift, or, say, 101 per hour. And each shell has to be lifted into position and lifted out again. The weight raised in an hour can be easily calculated. These are Scottish girls.<sup>137</sup>

There were others, however, who curtly dismissed the notion of women having a special aptitude for machine work, claiming that the public was being misled by the extravagant claims of some writers, and pointing out that the notion of women learning to become engineers in a matter of weeks was ‘ridiculous.’ Rather, they credited the impressive output of the new shell factories to the design of the machinery rather than to the aptitude of the women: ‘The success of female labour in the factories indubitably springs from the skill of those who have designed and made the machines,’ opined one writer in *The Engineer*.<sup>138</sup> They pointed out that women were adept on one simplified machine only, and that they performed the same operation day in and day out, which they considered ‘perfect for dull repetitive female labour’.<sup>139</sup>

Shell factories did make extensive use of automatic machinery and methods of mass production, but we should not dismiss the job of a machine operator as dull, mindless work which

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<sup>137</sup>*Glasgow Record*, 15 Nov. 1915; *The Times*, 15 Nov. 1915; Tuckwell Collection, 6651/108.

<sup>138</sup>‘A National Projectile Factory,’ *The Engineer*, 21 July 1916.

<sup>139</sup>See, for example, the intense debate on the extent of women’s skill and the nature of the new machines at the Mechanical Institute of Engineers (*The Engineer*, 22 Mar. 1918).

could be easily learned in a few days. The argument can, however, become somewhat academic, and it is enlightening to return to the women on the shop floor to bring some perspective to the issue. As illustrated by Jeanie Riley in a letter to her husband describing an accident to a fellow worker, it took a great deal of nerve to work on one of the large, imposing, albeit 'simplified', machines:

...she lost her finger in the work tonight at 5 o'clock and was taken to the Western Infirmary she saw it lying on her machine they tried to tell her it was not off ... .  
If I am offered a machine I will refuse it for I see enough.<sup>140</sup>

To some observers, the work may have been dull, simple, repetitive, and monotonous, but to women who had never been inside an engineering workshop in their lives, it took no small degree of care, concentration, and courage to become a machine operator in a munitions factory.

Just as women's work became increasingly heavier as the war progressed, so their skill level increased as they gained experience and became more familiar with their machines. According to Kirkaldy: 'supervision by skilled men became less necessary and in some cases the women, having become competent in the particular processes which they were doing, learned to set their own tools.'<sup>141</sup> Moreover, some women did what was indisputably skilled work. For example, shipyards, steel mills, and munitions factories all employed women as overhead crane drivers, a job which demanded 'the greatest steadiness and care, and a large amount of nerve as the lives of others depend on their every movement.'<sup>142</sup> Women also did 'highly skilled' work at Barr and Stroud, the scientific instrument makers, where after a training period of four months, they

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<sup>140</sup> Letter dated 4 May 1916, courtesy of the People's Palace Museum, Glasgow. In academic discussions on 'skill,' it is important for historians to bear in mind that First World War machines did not come equipped with present day safety features.

<sup>141</sup> Kirkaldy, *British Labour, 1914-1921*, 22; Drake, *Women in Engineering*, 43.

<sup>142</sup> *Beardmore News*, 10 July 1918.

performed a number of delicate processes in the Rangefinder Adjusting and Optical Mounting departments.<sup>143</sup>

Another indication that Scottish women did acquire a degree of skill was the presence of female 'flying squads' in some Glasgow munitions factories. 'Flying squads' were groups of twenty to twenty-five women who were trained to perform every operation in the production of shell, and who could be dispatched to any part of the factory when needed. Women on flying squads were paid a higher time rate than women who were single-machine operators. Although there are reports of female flying squads in a few English cities, the idea seems to have originated in Glasgow; according to Scott and Cunnison, they were 'adopted in Glasgow earlier than elsewhere.'<sup>144</sup> There is, however, some doubt about the popularity of 'flying squads' among the women workers. Mavor and Coulson, a Glasgow engineering firm which employed 500 women as shell workers, 100 women as trolley workers, and twenty-five women on a flying squad, complained about the difficulties in persuading women to join the flying squad.<sup>145</sup> It is likely that the women's reluctance was due to wages as their piece work earnings on one machine would probably have been higher than the increased time rate they received as a member of the squad. Nevertheless, the presence of flying squads in Glasgow is evidence that some women acquired the flexibility to work on several machines and that they were not simply confined to one machine performing the same 'dull, monotonous, repetitive processes.'

Finally, and most persuasively, we know that some Scottish women did attain a degree of skill because they took training courses in skilled processes, including oxy-acetylene welding, at the

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<sup>143</sup> Kirkaldy, *Labour, Finance and the War*, 108; GUABRC, UGD 295/26/1/14; see also photographs in IWM Photograph Collection, v. 110, 109914-23, and in GUABRC UGD 295.

<sup>144</sup> Scott and Cunnison, 100.

<sup>145</sup> *War Cabinet Committee on Women in Industry, Appendices, Summaries of Evidence etc.*, Cmd. 167 (1919), 26-7.

Royal Technical College in Glasgow. In October 1915, the College had initially offered courses on simple lathe operations at the instigation of the Ministry of Munitions which wanted to encourage both men and women into munitions work. The early training courses, which lasted fourteen days and included instruction from the College's staff mechanics, were free to students who were required to sign a declaration promising to work at a controlled establishment for at least three months. The courses were very popular, attracting several hundred applicants in the first few hours of advertising, and although a shortage of lathes limited the class size to forty students at a time, the College issued 611 certificates in turning between October 1915 and August 1916.<sup>146</sup> Weir's advisory board of management noted that, 'owing to the extraordinary demand for female labour,' the trained women were 'getting jobs as fast as they are turned out.' In addition, some students completed the courses so successfully that they underwent further training to become instructors themselves.<sup>147</sup>

As the war progressed, the process of 'combing out' young men considered fit for military service from industrial jobs was more drastically applied, and the need for women who were capable of performing skilled operations became more urgent. The College introduced advanced, six-week courses to train women as fitters, turners, machinists and oxy-acetylene welders on 'modern machine tools' which the Ministry of Munitions had provided to the College.<sup>148</sup> Women who exhibited the potential to do more complicated machine work were selected by their employers to take the advanced training programs and their wages were paid during the training period. Twelve students at a time enrolled in the oxy-acetylene welding class, and between May and July

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<sup>146</sup> SUA, Royal Technical College, Glasgow, Minutes of Governors and Committees, 1915-1916, [RTCM], 13 Sept. 1915, p. 48; 'Report on Munition Work,' 14 Sept. 1916, p. 90; *Glasgow Herald*, 31 Oct. 1916, p. 4e.

<sup>147</sup> GUABRC, DC 96/17/43, Minutes of the Board of Management for Glasgow and the West of Scotland, Jun. 1916, 29 Nov. 1915.

1916 alone, sixty-six students had successfully completed the course. The minutes of the College recorded that: 'a considerable degree of skill has been attained by most of the selected workers...[and] in the use of hand tools some of the women have become surprisingly expert.'<sup>149</sup> Some young Scottish women even traveled to London colleges to take specialised training courses. According to a confidential Ministry report of July 1917, 'a good many women from Scotland are still being accepted for instruction in England. The Scottish Education Department has recently recommended fifteen candidates.'<sup>150</sup>

Some Scottish women, therefore, did attain a degree of skill, becoming proficient on a number of specialized engineering processes. It is ludicrous to claim that, after a six-week training course and a few months in a munitions factory, women could do the same work as a skilled engineer who had undergone a seven-year apprenticeship. Equally, it would be misleading to suggest that women's ability to acquire proficiency at machine work was entirely due to the modification and simplification of machines. Women demonstrated that they had the capacity to learn advanced machine work, and that, given similar circumstances and the same training as the men, women had the ability to become skilled engineers.

It is unclear why Scottish women would go to London for advanced training. Perhaps they were being trained on specialised machines which were not available at Glasgow's Royal Technical College, or perhaps there was a wider, more cultural-based reason, as suggested by another confidential Ministry report:

Scotswomen have shown great aptitude for munition work and are much in request by firms as they are particularly steady and intelligent workers. It is considered

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<sup>148</sup> *Glasgow Herald*, 31 Oct. 1916; SUA, RTCM, 14 Sept. 1916, p. 90; *OHMM*, 4, iv, 71; photograph, Tuckwell collection, 665II/12.

<sup>149</sup> SUA, RTCM, 14 Sept. 1916, p. 90; 'Report on Munition Work', 12 Feb. 1917, p. 9; *Sacrifice and Service in the Great War*, p. 12.

<sup>150</sup> PRO MUN 2/28, 7 July 1917, p. 8; see also report 17 Feb. 1917, p. 9.



that part of their success may be due to the excellent education available for all classes in Scotland.<sup>151</sup>

Is there any justification in this statement that Scottish women were particularly well suited to munitions work? Other confidential Ministry documents record similar appreciation of Scottish women's work. In June 1916, Weir's advisory board of management, on a tour of the new factories, were particularly impressed by the work of the women, and Lobnitz's official report to the Ministry contains a number of references to the capability and high productivity of the women workers.<sup>152</sup> It is important to note that such comments were made in confidential Ministry reports which were not intended for public consumption and therefore are quite distinct from the overly extravagant praise that was frequently heaped on the women in the public press, usually for the purpose of boosting public morale or encouraging more women into munitions work. In a circular to department heads asking for a statement of progress, Dr. Addison insisted that he wanted an honest account and not 'a sort of window-dressing performance.'<sup>153</sup> We can therefore assume that Ministry officials who had visited the factories were genuinely impressed by the work of the women.

But is there any substance in the Ministry's opinion that the women were specially suited to munitions work by reason of 'the excellent education available for all classes in Scotland'? Scott and Cunnison, in their informed survey of Clydeside's wartime industries, made a similar assessment: 'Probably the combination of good education with the habit of hard physical work, which was found to lead to the best result in the training for munitions work, accounted for the relatively good adaptability of the Scottish women.'<sup>154</sup> Historian Helen Corr has questioned the

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<sup>151</sup> PRO MUN 2/28, 30 Jun. 1917.

<sup>152</sup> GUABRC, DC 96/17/43, Jun. 1916; PRO MUN 5/364/1121.3/1.

<sup>153</sup> GUABRC, DC 96/17/48.

<sup>154</sup> Scott and Cunnison, 100.

egalitarianism and distinctiveness of Scottish education and its reputed superiority over the English system.<sup>155</sup> Although Corr noted an emphasis on domestic education for girls in Scottish schools, some would also have received a grounding in academic subjects, especially mathematics, which would qualify them for advanced training in technical subjects. Higher education was an important factor enabling women to acquire skill in a very short time, as they would need to be able to carry out precise measurements and complex calculations. Certainly, to gain an understanding of *The Munition Workers Handbook*, a small, pocket-sized reference book specifically designed for munitions women, one would require a very sound grasp of the principles of higher mathematics.<sup>156</sup> Although we have to be cautious in the use of national stereotypes, there may nevertheless be an element of truth in the notion that sturdy constitutions and higher education were factors in allowing Scottish women to perform work which was both very heavy and highly skilled.

The west of Scotland, renowned for its shipbuilding and heavy engineering, became during the war an important centre for the delivery of munitions to the British army. The Clydeside munitions industry, which had been almost non-existent before the war, expanded enormously during the war to produce all manner of weapons and devices necessary for the prosecution of the war. William Weir spearheaded the development of Glasgow's burgeoning munitions industry by masterminding the Glasgow Shell Scheme, and his dynamism and resourcefulness were essential elements in Clydeside's new munitions industry. However, its productivity would not have been so impressive without the labour of tens of thousand of Scottish women who donned khaki uniforms and trudged to work in the new factories, foundries and steel mills. While the majority of the women worked on the manufacture of shells, many worked in other areas of industry producing

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<sup>155</sup> Helen Corr, 'An Exploration into Scottish Education,' in *People and Society in Scotland, 1830-1914*, ed. W. Hamish Fraser and R.J. Morris (Edinburgh, 1990), 290-309.

<sup>156</sup> Ernest Pull, *The Munition Workers' Handbook*, passim.

aircraft, tanks, bombs, mines and countless other devices crucial to the war effort. The women, who came from a wide range of pre-war female occupations, performed a vast array of tasks, and some even became adept in skilled processes. Women in Scotland had always done dirty, heavy, laborious work, but never before had women breached the engineering workshops of Clydeside to work on machines once considered the exclusive domain of skilled workmen.

**Chapter Two**  
**Middle Class Women in Munitions Factories**  
**and Class Relations**

On Monday 7 February 1916, the citizens of Glasgow opened their newspapers to find photographs of some of the area's most prominent women, including Miss Denny of Dumbarton's shipbuilding family, Miss Greenlees of Glasgow's boot-making family, and Mrs. Godfrey Collins, the wife of the M.P. for Greenock. While it was a common occurrence to find in the Monday edition photographs of local ladies engaged in their weekend pursuits, on this occasion the circumstances were somewhat different. Rather than dressed in their finery at a society wedding or sipping tea at a civic function, the women, kitted in plain overalls and mobcaps, were standing attentively beside imposing machinery in a dark workroom of a local munitions factory.<sup>1</sup> For some months newspapers had been intriguing readers with reports of women working in engineering workshops, many of them encouraging middle class women to 'take up the work.' Now the papers were providing proof not only that women were capable of handling machines, but that the cream of west of Scotland society was setting a fine example in answering the call to the nation's womanhood to produce arms for the 'boys at the Front.' The war had introduced the strange phenomenon of women working in engineering establishments, but even stranger was the presence of middle class and upper class women on the factory shop floor.

One of the effects of the war on the Home Front was that it brought working class women and middle class women into contact with each other to an unprecedented degree. Before the war, class interaction between women was largely restricted to philanthropic societies where middle

class women engaged in schemes of amelioration and investigation into working class women's lives. This involved relatively few middle class women and only the poorest sections of the working class; for example the women who had to appeal to the Charity Organization Society in times of great hardship. The war, however, opened up new arenas of class interaction in which much larger numbers of middle class women were involved with women from the broad spectrum of the working class, from the 'rough' to the 'respectable.'

At the outbreak of the war, a number of middle class women, anxious to contribute to the war effort, directed their energies into new schemes of improvement and control of working class women. They joined voluntary societies, formed committees, and devised plans of 'good works.' Some members of the National Union of Women Workers (NUWW), concerned about the 'moral conduct' of young women in wartime, formed 'women patrols' to monitor the behaviour of soldiers and 'girls' in the vicinity of military camps.<sup>2</sup> Other members formed 'Cheer Up Clubs' to maintain morale amongst soldiers' and sailors' wives by providing weekly meetings and entertainments.<sup>3</sup> In addition, members of the newly-constituted Patriotic Food League, responding to concerns over food shortages and increased prices, delivered lectures on thrift and arranged cookery demonstrations on the economical use of wartime food items to working class women.<sup>4</sup> The close proximity of women of different classes, under the stressful circumstances of wartime, often resulted in increased class tension. A brief examination of another middle class women's voluntary

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<sup>1</sup> *Glasgow Herald*, 7 Feb. 1916, p. 3; *The Bulletin*, 7 Feb. 1916, p. 12.

<sup>2</sup> *Glasgow Herald*, 13 Feb. 1915, p. 13. The NUWW was not a trade union, but a philanthropic organization.

<sup>3</sup> *Glasgow Herald*, 21 Nov. 1914, p. 4g; 4 Dec. 1914, p. 4f; 4 Feb. 1915, p. 8; 23 Feb. 1915, p. 8g; *Bulletin*, 10 Nov. 1916, p. 12.

<sup>4</sup> Glasgow Caledonian University Archives [GCUA], Glasgow and the West of Scotland College of Domestic Science [GWSCDS], Minute Book, 24 Sept. 1915, 22 Mar. 1917, 21 Nov. 1917; *Glasgow Herald*, 19 July 1915, p. 9c; 7 Feb. 1916, p. 4e; *Bulletin*, 3 Mar. 1916, p. 12.

organization, the Soldiers' and Sailors' Families Association (SSFA), provides a good example of this new source of class hostility.

The SSFA, which had lain dormant since the Boer War, sprang into action in August 1914 to fulfill its mandate of dispensing funds to needy families of servicemen. Although the government had instituted a system of separation allowances to the wives and dependents of servicemen, bureaucratic mismanagement caused great delays in issuing payments, leaving many working class women and children 'absolutely dependent' upon the relief granted by the SSFA.<sup>5</sup> Large numbers of middle class women volunteered to act as SSFA visitors and 'associates.' As early as 10 August 1914, the West of Scotland Women's Suffrage Association offered their services to Glasgow's Lord Provost to aid in the distribution of relief, and shortly afterwards they were raising funds and had set up an SSFA branch office on their premises.<sup>6</sup> The SSFA received donations from a broad range of individuals and organizations, including those of the working class. For example, the staff of the West End Laundry in Partick saved small sums of approximately 12s. to send to the SSFA each week.<sup>7</sup> By the end of the year, the Glasgow SSFA was raising from public subscriptions approximately £150 per week, and had accumulated funds in excess of £30,000.<sup>8</sup>

Despite having such a healthy account, however, SSFA visitors often exhibited great reluctance in dispensing the largesse to the families in need, and the administration of the funds became a fertile source of class tensions. The SSFA allowed a great deal of discretion to its middle class lady visitors, or almoners, who interviewed working class applicants in their homes once a

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<sup>5</sup> Margaret Ferguson, 'The Family Budgets and Dietaries of Forty Labouring Class Families in Glasgow in War Time,' *Proceedings of the Royal Society of Edinburgh*, 37 (1917): 119.

<sup>6</sup> Glasgow Mitchell Library [GML], West of Scotland Women's Suffrage Association, Executive Committee Minute Book, Aug. 1914, Sep. 1914, Oct. 1914.

<sup>7</sup> *Partick and Maryhill Press*, 9 Oct. 1914; 23 Oct. 1914; 27 Nov. 1914.

<sup>8</sup> *Glasgow Herald*, 1 Jan. 1915, p. 11.

week before deciding to grant them a small weekly sum.<sup>9</sup> Following the practices of nineteenth century philanthropic societies, the visitors were at great pains to prevent ‘overlapping,’ that is, they wanted to be sure that the applicants were not in receipt of funds from other sources. As a result, working class women often suffered unnecessary hardship when SSFA almoners withheld their money until they had completed time-consuming checks of other charities. In addition, the SSFA visitors were very careful not to give any money if they suspected it would end up in the local public house, and in the course of their investigations exposed a number of instances of drunkenness among servicemen’s wives.<sup>10</sup>

Some SSFA visitors even found grounds to deny applications from women who kept clean, tidy houses and showed no signs of alcohol consumption. For example, they refused to give money to applicants whose houses they considered too large or too well furnished, arguing that they ‘could get along without help’ for a while.<sup>11</sup> By September 1914, the Glasgow Trades Council was receiving a barrage of complaints about ‘the manner in which agents of the SSFA are prosecuting enquiries into the circumstances of wives and children... of men who are serving the colours.’ There was widespread resentment at SSFA questions such as: ‘What church do you go to?’ ‘Do you go regularly?’ ‘Has your husband any war medals?’ ‘Has your husband any good conduct strips?’ and ‘How did you spend the half-crown you got last week?’ SSFA advice was equally objectionable, with visitors telling women: ‘You should go into a smaller house.’ ‘You should take the baby off the breast and go out to work.’ ‘Have you pawned anything? You have a good lot left yet.’ The Trades Council denounced such questions and comments as ‘an insult to those to whom they are addressed and to the workers in general,’ and considered holding a public meeting to

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<sup>9</sup> *Partick and Maryhill Press*, 23 Oct. 1914.

<sup>10</sup> *Glasgow Herald*, 24 Dec. 1914, p. 9e; 31 Dec. 1914, p. 2d; 3 Feb. 1915, p. 12.

<sup>11</sup> GML, Glasgow Trades Council Minute Book [GTCM], 2 Sep. 1914.

express their indignation<sup>12</sup> Less than two months into the war, therefore, new arenas of interaction between middle class and working class women were already causing class hostility and resentment, a pattern which was to continue and intensify for the remainder of the war.

Historians have examined the ways in which the war allowed middle class women to forge for themselves new career opportunities which were based on their authority over working class women.<sup>13</sup> As well as seeing the new middle class jobs as 'critical site[s] of professional empowerment for women,' historians have also noted that they often generated class antagonisms.<sup>14</sup> Although contemporary accounts emphasized the benefits to working class women from close association with their middle class 'sisters', historians have found little evidence of a cross-class sisterhood. According to Phillipa Levine, middle class women police patrols took up an 'authoritative, and often authoritarian stance which served to diminish the initial empathy for women they had espoused.'<sup>15</sup> Class tensions also ran deep in munitions factories, the largest arena of class interaction between women during the war. Deborah Thom's study of the women at the Woolwich Arsenal shows that the presence of middle class women in the factories 'unsettled' the other workers.<sup>16</sup> While Angela Woollacott sees some examples of cross-class bonding among women working together under oppressive conditions, she concludes that the war did not act as a

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<sup>12</sup> GML, GTCM, 16 Sep. 1914. See also *Glasgow Herald*, 16 Nov. 1915, p. 3d. The outrage of the Labour movement at the impertinence of SSFA visitors existed throughout Britain; see Susan Pedersen, 'Gender, Welfare, and Citizenship in Britain during the Great War,' *American Historical Review* 95 (1990): 983-1006.

<sup>13</sup> Phillipa Levine, "'Walking the Streets in a Way No Decent Woman Should": Women Police in World War I,' *Journal of Modern History*, 66 (1994): 34-78; Angela Woollacott, 'From Moral to Professional Authority: Secularism, Social Work, and Middle-Class Women's Self-Construction in World War I Britain,' *Journal of Women's History*, 10 (1998): 85-111; Angela Woollacott, "'Khaki Fever" and its Control: Gender, Class, Age and Sexual Morality on the British Home Front in the First World War,' *Journal of Contemporary History* 29 (1994): 325-47.

<sup>14</sup> Levine, 39.

<sup>15</sup> Levine, 48.

<sup>16</sup> Deborah Thom, 'Women of the Woolwich Arsenal,' 61.



social leveler and that women's experience in munitions factories 'cemented rather than challenged the primacy of class.'<sup>17</sup>

What was the nature of the class interaction amongst women employed in west of Scotland munitions factories? Was it, as *The Glasgow Herald* suggested in a report on Georgetown, a harmonious experience where 'women of all classes - university graduates, women of leisure and means, clerks, seamstresses, shop girls, and factory hands - are working together.'<sup>18</sup> Or, as this chapter will argue, did it lead to friction, reveal mutual incomprehension, and heighten class-consciousness amongst working class women by exposing glaring class inequalities?

Class has been devalued in recent years as a tool of historical analysis in favour of the importance of race, identity, gender and ethnicity. Nevertheless, where inequality and subordination exist, as they did in the munitions factories of the First World War, class remains a valid and valuable tool to explore the nature and experience of women workers. This chapter will follow E.P. Thompson's approach in viewing class not as a 'structure' or a 'category,' 'but as something which in fact happens (and can be shown to have happened) in human relationships.'<sup>19</sup> We will examine the shifting relationships of social power that took place in munitions factories, where the close proximity of middle class women underlined conspicuous differences and stimulated a greater sense of class awareness among working class women. The use of language, accents, manners, and even small details like the uniforms the women wore all underlined the huge differences between the classes, engendering among working class women strong feelings of 'them' and 'us.'

Middle class women fulfilled a vast array of functions in munitions factories in the west of Scotland. Some worked in a voluntary capacity, such as the members of the Glasgow Union of

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<sup>17</sup> Woollacott, *On Her Their Lives Depend*, chapter 7, at 185, 187.

<sup>18</sup> *Glasgow Herald*, 1 Aug. 1916, p. 4f.

<sup>19</sup> E.P. Thompson, *The Making of the English Working Class* (London, 1965), 9.

Women Workers (GUWW) who continued the late nineteenth century middle class philanthropic concern for working class diets by establishing factory canteens to provide cheap, nourishing meals for employees.<sup>20</sup> The majority of middle class women in munitions factories, however, were in paid employment and held a number of positions of responsibility such as forewomen, instructors, inspectors, examiners, managers, patrol women, and welfare supervisors. It is difficult to determine the extent of middle class women's employment in munitions factories, but it seems that they formed a relatively small percentage of the work force. Woollacott believes that only 'a tiny proportion' were middle class, and Miriam Kozak estimates that they formed only 9% of the workforce, although she points out that the figures are unreliable.<sup>21</sup> Contemporary observers also speculated that the number was 'comparatively small,' and according to Highton, 'relatively few' of women munitions workers on the Clyde were 'of independent means or from well-to-do homes.'<sup>22</sup> Although they formed a small percentage of the workforce, middle class women nevertheless held a disproportionate number of the positions of authority and responsibility within the factories. Educated middle class women were much more likely to be sent for advanced training than working class women, and were almost exclusively in managerial or supervisory positions. The number of middle class women in munitions factories may have been small, but their impact on the workforce was considerable.

The aim of this chapter is twofold: first, to examine the participation and function of middle class women in Clydeside's munitions industry; and second, to probe the nature of class relations amongst the west of Scotland's female munitions workforce. Given the paucity of records of working class women's war experiences, we will approach the latter question principally by

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<sup>20</sup> *The Bulletin*, 12 Oct. 1915, p. 12; 8 Jan. 1916, p. 1.

<sup>21</sup> Woollacott, 180; Kozak, 122.

<sup>22</sup> Highton in Drake, *Women in Engineering*, 42; Kirkaldy, *Labour, Finance and the War*, 103.

looking at the experience of middle class women and extrapolating and hypothesizing on the experience of working class women.

### **The Early Days**

As the war progressed, middle class women increasingly filled high-ranking, supervisory positions in the factories, but in the early days, in the spring and summer of 1915, when the possibility of employing women on munitions work first took hold, women ‘of a superior class’ formed a fair proportion of the actual workers on the factory floor. The first newspaper articles and photographs of women munitions workers in the Glasgow area appeared in June 1915, featuring the women at Beardmore’s East Hope St. factory, and informing the public of some of the characteristics of the first ‘200 young women... busily employed making high explosive shells’:

If the wages were half what they are - in many cases indeed even if there were no wages at all - the girls would work all the same and be only too grateful to have the chance of serving king and country. For remember, these young women are by no means all in the position of requiring to take the first work that comes their way. All are of a superior class, and many come from comfortable middle class homes.<sup>23</sup>

The articles explained that the work was ‘fairly strenuous’ as the women worked twelve-hour shifts, starting at 6:00 a.m. and at 6:00 p.m., but they emphasized that no previous experience was necessary: ‘not one of the girls had the slightest idea of how the work was done. It is doubtful if any had ever been inside a machine room before.’ Rather than having experience with factory machinery, it was more important that prospective applicants possessed ‘regularity, earnestness, concentration and intelligence in a marked degree.’<sup>24</sup> The newspaper articles made clear the type of

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<sup>23</sup> *The Bulletin*, 23 Jun. 1915, p. 4.

<sup>24</sup> *Glasgow Herald*, 19 Jun. 1915, p. 11f.

woman that employers hoped to attract into munitions work: intelligent, patriotic, fit, healthy, hard-working, and 'of a superior class.'

In November 1915, Britain's major national newspapers all carried inspirational accounts of the work of women in the new munitions industry. The government had orchestrated a 'journalistic tour' of four munitions districts, including Glasgow, which was designed to reassure the public of the progress being made in armaments production throughout the country. The accounts were remarkably similar in their expressions of wonderment at the work of women, and many also commented on the presence of middle class women on the shop floor. One journalist gave an account of his visit to a Scottish factory,<sup>25</sup> where he found 'numbers of women who, but for the war, would have been leading idle lives.... They have joined with their sisters less fortunately placed in the social scale to do their best for their country.' The journalist interviewed one young woman who had taken merely three hours to learn how to operate a lathe. When asked if she had done any of this kind of work before, she responded: 'Oh, no. I had never done any work before. I am the daughter of the Chief Constable of ----.' The journalist also interviewed 'the wife of a sergeant in a famous corps of horse':

She is well endowed with this world's goods, and has no need to work, but she says she could not stay at home while her husband is fighting. I ask if she likes the work - in her case it entails a good deal of manual labour - and she replies, 'I simply love it, and nothing would keep me at home....' When I ask if she considers she is well paid, the brave soldier's wife replies, 'They *make* me take about 20s. a week.' The suggestion in the tone of her reply is that she would prefer doing the work voluntarily.<sup>26</sup>

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<sup>25</sup> War censorship prevented journalists from naming specific factories, but the factory visited would almost certainly have been East. Hope St., which was considered a 'model' factory in the employment of women, and was often on the itinerary of visiting observers and dignitaries.

<sup>26</sup> *The Daily Telegraph*, 16 Nov. 1915, in Tuckwell Collection, 6651/114.

Although we have no way of knowing how many there were or how long they remained on the job, middle class women were among the first to take up munitions work, some of them operating machines with others apparently doing manual labour.

Government officials were keen to attract middle class women into munitions work as it would alleviate the dislocation in working class women's traditional industries. We have already noted the complaints raised by textile employers over the depletion of their female workforce into munitions factories, and the government's attempts to solve the problem by instructing controlled establishments to hire women only through labour exchanges, thereby screening out those already in employment. The Glasgow Advisory Committee on Women's Employment considered the question carefully. To ensure that 'no further withdrawal of women labour was made from the ordinary industries,' they advised the Scottish Office to 'appeal to leisured women of the Country... to come and do their bit in making munitions, in such a direct call to the spirit and patriotism of that class, the number of which must be very large, that the response would meet the need.' However, as munitions factories were paying higher wages than 'ordinary industries,' they realised that 'the delicate question of remuneration' would have to be handled carefully, and they anticipated some difficulty in 'facing the resentment of the presently employed women in ordinary industries at being debarred from sharing the large earnings of their (all along the line) more fortunate sisters.'<sup>27</sup> The committee, however, offered no advice on mitigating the resentment of the women in the 'ordinary' industries.

In the spring and summer of 1915, therefore, munitions manufacturing appeared as a new area of employment for Glasgow women, many of who were in desperate need of work especially after the economic dislocation in female trades during the first few months of the war. However,

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<sup>27</sup> SRO, HH31/27/1/19, Scottish Advisory Committee for Women's Employment.

both employers and government officials actively encouraged middle class women into munitions work even to the point of excluding working class women from a much-needed new source of revenue.

One of the most remarkable examples of the participation of middle class, and even upper class, women in munitions factories was the scheme of lady weekend relief workers. Mrs. Winifrede Cowan, the wife of the M.P. for East Aberdeenshire, and Mrs. Margaret Moir, whose husband was a high-ranking official in the Ministry of Munitions, masterminded a plan where 'women of leisure' would take over the machines of the regular women workers during the weekends. The dual objectives were to relieve the workers from the strain of working seven days without a break, and to keep the machines operational at all times. Moir and Cowan persuaded Vickers, the giant armaments firm in Erith in the North of England, to try out the scheme, and on 19 July 1915, 'for the first time in the history of the industrial life of England, between twenty and thirty English ladies took up service for their country amidst the novel surroundings of a shell factory.'<sup>28</sup>

Moir and Cowan, realizing that the provision of suitable accommodation was essential to the success of their scheme, established a 'hostel' at Lesney House, a large mansion with 'charming gardens and grounds,' and space enough for twenty four ladies. Soon newspaper headlines such as 'Titled Women as Shell Makers', 'Palatial Hostel at Erith', and 'Factory Hands Arrive in Motor Cars' were attracting widespread public attention, and giving rise to criticism in some quarters.<sup>29</sup> Margaret Llewellyn Davies, the leader of the English Women's Cooperative Guild, pointed out the considerable contrast in working conditions between the 'lady' and the 'women' munitions workers. The 'lady' workers:

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<sup>28</sup> *The Common Cause*, 17 Mar. 1916, p. 646, in Tuckwell Collection, 665II/70.

started with an “excellent lunch”, tea was brought down when the hooter announced the half-hour tea-time, and hot soup was ready for the workers at their residence where the ladies are waited on by maids on loan from private establishments.

By contrast, the ‘women’ workers were:

making munitions from 7 a.m. to 8 p.m. Half-an-hour is allowed for breakfast, and only half-an-hour for dinner... no time is allowed for tea. Most of the women live from three to six miles from their homes, some walking to the factory owing to the lack of railway facilities.<sup>30</sup>

It was rare to find caustic observations such as Llewellyn Davies’s in newspapers which were much more likely to laud the extraordinary accomplishments of landed ladies than to notice the daily drudgery of ordinary women workers.

Within a few months, Moir and Cowan had extended their scheme to three other factories in Britain, two of which were in Scotland, both of them Beardmore-owned: the East Hope St. works in Glasgow, and the Underwood works in Paisley. In October 1915, the women had obtained approval for the scheme in Scotland from William Weir who had no objection, especially as Lloyd George himself had given his full blessing to the project.<sup>31</sup> Weir at once sent the women to Beardmore who, according to Moir, was ‘most encouraging and willing to help in every way. We will start at his Hope St. factory... to be trained in batches of fifty per week.’<sup>32</sup> On 17 November, the Glasgow Week-End Workers were formally constituted at a meeting in the Central Station Hotel, and the following week the first group started their training at Beardmore’s. The original fortnight training period was quickly found to be ‘unnecessarily long’ and was reduced, at first to one week, and later to a few days.<sup>33</sup> The scheme was advertised in the local newspapers, and a few

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<sup>29</sup> *The Daily Chronicle*, 30 July 1915, in Tuckwell Collection, 6651/34.

<sup>30</sup> *The Daily News and Leader*, 22 July 1915, in Tuckwell Collection, 6651/30.

<sup>31</sup> GUABRC, DC 96/17/5; *OHMM*, 5, iii, 113.

<sup>32</sup> GUABRC, DC 96/17/5, note to Weir, 25 Oct. [1915].

<sup>33</sup> IWM, MUN 17.2/6.

months later, a full page of photographs in *The Bulletin* revealed the incongruous sight of some of the cream of west of Scotland society, in uniform and dust caps, standing at their lathes.<sup>34</sup>

Although the numbers in training never reached fifty a week, the Scottish scheme nevertheless took root. Only eighteen were mustered for the first week's training, and thereafter 'various numbers' started every Monday. The largest number was during Christmas week, when thirty women, mostly school teachers on holiday, turned up at the factory for instruction on lathe work.<sup>35</sup> However, by May 1916, 'two sets of voluntary lady workers,' totaling 321 women, were working weekend shifts in Paisley; and in East Hope St., 420 women took part in the scheme over a period of three years.<sup>36</sup> Moreover, it appears that west of Scotland women formed a disproportionately high number of weekend workers, as out of the approximately 2,000 trained in Britain, at least 740 worked in Glasgow and Paisley.<sup>37</sup> There is no way of knowing how long each woman remained on the job, but we do know that the scheme was still in existence in Glasgow at the end of the war. On 24 November 1918, the weekend workers, 'past and present,' held a celebration tea in the East Hope St. factory canteen to mark both the end of hostilities and their brief sojourn as factory hands.<sup>38</sup>

Various factors impelled middle class women to be among the first to take the unprecedented step of venturing onto the factory floor to make munitions. We have already made reference to the close association between munitions manufacturing and patriotism. Women, especially soldiers' wives, were keen to 'do their bit.' Feeling helpless at home while their men folk were at the front, munitions work afforded them the opportunity to contribute in a tangible way to

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<sup>34</sup> *The Glasgow Herald*, 22 Nov. 1915, p. 14c; *Partick and Maryhill Press*, 3 Dec. 1915, p. 3; *The Bulletin*, 7 Feb. 1916, p. 12; *Glasgow Herald*, 7 Feb. 1916, p. 3.

<sup>35</sup> IWM, MUN 17.2/6.

<sup>36</sup> PRO MUN 2/27, 13 May 1916, p. 7; *Beardmore News*, 11 Dec. 1918, p. 6.

<sup>37</sup> PRO MUN 5/57/320/10.

<sup>38</sup> *Beardmore News*, 11 Dec. 1918, p. 6.



the prosecution of the war. In May 1915, the 'shell scandal' had precipitated public outrage at the shortage of armaments for the men at the front. In Glasgow, anxiety over the lack of shells was aggravated by a letter written by William Weir to the Lord Provost of Glasgow and printed in the *Glasgow Herald* in May, in which he described shell lathes lying idle in Glasgow, and attacked the restrictive practices, bad time keeping, and drinking habits of the skilled workmen.<sup>39</sup> Weir's letter provoked a storm of protest from various segments of Glasgow society, many expressing their indignation at the workers slacking at home while men and boys were fighting and dying in France.<sup>40</sup> The letter also sparked an outpouring of offers of help from concerned Glaswegians who appealed to Weir to allow them to work in his factory. One professor at Glasgow University wrote to find out 'to what extent our university students could help to increase production of munitions,' and informed Weir that, 'apart from the students there are thousands in Glasgow anxious to help in this way if they were allowed.'<sup>41</sup> While most of the letters came from men, there were also a few from women in areas as diverse as Eaglesham, Shawlands and Dennistoun.<sup>42</sup> In this time of national emergency, with casualty lists growing longer by the day, many women were willing to do any sort of work that would help the war effort, especially if their husbands, brothers, sons or lovers were among the men at the front.

The equal rights feminists of the pre-war period had a different motive for seeking work in munitions factories. The war occurred at a critical period in the expansion of occupations for women. For some years prior to 1914, women had been battling against the entrenched prejudices of the professions, some of which had barred women from entering their ranks, while others had made it extremely difficult for them to gain a foothold. The circumstances of the war altered the

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<sup>39</sup> *Glasgow Herald*, 21 May 1915, p. 10b; Reader, *Architect of Air Power*, 38-40; DC 96/18/188.

<sup>40</sup> *Glasgow Herald*, 22 May 1915, p. 8c; 24 May 1915, p. 5g; 25 May 1915, p. 3c.

<sup>41</sup> GUABRC, DC 96/1/40, letter dated 22 May 1915.

situation drastically as women were increasingly called upon to take all manner of jobs in order to release men for the army. Engineering was one of the occupations into which women sought entry, and munitions making allowed them the chance to prove that they were capable of performing the work. Eunice Murray, the leader of the Women's Freedom League in Scotland, and a staunch advocate of equality for women, worked in a munitions factory in Glasgow for some time, as one of the weekend relief workers.<sup>43</sup> By operating lathes in engineering workshops, munitions work gave feminists an opportunity to break down a long-standing and previously insurmountable gender barrier.

It is also important to realize the extent to which the novelty of women making munitions had gripped the public imagination. Frequent newspaper reports and photographs fed the public appetite for news of this unusual occurrence, and munitions exhibitions proved popular events. When Weir organized a 'small, private exhibition' of women's work at Glasgow's McLellan Galleries, featuring 600 photographs of women performing various shell-making operations, it attracted 15,000 people in a matter of days even though admission was strictly limited to ticket holders.<sup>44</sup> Shortly afterwards, in December 1916, the McLellan Galleries was the venue for another exhibition of women's munitions work. At the 'Active Service Exhibition,' a Red Cross fundraiser, Beardmore surpassed Weir's provision of 600 photographs by temporarily installing in the Galleries a row of machines staffed by uniformed women demonstrating a number of fuse manufacturing processes. The Beardmore display was the highlight of the exhibition generating much public interest.<sup>45</sup>

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<sup>42</sup> GUABRC, DC 96/1/40-1.

<sup>43</sup> *Glasgow Herald*, 15 Nov. 1916, p. 5e.

<sup>44</sup> DC 96/17/43, Minutes of the Advisory Board of Management, 30 Oct. 1916, 27 Nov. 1916; Tuckwell Collection, 665II/126.

<sup>45</sup> *The Bulletin*, 28 Dec. 1916, p. 1.

Part of the reason that Moir and Cowan were able to attract such well-heeled women into their scheme was the new vogue for munitions work. An object of keen public interest, suffused with patriotic intent, and affording the opportunity to contribute to the prosecution of the war, munitions manufacturing stimulated a number of middle class women to take up factory work. The women saw themselves as engaging in a bold new venture. For a time at least, they did not consider what they were doing as the daily grind of factory work, but as a valuable contribution to the war effort; it was a 'cause' rather than a job.

#### **'Leisured Women Are Needed'**

As the war progressed the demand for middle class women increased and the variety of job opportunities available to them expanded. An August 1916 article in the *Glasgow Herald* entitled 'Leisured Women Are Needed' explained the current demand for middle class women. The article was careful to point out that working women already in employment in other industries should remain in their present positions. Drawing on the distinction between 'working girls' and 'educated women of social standing,' an official with the Board of Trade explained: 'Experienced, skilled girls should remain at their trade.... There is no rush on them for munition work.' It was very important that 'girls' should not give up their 'normal work', and he accused those who did of showing 'a lack of true patriotism.' But, he went on: 'As regards women of leisure, they are needed - very much needed.... Obviously certain duties will be much better discharged by educated women than by working girls.' The new job opportunities for middle class women in shell factories included overseers, forewomen, examiners, inspectors, fire patrol women and welfare workers, which he considered 'an excellent opening for educated women.'<sup>46</sup>

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<sup>46</sup> *Glasgow Herald*, 12 Aug. 1916, p. 3d.

Middle class women with or without previous experience were able to land good jobs in munitions factories. Those who had taken up munitions work early in the war and had experience on lathe work, quickly rose through the ranks and became forewomen or instructresses. Of the weekend workers at East Hope St., it was noted that 'several of the best workers left to take posts as supervisors in other factories.'<sup>47</sup> Even for middle class women with no previous training or experience there were still plenty of job opportunities. Sylvia Pankhurst's weekly newspaper, *The Woman's Dreadnought*, always sensitive to class distinctions, drew the attention of its readers to the following notice in *The Times*:

Lady Ammunition Work Supervisor, of high social status, required by engineering company on Government contract, employing women; no technical knowledge necessary, chief qualification being tact, power of control, and ability to maintain a correct tone. - Box G.495, *The Times*.<sup>48</sup>

Some women were catapulted straight into supervisory jobs with no other qualification than the possession of the 'power of control.' Employers needed authoritative women to supervise and regulate their new women workers. The management at Barr and Stroud found that 'these young girls' they had hired 'needed a good deal of supervision and a good disciplinarian in charge.'<sup>49</sup> Employers and government officials believed that middle class women could provide the discipline, leadership and air of authority, which they considered essential factors in the control and regulation of the vast new female work force.

Certainly, the system of control at Georgetown depended on the employment of middle class women in a supervisory capacity. Georgetown, consisting of thousands of women from almost every occupational category in the west of Scotland, needed a sound organizational structure and a strict hierarchy to turn an unwieldy and disparate group of women, many with no

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<sup>47</sup> IWM MUN 17.2/6.

<sup>48</sup> *The Woman's Dreadnought*, 1 Apr. 1916, p. 452.

previous industrial experience, into a disciplined and productive workforce. At Georgetown the workers were divided into small groups of approximately twenty women working in isolation in small wooden huts under the supervision of an overlooker. The linchpin of the Georgetown system was the overlooker whose job was to ensure maximum output and the maintenance of order. The factory management found that: 'By starting with a good type of woman as Overlooker, Forewoman, etc., even the most unlikely material could be trained and moulded, and a thoroughly efficient and disciplined factory staff be quickly built up.' They attached great importance to the selection of overlookers and were very specific about the kind of person they wanted in the job:

The workers matter very little; even the roughest and most undisciplined women being capable, when well handled, of behaving in factory hours in an orderly manner and of working hard and well. The Overlooker comes most in contact with the worker; and it is therefore on her that the conduct of a group of workers depends. First of all she needs strength of character; and it is of the greatest advantage that she should be mentally the superior of her workers.<sup>50</sup>

The factory management were very pleased with the first overlookers employed at the factory whom they described as women 'of a very superior type...in their favour was the decided difference in education, force of character, and social position between them and their workers.' As the factory grew, however, and an increasing number of women were needed to fill the position of overlooker, the management found it more difficult to find suitable candidates. They were, however, reluctant to put working class women into positions of authority. Rather than promote workers from the ranks, they preferred to recruit students from Glasgow University, devising a special class for them where the training was 'especially thorough.'<sup>51</sup> Authority and discipline at Georgetown rested on the strict maintenance of social distinctions.

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<sup>49</sup> GUABRC, UGD 295/26/1/14, p. 3.

<sup>50</sup> *OHSFF*, 148-9. A whole section of the official history of Georgetown is devoted to the 'Selection of Overlookers'.

<sup>51</sup> *OHSFF*, 148.

Ministry officials and munitions employers scoured colleges of higher education in search of suitable candidates. At the Glasgow and West of Scotland College of Domestic Science the demand for students for war work far exceeded the supply, and a College report noted that: 'often the College Office has looked more like a Women's Employment Bureau.' While most of the College's students took up positions in army and factory canteens employing their knowledge of food values and preparation, the report observed that: 'In addition, numbers of students are making munitions where, though their special training is not utilized directly, the discipline, handiness, industry, and trained intelligence acquired in the College are valuable assets.'<sup>52</sup> Graduates filled a number of 'responsible posts' in munitions factories including 'supervisors, managers and inspectresses.' The college governors even granted special leave of absence for the duration of the war to two of the teaching staff who were offered jobs in local factories. Miss Ferguson, the 'High-Class Cookery Teacher,' became the canteen manageress at Beardmore's NPF, and Miss Roy, a teacher of dressmaking, became the welfare supervisor at Mechan's 'Edith Cavell' Bomb Factory.<sup>53</sup>

It is also highly likely that the women attending the munitions training courses at the Royal Technical College were from the middle class.<sup>54</sup> Although the College received applications from a wide range of women including domestic servants and college graduates, the selection process was very rigorous and excluded 'those unsuitable.'<sup>55</sup> According to the *Glasgow Herald*, the women taking the courses were from 'the more intelligent sections of the community'; and a report in *The Engineer* confirmed the middle class origin of women in training programs: 'many of the most

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<sup>52</sup> GCUA, GWSCDS, Minute Book, October 1909-January 1917, p. 376

<sup>53</sup> GCUA, GWSCDS, Minute Book, 12 Dec. 1917, 22 Mar 1917, 8 Feb. 1916.

<sup>54</sup> SUA, RTCM, 1 June 1916, 6 Mar. 1918. See also, DC 96/17/43, Minutes of the Advisory Board of Management, 29 Nov. 1915.

<sup>55</sup> SUA, RTCM, 14 Sep. 1916.

highly skilled women engineering workers today were those who had been accustomed to a refined life.... By sending them first to a training centre, they were introduced gradually to workshop conditions.<sup>56</sup> As well as offering instruction on machines, college training courses were also a means of encouraging into munitions work women who were wholly unaccustomed to the conditions of factory life.

Young women with a good education and family connections could do very well in the munitions industry. The experience of Stella Drummond, the daughter of Flora ‘General’ Drummond, the Scottish stalwart of the Women’s Social and Political Union, and her friend, Lady Mary Hamilton, the daughter of the Duke of Abercorn, was typical of young educated women’s foray into the industry. On the opening of munitions work to women, Drummond and Hamilton applied for work in a factory as ‘ordinary “hands,”’ and mastered the processes within a few weeks. After spending six months doing repetitive machine work, their skill ‘attracted the attention of those in authority and they were selected for training in more advanced work.’ After completing training courses in London in tool making and tool setting, they became proficient in advanced machine work and were promoted to posts as forewomen in charge of eight machines each and with responsibility for the workers employed on them. Neither woman, however, made extensive use of her advanced machine skills; Hamilton resigned from the factory on the occasion of her marriage, and Drummond eventually transferred into welfare supervision.<sup>57</sup>

Women with university degrees advanced at an even faster rate up the munitions factory hierarchy. Catherine Borland, who had an M.A. in History from Edinburgh University and a fellowship from the Carnegie Trust, had been engaged at the outbreak of the war in historical

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<sup>56</sup> *Glasgow Herald*, 21 June 1916, p. 9a; *The Engineer*, 22 Mar. 1918; *OHMM*, 4, iv, 63-4, 73; *Glasgow Herald*, 31 Oct. 1916.

<sup>57</sup> Barbara McLaren, *Women of the War* (New York, 1918), chapter 12.

research compiling a catalogue of mediaeval manuscripts in the Advocates Library in Edinburgh. Despite having no previous industrial experience, she nevertheless entered the munitions industry at the highest female level. According to Borland: 'On completion of my research work in March 1916, I offered myself as a candidate and was accepted by the Ministry of Munitions for Welfare Work. In April 1916, I was appointed Head Supervisor at Alexandria.'<sup>58</sup> In the space of one month, Borland had gone from the rarefied environment of Edinburgh academia to the hectic industrial pace of Armstrong-Whitworth's munitions factory in Alexandria where she had responsibility for a workforce of 1600 women, and oversaw a large staff of welfare supervisors, nurses, and forewomen.<sup>59</sup>

The most impressive example of a spectacular rise to the highest echelons of the industry was Agnes Borthwick, the works manager of Georgetown. Born in 1889, Borthwick received her early education at Greenock High School for Girls, and graduated from Glasgow University in 1912 with an M.A. (Hons.) in English. Between 1912 and 1914, she was a British Research Scholar at Bryn Mawr College, but returned to Scotland on the outbreak of the war. After a spell of secretarial work with the Scottish Committee on Women's Employment, Borthwick was associated with Georgetown from its inception, being one of the initial group of twelve overlookers sent to Woolwich Arsenal for instruction in shell and cartridge filling in November 1915. In January 1916, she started work as a forewoman with the first group of 250 workers, and by the end of April, she was appointed assistant works manger, overseeing 1500 workers. The following month she was promoted to works manger of the Cartridge Factory, which then employed 2000 people, and two months later, at the age of twenty-seven, Borthwick was appointed works manager

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<sup>58</sup> IWM MUN 24/15, p. 37.

<sup>59</sup> IWM MUN 24/4, 24/15.



of the whole factory and was 'entirely responsible for the volume and efficiency of the output.'<sup>60</sup> Within a few months Borthwick had risen to the top of the Georgetown management hierarchy reporting only to Gilbert MacPherson, the general manager. Borthwick remained with the filling factory for the duration of the war, and was instrumental in overseeing its exponential growth to a workforce in the region of 12,000 people. It was extremely rare for a woman to reach the top level of industry, and it is likely that Borthwick achieved a position of responsibility in a munitions factory unsurpassed by any other woman in Britain.

### **A Solvent of Social Barriers?**

Munitions factories provided a new location for class interaction which some observers regarded as a golden opportunity to break down class barriers. Contemporary commentators attached great emphasis to the new mingling of the classes, and numerous press reports claimed that munitions work had drawn women of all classes closer together 'to the mutual benefit of both.' According to one observer: 'Social status, so stiff a barrier in this country in pre-war days, was forgotten in the factory, as in the trenches, and [munitions women] are all working together as happily as the members of a united family.'<sup>61</sup> Another remarked: 'In the munition works, well educated women, women with plenty of money, women who never worked before, work year after year beside the working girl...and they mutually admire each other.'<sup>62</sup> However, the first hand accounts of some middle class women abound with class prejudice and strongly suggest that mutual incomprehension rather than mutual admiration was at the root of the relationship. One

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<sup>60</sup> IWM MUN 13/3-5; McLaren, *Women of the War*, chapter 7; *OHSFF*, 146, and passim; *Who's Who* (1919), 254.

<sup>61</sup> Yates, *The Woman's Part*, 9.

<sup>62</sup> Helen Fraser, *Women and War Work* (New York, 1918), 269.

middle class woman claimed that 'inside the [factory] gates we are all on a level', but went on to expose the great gulf between the classes and her own deep-seated distaste for her fellow workers:

The ordinary factory hands have little to help them keep awake. They lack interest in their work because of the undeveloped state of their imaginations. They handle cartridges and shells, though their eyes may be swollen with weeping for sweethearts and brothers whose names are among the killed and wounded, yet they do not definitely connect the work they are doing with the trenches. One girl, with a face growing sadder and paler as the days went by because no news came from France of her 'boy' who was missing, when gently urged to work harder and not to go to sleep so often, answered, with angry indignation: 'Why should I work any harder? My mother is satisfied with what I takes home of a Saturday.'

It was small wonder that the writer later revealed that her 'attempts at friendliness [were] treated with the utmost suspicion.'<sup>63</sup> Munitions factories, rather than presenting golden opportunities for the dissolution of class barriers, were more likely to be breeding grounds for class tensions and animosities.

In her memoir, Peggy Hamilton has provided us with a direct and honest account of the experience of an upper middle class munitions worker. Hamilton's account is a refreshing change from many middle class women's descriptions of their wartime interaction with working class women in which their use of flowery language and banal sentiments ring hollow.<sup>64</sup> Hamilton, one of the many educated women sent for advanced training, worked as a tool-setter in a large munitions plant where she was well aware of the resentment and hostility directed towards her and her friend from the women workers who 'regarded us as outsiders and did their best...to make their feelings felt.'<sup>65</sup> Although most of the hostility was manifested in practical jokes, minor harassments, and a fair amount of ostracizing, it nevertheless could escalate into threats of physical violence and fights

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<sup>63</sup> Naomi Loughnan, 'Munition Work,' in *Women War Workers*, ed. Gilbert Stone, (London, 1917), 28, 33, 37.

<sup>64</sup> For example, the personal account of one weekend relief worker was typical of the language adopted by middle class women in their descriptions of their interaction with working class women: 'thus it was that we came into daily intercourse with the other workers whose speech may be rough but whose hearts are soft and golden' (IWM MUN 17.2/8).

in the factory yard.<sup>66</sup> Hamilton eventually reached a degree of understanding with her fellow workers, but never became a member of their group, preferring to eat and work on her own.<sup>67</sup> A greater cause of working class resentment than Hamilton was her friend, Joan Tomlinson, who through family connections at the Ministry of Munitions, was 'chosen' for a high-ranking, well-paid job. Hamilton wrote:

Although Joan and I sensed a certain resentment...at the time we did not understand what caused it. With hindsight, I am sure that the...women did not understand Joan's more elevated position. She was 'top brass'.... Her hours were irregular and much of her time was spent in Deakin's office.... Joan often had her meals up there instead of with the rest of us, and it looked like favouritism.<sup>68</sup>

When Tomlinson's fiancée was wounded, she 'worked shorter hours than anybody else' and eventually 'worked more or less what hours she pleased' so she could spend time with him.<sup>69</sup> It is highly unlikely that working class women with wounded fiancées and husbands would be given special permission to take time off. In fact, time keeping was strictly enforced and severe penalties exacted for lateness and absences. Such conspicuous inequalities could only have rankled the women workers and exacerbated existing class tensions.

The very nature of middle class women's jobs forced the classes further apart rather than bringing them closer together. As welfare supervisors, forewomen and charge hands, middle class women were in positions of power and authority over working class women that resulted in heightened class tensions. At Babcock and Wilcox 'Aisne' NPF in Renfrew, the welfare supervisor had strong feelings against the promotion of working class women to the post of charge hand. The practice, she decided, was: 'not a success for 2 reasons (1)The workers resented a fellow-worker

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<sup>65</sup> Peggy Hamilton, *Three Years, or For the Duration* (London, 1978), 51.

<sup>66</sup> Hamilton, *Three Years*, 52.

<sup>67</sup> Hamilton, *Three Years*, 101, 113, 118.

<sup>68</sup> Hamilton, *Three Years*, 44, 52.

<sup>69</sup> Hamilton, *Three Years*, 59, 64.

being put over them. (2) The Charge-Hands themselves were not capable of taking charge and were unequal to the responsibility.' She felt that it was imperative to 'engage women of good character and education as Charge-Hands.'<sup>70</sup> The duties of a charge hand, however, were hardly conducive to the establishment of class harmony. Not only were they 'responsible for the clothing and behaviour of the women in their operation,' they had also:

To try as far as possible to keep the girls from leaving their work before the horn sounds at intervals and stopping time... [and] to report any cases of disobedience or disrespect, or undesirable conduct, immediately to the Lady Superintendents.<sup>71</sup>

Charge hands and welfare supervisors at 'Aisne' also closely monitored the time keeping and absenteeism of the workers, devising a strict system of surveillance where 'a coloured disc (colour according to the length of absence) was placed on a specially prepared chart, thus a worker's lost time for a month could be seen at a glance.'<sup>72</sup> Supervisors interviewed and summarily dismissed workers who could not produce a doctor's certificate or a reasonable explanation for their absence.

Welfare supervisors also had the power to dismiss women for disobeying work orders. At Cardonald NPF, when a number of workers refused 'point-blank' to work under 'certain changed conditions,' the welfare supervisor was immediately summoned. On hearing the details of the complaint, 'she agreed the girls' objection was preposterous, and at once suggested that an example should be made. Fifteen were discharged on the spot.'<sup>73</sup> As Barbara Drake pointed out, although the welfare supervisor 'naively professed' to serve both worker and employer, she 'could only truly serve that party which employed and paid her.'<sup>74</sup> Given the authoritarian manner of

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<sup>70</sup> IWM MUN, 21/20

<sup>71</sup> IWM MUN, 21/20, 21/36.

<sup>72</sup> IWM MUN, 21/20

<sup>73</sup> Cecil Walton, *Welfare Study: What It Is* (Glasgow, n.d.), 17. It is highly likely that the 'changed conditions' were that women were required to scrub the factory floors. The women objected, stating that 'scrubbing floors...was not munition work' (See *Glasgow Herald*, 1 Mar. 1917, p. 5g.).

<sup>74</sup> Drake, *Women in Trade Unions*, 102-3.

welfare supervisors, it is hardly surprising that some workers developed a good deal of animosity towards them. In her evidence to the War Cabinet Committee on Women in Industry, Mary Macarthur declared: 'There is no getting away from it. The very word welfare sticks in the nostrils of the women workers,' clarifying to the committee that: 'it is not so much a union official objection as a rank and file objection.' Describing the proceedings of a conference of working women 'from bench and factory from all parts of the country,' she told the conference: 'We sat for two days discussing all sorts of subject.... There was no more caustic debate than that on Welfare. All the women were on their feet at once to say how much they hated it.'<sup>75</sup>

Some women workers were so incensed at the domineering attitude of their welfare supervisor that they struck work to express their anger and resentment. In September 1917, at Arrol-Johnstone's works in Dumfries, 400 women went on strike. They had three demands: an adjustment in the hours of work, an improvement in the conditions of the night shift, and the immediate dismissal of the 'lady supervisor' whom they found 'unsympathetic' and 'too strict.' An official from the Ministry's labour department visited Dumfries to discuss the women's grievances, finding it fairly straightforward to adjust the working conditions to meet the women's demands. The welfare supervisor, however, was a harder matter, and 'It was only with the greatest difficulty that the strikers were induced to withdraw their demand for the dismissal of the lady superintendent towards whom they evidently felt great animosity.'<sup>76</sup> Some welfare supervisors achieved the reverse of their intended effect; rather than ensuring an obedient, diligent workforce, they themselves became the cause of discontent and labour disruption.

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<sup>75</sup> PRO MUN 5/84/342/17, K9-K10, evidence of Mary Macarthur to the War Cabinet Committee on Women in Industry, 4 Oct. 1918.

<sup>76</sup> PRO MUN 2/28, 22 Sept. 1917, p. 16; 29 Sept. 1917, p. 17. See also, 20 Oct. 1917, p. 18.

Other middle class women's jobs resulted not only in curt dismissal of women workers but also in the payment of hefty fines. Part of the duties of the patrol women at Georgetown was to search the workers for flammable materials before they entered the factory, and report those in possession of matches to the factory management and to the local police in Paisley. The culprits were prosecuted in the sheriff court where they received a strict admonition from the sheriff and the imposition of a £5 fine.<sup>77</sup> Simply by carrying out the requirements of their jobs middle class women engendered resentment and animosity. If we take into account the authoritative, imperious attitude, which often accompanies positions of petty power, we can see that the resentment would be aggravated. The management at Dick Kerr engineering works in Kilmarnock noted about their women workers: 'we found there was a tendency at times for them to get into groups and look upon the reprimanding of their forewoman as unnecessary, and done more from a grumbling officious standpoint than from it being the forewoman's duty to do so.'<sup>78</sup> The nature of middle class women's jobs in munitions factories exacerbated class tensions rather than healing them.

Class segregation permeated all areas of munitions factories, from the uniforms that the women wore, to the canteens in which they ate their food. Different colours and qualities of uniforms marked each woman's place in the factory hierarchy. At Georgetown, assistant works managers wore dark green coats and green hats; forewomen wore white overalls and caps; assistant forewomen wore blue-grey overalls with a red chevron on the left arm and white caps; overlookers wore blue-grey overalls and white caps; and workers wore khaki coats and trousers and khaki caps.<sup>79</sup> The uniforms of the supervisors were not only more attractive, the fabric was also of better

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<sup>77</sup> *Paisley and Renfrewshire Gazette*, 'Fined for Carrying Matches,' 7 Oct. 1916; 'Matches in Danger Zones,' 24 Aug. 1918; 'Women and the Cigarette Habit,' 31 Aug. 1918.

<sup>78</sup> *War Cabinet Committee on Women in Industry, Appendices, Summaries of Evidence, etc.* Cmd. 167(1919), 31.

<sup>79</sup> IWM MUN 13/3, letter from Agnes Borthwick.

quality material than khaki, the roughness of which was often a cause of complaint among women workers. At Barr and Stroud, where the composition of the female work force ranged from university graduates to domestic servants, the management noted that different styles and qualities of uniform were 'not altogether a good arrangement as the girls thought there was some class distinction.'<sup>80</sup> In a manual designed to promote the benefits of welfare supervision, Cecil Walton, the manager of Cardonald NPF, explained the benefit to management of different coloured uniforms: 'Why so many and distinctive uniforms? No philanthropy in this. A simple means of knowing amongst a great crowd that every woman is in her proper section and station, and warning the superintendent if it is not so.'<sup>81</sup> No social leveling took place in munitions factories, where women were carefully categorized and treated according to their class.

The provision of canteens for munitions workers was another wartime innovation that middle class women took up eagerly at the beginning of the war and where there were high expectations that good results would accrue from the new mingling of the classes. When munitions factories started employing women in large numbers and for long hours, often for twelve-hour shifts, some middle class women's organizations, conscious of the nutritional deficiencies in working class diets, decided to operate canteens for women workers. While the stated intention was to improve the quality of the working woman's food intake, the overriding objective was to increase output as a nutritious meal in the middle of a shift would give workers 'that sense of satisfaction which conduces to a vigorous resumption of work.'<sup>82</sup> The Glasgow Union of Women Workers (GUWW) operated six factory canteens for women in the west of Scotland, including one

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<sup>80</sup> GUABRC, UGD 295/26/1/14, Barr and Stroud, Historical Notes on Women Workers, 7.

<sup>81</sup> Walton, *Welfare Study*, 19-20.

<sup>82</sup> *The Bulletin*, 12 Oct. 1915, p. 12.

at East Hope St., opened in October 1915, and one at Underwood in Paisley which Lady Beardmore herself opened in January 1916.<sup>83</sup>

Once more the entry of middle class ladies into the factory environment was an object of public interest, and newspapers carried photographs and reports of them 'cooking and waiting' on the women workers:

A number of ladies were engaged in their voluntary work of looking after their humbler sisters' creature comforts. The wife of a well-known publisher was peeling potatoes, and the spouse of a local professional man was busy with a mincing machine. Other ladies were laying out tables for the next meal.<sup>84</sup>

According to the *Glasgow Herald*, 'large numbers of local ladies had sacrificed their spare time... to act as ministering angels.' While the GUWW had mustered up 170 volunteers to work and serve food at Beardmore's Paisley works, the Glasgow branch of the British Women's Temperance Association (BWTA) had enlisted eighty-two women at Howden's in Govan, and sixty-nine to provide factory meals at the North British Diesel works in Whiteinch.<sup>85</sup>

Again there were high expectations that the new social mingling in factory canteens would have a beneficial effect on class relations. According to one canteen organizer:

By our system two different classes have been brought into close touch, to the mutual benefit of both.... Munition makers respond to the influence of the lady workers and appreciate that we are standing shoulder to shoulder with them... [and] the outlook of the hitherto leisured woman has been changed and broadened.... Never again will she look with uncomprehending eyes on the problems and conditions of the daily toiler.<sup>86</sup>

However, despite such rosy hopes, the canteen scheme failed on two counts. First, the organizers failed to sustain it as a voluntary system; and second, they failed to engender any feeling of 'mutual benefit.' By the end of the year, the function of the GUWW had been curtailed to purely

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<sup>83</sup> IWM MUN 18.1; *The Bulletin*, 12 Oct. 1915, p. 12; 8 Jan. 1916, p. 1.

<sup>84</sup> *The Scotsman*, 15 Nov. 1915, in Tuckwell Collection, 665I/107.

<sup>85</sup> *Glasgow Herald*, 8 Jan. 1916, p. 6h; IWM BO 3.23/7.



administrative work and they had hired paid labour to do the actual kitchen work. In December 1916, in a confidential interview with the Women's Service Committee in London, which was investigating ways in which to make better use of the services of middle class women, Mrs. Brownlee, the Chairwoman of the Canteens Committee of the GUWW candidly admitted the difficulties in Glasgow. For a start, there were problems with transportation; as none of the lady volunteers lived in the area of the munitions factories, the organization had to pay for taxis to take them home after their shifts. But, as Mrs. Brownlee pointed out at length, the most serious problem concerned voluntary workers:

In connection with the Voluntary workers I would just like to say that we found our difficulty was that we could not retain them for any length of time. We started with Voluntary workers, and we had about 115 on whom we called for help in one of our canteens.... The system has been changed with us... it is a different type of worker we employ, more of the charwoman type, who now comes in to work as a paid worker. We consider that it is a waste of the voluntary worker's time to do that work when she might be occupied in better work, as it is only clearing away dishes, washing up and that sort of thing.... We want them paid and organized - when they are paid we know they have to do what we tell them. That is the position.<sup>87</sup>

As with other middle class philanthropic endeavors, when the first flush of enthusiasm faded and unforeseen complications arose, there was a high attrition rate among the volunteers, and they had to rely on the paid services of working class women to carry out their service.

Voluntary women's organizations also failed to engender any feelings of mutual benefit or respect. While it is difficult to gauge the nature of class interaction within the factory walls, we have some clues about the attitude of the middle class canteen ladies to the working class women they sought to 'serve'. In the canteens, there was a high incidence of theft of cutlery and cups both of which were in very short supply during the war. At Cardonald, the problem was so acute that

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<sup>86</sup> *The Times*, 3 Feb. 1916.

<sup>87</sup> IWM MUN 18.1 - 18.6.

the management contemplated restricting the provision of 'free cutlery' because 'the loss for the last three months is very close upon **Two Thousand Articles**.'<sup>88</sup> At Paisley, the problem was also rife. In one factory canteen, which served 200 - 300 women, 'sixty teaspoons, 240 articles of cutlery, 400 Bovril cups, and 1200 teacups had been stolen' within a seven-month period, and the factory management was considering chaining the cups to the tables. They also tried to persuade the middle class women to monitor the situation more closely, but the 'ladies in charge of the canteen... declined to take full responsibility owing to the class of women they had to deal with.'<sup>89</sup> The hopes that working class women would 'respond to the good influence' of middle class volunteers were far removed from the reality of running a factory canteen. The daily interaction with working women produced circumstances which middle class women did not envisage when formulating their schemes of amelioration, and were hardly conducive to fostering feelings of 'sisterhood' or 'togetherness'.

We have another clue which reveals the nature of middle class women's attitude towards their 'poorer sisters.' The primary function of the BWTA was not the provision of factory canteens, but temperance work. Indeed, the initial impetus behind the wartime factory canteen movement was to increase the output of munitions by keeping the workmen out of pubs during their lunch hour. According to the government body which regulated factory canteens: 'It is a matter of common knowledge and experience that the absence of proper facilities for obtaining wholesome and sufficient nourishment frequently leads, directly or indirectly, to drinking habits with all their resultant evils.'<sup>90</sup> The Glasgow branch of the BWTA, which operated factory canteens in at least three local munitions plants, indulged in another activity which expressed their

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<sup>88</sup> *Cardonald News*, 21 Dec. 1917, in IWM MUN VII/21 (bold in original).

<sup>89</sup> *Paisley and Renfrewshire Gazette*, 10 Feb. 1917; *Glasgow Herald*, 8 Feb. 1917, p. 3e.

<sup>90</sup> *Third Report of the Central Control Board (Liquor Traffic)*, Cd. 8558 (1917-1918), 9.

concern for the well-being of working class women. At the Annual General Meeting in February 1917, the chairwoman, Mrs. Gilchrist, announced the results of an investigation carried out by members who ‘undertook to watch and count the entrants to selected public-houses on a Saturday evening for two hours... in various parts of Glasgow’ and in large neighbouring towns. She was saddened to find that ‘in Glasgow alone 2806 women entered 22 public-houses within a few hours.’ The association decided to bring the matter to the attention of the appropriate authorities and resolved to send a copy of the report, which included ‘statistics relating to child neglect through drink,’ to all local members of parliament.<sup>91</sup> We do not know if the BWTA women who were ‘cooking and waiting’ on the women workers in the canteens were the same ones shadowing their movements outside Glasgow pubs, but they did belong to the same organization. The activities of the BWTA women reveal the nature of their ‘concern’ for working class women and illustrate a great depth of incomprehension and alienation in their attitudes towards working class women.

Of course, not all munitions women stole cups and cutlery, and not all middle class volunteers patrolled the pavements outside Glasgow pubs. Other middle class women’s organizations took an interest in the canteen system from different points of view. For example, the Scottish Council on Women’s Trades’ interest in canteens was motivated not by the moral preoccupations of the BWTA, but by a long-standing interest in the industrial conditions of working class women.<sup>92</sup> Although the BWTA is an extreme example, and although factory canteens had beneficial aspects, they nevertheless provided a location for the festering of class resentment. Whenever middle class women intruded into the lives of working class women in a ‘do-gooder’ capacity, there was a strong possibility that their schemes of improvement, presumption at knowing what is best, and officious, condescending manner would generate resentment in working

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<sup>91</sup> *Glasgow Herald*, 8 Feb. 1917, p. 5e.

class women. Even though the food may have been appreciated, the haughty attitude accompanying it was not. In *The Bulletin* photographs of the East Hope St. canteen, the GUWW women are easily identified by their smart black hats and authoritative airs.<sup>93</sup> Although they were there purportedly to 'serve' the workers, the photographs leave no doubt upon which side of the class divide subservience belonged.

Newspaper reports themselves were potential causes of class resentment. It must have rankled some working class women that newspaper articles about munitions factories invariably showcased the contribution of the middle class volunteers. Even the *Partick and Maryhill Press*, a local weekly paper which was often sympathetic to working class interests, informed its readers of one factory canteen: 'the food is supplied at modest prices ... [and] the cheapness is due to the initiative of wealthy ladies belonging to the best society of the town, who act as the servants at the factory.' The article went on to mention the system of weekend workers:

The workers of the week must rest... but there must be no cessation of shell making... The work must never fail. But who is to prevent this but these same ladies who at other times wait in the buffets, but who at the weekend don overall and cap and set their white hands to the heavy work.<sup>94</sup>

Although middle class women constituted a far smaller proportion of the workforce and worked for far shorter hours than the working class women, they were very often the objects of public acclaim in newspapers, which was hardly conducive to fostering feelings of 'appreciation' that middle class women expected to generate in their poorer sisters.

It is difficult to ascertain the attitude of working class women and we have to rely almost entirely on middle class women's accounts, some of which mention the overt tensions on the factory floor. Barbara Drake, the authority on women in the engineering trades, saw beneficial

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<sup>92</sup> Scottish Council on Women's Trades, *23<sup>rd</sup> Annual Report* (1917-1918), 12.

<sup>93</sup> *The Bulletin*, 12 Oct. 1915, p. 12.

effects of middle class women in the factory, such as their spontaneous indignation at the condition of toilets and their efforts to improve them, but she also admitted that ‘the regular worker’ viewed the middle class worker ‘with unconcealed dislike and suspicion.’<sup>95</sup> Similarly the account of Stella Drummond and her friend Lady Mary Hamilton’s foray into munitions work revealed that they ‘mastered the processes on which they were engaged in a few weeks, but admitted that a victory over the prejudices of the factory employees, inclined to resent the introduction of “swells” was a lengthier task.’<sup>96</sup> We also have the account of Peggy Hamilton who revealed the resentment felt by working class women to the favouritism shown to middle class women. Towards the end of the war, Hamilton felt depressed by the deprivations caused by the war, but she conceded that she was ‘still in far happier circumstances than my fellow workers.’<sup>97</sup> Surely the reverse must have been true, and working class women would realize that they were in *less* happy circumstances. It is highly likely that close proximity in the factories highlighted glaring inequalities, exacerbated feelings of ‘them’ and ‘us’, and raised class-consciousness among working class women.

#### **‘Somewhere in Scotland’ - An Engineering University for Women**

One of the most remarkable undertakings in middle class women’s wartime employment, ‘an engineering university for women,’ was built in a tiny village in the south west of Scotland. Previous historians have touched only briefly upon this intriguing ‘university’, but it deserves further study as it illustrates some of the features and the shortcomings of middle class women’s work, as well as revealing the degree of confidence that some employers and Ministry officials were prepared to invest in the work of middle class women.

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<sup>94</sup> *Partick and Maryhill Press*, ‘French Journalists Visit Glasgow,’ 28 Apr. 1916.

<sup>95</sup> Drake, *Women in Engineering*, 77.

<sup>96</sup> McLaren, 64.

In July 1916, reports appeared in the press of an ‘experiment of quite a novel kind’ that was about to take place ‘somewhere in Scotland.’ As reported in *The Times*: ‘Two of the directors of a well-known controlled establishment have been so impressed by the work done by educated women that they are prepared to sink £40,000 in a concern which will be worked entirely by such women.’<sup>98</sup> According to the reports, ‘ordinary factory conditions will not prevail’ at the new enterprise; rather the emphasis was to be on education, with the women taking a three-year course of practical and theoretical instruction and sitting examinations every six months. Working a forty-four hour week on the manufacture of aeroplane parts, they would receive £1 per week for the first six months, after which time their examination results would determine their pay rate. Other features, which did ‘not prevail’ in ordinary factories, included a music-room, library, recreation rooms and classrooms. *The Times* also pointed out that the factory would be ‘only open to well-educated women between 20 and 35 [with] an interest in mechanics,’ emphasizing that preference would be given to widows and daughters of officers in the army and the navy. Moreover, the directors envisaged the scheme not just as a wartime venture but as a permanent institution for the training of educated women as engineers. In accordance with the strict censorship laws governing munitions establishments, the reports were shrouded in secrecy and, apart from the mysterious ‘somewhere in Scotland,’ they gave no hint of the location of the factory, or the identity of the directors.

Sixteen months later, in November 1917, the grand plans had become a reality and a rash of reports appeared, within days of each other, in magazines as diverse as *The Autocar* and *The*

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<sup>97</sup> Hamilton, 60.

<sup>98</sup> *The Times*, 10 July 1916; 12 July 1916; *The Engineer*, 14 July 1916.

*Gentlewoman*.<sup>99</sup> Complete with photographs of a remarkably modern-looking, four-storey, ferro-concrete factory set amidst bracken hills, the reports were designed to make the new engineering enterprise an attractive proposition for educated middle class women. Situated next to a fast-flowing river, the factory was powered entirely by electricity, and outfitted with ‘the “last word” in machine tools.’<sup>100</sup> The syllabus included classes conducted by ‘highly trained lecturers,’ and shop instruction in the more intricate aspects of lathe and other machine work.<sup>101</sup> There was a complex system of evaluation and remuneration with wage increases linked to exam results. Students had to achieve not only 75% on the written exam, but also 90% in other categories of evaluation such as attendance, punctuality, ‘general conduct,’ and cleanliness of machines and work areas. While admitting that the wages were smaller than those earned by female operatives in shell factories, the reports nevertheless pointed out that the women were:

engineer apprentices, not mere war workers. They are learning a profession and being fitted ultimately to take up good posts as qualified engineers. And the prospect of the woman engineer is as good as that of the man.... So, by and by there may be women earning from one to two thousand a year.’<sup>102</sup>

There were other attractive features. Not only did the students ‘dine sumptuously’ in ‘well-appointed mess rooms’ on three course meals cooked in an all-electric kitchen, they also had a *char-a-banc* to drive them from the town to the factory, although it was noted that many preferred to ride their bicycles. There was not yet sufficient accommodation in the village for all of the students, but plans were underway for the construction of a new hostel. All of the articles remarked on the beautiful surrounding scenery and the excellent recreational facilities. While the factory had

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<sup>99</sup> *The Autocar*, 10 Nov. 1917; *Engineering*, 9 Nov. 1917; *The Lady*, 8 Nov. 1917; *Lady’s Pictorial*, 10 Nov. 1917; *The Gentlewoman*, 17 Nov. 1917. The latter four articles were reprinted in a booklet, *Engineering: A New Profession for Educated Women: Expert Opinions of a Notable Achievement* (IWM MUN 17.3/4).

<sup>100</sup> IWM MUN 17.3/4, p. 40.

<sup>101</sup> *Engineering*, 9 Nov. 1917, p. 486.

a library and a reading room, the nearby town provided opportunity for tennis, sea bathing and hockey. Indeed, so glowing were the reports that they made the factory seem more like a holiday camp than a munitions factory. Already sixty women with a ‘talent for engineering’ were engaged in the work and the directors anticipated a workforce of 200 in the near future. Moreover, the superintendent of the factory was eminently qualified for the job being a ‘Girton girl’ with ‘high honours’ in mathematics, and a photograph of her astride her motorcycle reinforced the sense of adventure and modernity surrounding the enterprise.<sup>103</sup>

All of the reports underlined the class exclusivity of the factory. *The Autocar* noted that it was ‘not open to female labour of the usual factory class;’ and *Engineering* stated that the factory was ‘for the employment exclusively of educated women of good social standing and in contradistinction to the woman factory worker.’<sup>104</sup> But *The Lady* dealt with the issue in the most forthright manner:

It is worthy of note that it is not now, nor will it ever be, open to female labour of the usual factory class. This fact is insisted on not from any snobbish motives, but because it is realised that a mixture is not desirable. The educational and cultural differences existing between people place them in different categories, and it is as distasteful to the one as to the other to have to mingle.<sup>105</sup>

The new enterprise appeared to be all that its promoters had envisaged, and the articles had done a splendid job in promoting engineering as an exciting career to the middle class women of Britain.

Once more, as in the earlier reports, the location of the factory and the identity of the directors remained a mystery. *The Daily Mail*, which had interviewed one of the owners, referred to him simply as: ‘one of our great engineers of the war, a man who makes everything from a

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<sup>102</sup> *Lady’s Pictorial*, 10 Nov. 1917, p. 614-5, in IWM MUN 17.3/4, p. 29. A statement bound to generate interest as women in the top levels of the munitions industry earned roughly £250 per annum.

<sup>103</sup> *The Gentlewoman*, 7 Nov. 1917, in IWM MUN 17.3/7.

<sup>104</sup> *The Autocar*, 10 Nov. 1917, p. 454; *Engineering*, 9 Nov. 1917, p. 485.

<sup>105</sup> *Lady’s Pictorial*, 10 Nov. 1917, p. 616; IWM MUN 17.3/4, p. 30.



battleship to an aeroplane engine.’<sup>106</sup> The great engineer himself, however, could not resist the temptation to share the secret with his many employees. On the front page of the 6 November 1917 issue of *The Beardmore News*, a reprint of *The Daily Mail* article appeared along with the following broad hint: ‘Readers of “The Beardmore News” will have no difficulty in identifying who is referred to in the opening words, “one of our great engineers of the war.”’ Sir William Beardmore himself, displaying a surprising faith in women’s abilities, was indeed the originator of the remarkable wartime experiment in the utilization of middle class female labour.

The firm of Sir William Beardmore was a gigantic industrial octopus whose tentacles reached into many areas of the engineering business, stretching further afield as the war progressed.<sup>107</sup> In addition to his many other business interests, Beardmore had, in the early 1900’s, taken an interest in the manufacture of cars and was a backer, and later the chairman, of Arrol-Johnston Limited, one of Scotland’s three principal car manufacturers. Beardmore hired T.C. Pullinger, an engineer with long experience in the car industry, as the general manager, and in 1913, Arrol-Johnston moved to a new, custom-built factory at Heathhall, near Dumfries in the south west of Scotland. Heathhall, modeled on high-efficiency American car manufacturing plants, was ‘Britain’s first ferro-concrete, reinforced steel car factory,’ and ‘the most modern in Europe’ at the time.<sup>108</sup> Before the war, Beardmore had also taken an interest in the manufacture of aircraft, and in

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<sup>106</sup> *Daily Mail*, 2 Oct. 1917, in Tuckwell Collection, 665d/2c.

<sup>107</sup> See Hume and Moss, chapter 5. In his April 1919 Victory Dinner speech, Beardmore proudly proclaimed his company’s enormous wartime growth: ‘In 1914, just before the war broke out, the total number of employees in the firm was 11,080. When the armistice was declared in November last, the total number of employees on the books was 42,500. The weekly wages paid in 1914 averaged £22,800; in 1918 they averaged £145,000 weekly. The total sum paid in wages during the war period amounted to a few thousand pounds short of 18 ½ millions sterling. The total turnover of the firm during the war period was £68,275,000.’ (*The Beardmore News*, 14 May 1919, p. 5).

<sup>108</sup> Tim Amyes, ‘William Beardmore,’ typescript, 2; Hume and Moss, 107-8; Michael Worthington-Williams, *The Scottish Motor Industry* (Aylesbury, 1989), 5-9. I am very grateful to Tim Amyes, the archivist of the Scottish Motoring Museum, for allowing me to read the typescript of his article, his interview with Dorothee Pullinger, and other information relating to Tongland.

1913, part of Heathhall was used for the development and production of aero-engines. In 1915, as the government's demand for aeroplanes for military and naval purposes increased, the entire productive capacity of Heathhall was devoted to aircraft manufacture. At Heathhall, Beardmore and Pullinger, along with Major Frank Halford from the Royal Flying Corps, developed a powerful new aero-engine, known as the B.H.P. after its designers, (Beardmore, Halford, Pullinger) and later as the Galloway Adriatic. In June 1916, the first run of B.H.P. engines was made at Heathhall, but as the factory was already working to capacity, Beardmore and Pullinger decided to build a new factory and formed a separate company, the Galloway Engineering Company, to manufacture the aero-engines.<sup>109</sup> They chose Tongland, a small village two miles from the town of Kirkcudbright and close to Dumfries, as the site for the new factory. Hence the genesis of the mysterious 'engineering university for women'.

Beardmore and Pullinger spared no expense in the building of their new factory, which was not only the latest in design and construction, but also equipped with the most up-to-date machinery. Unlike many hastily-constructed, wartime buildings, the Tongland factory was 'built with a view to permanence.'<sup>110</sup> When we consider the wartime difficulties and restrictions on new buildings, Tongland becomes an even more remarkable achievement. Throughout the war, Beardmore received a number of government grants to facilitate the construction of new factories and extensions, but it is not known if he received one for Tongland. The government did, however, contribute very generously towards the construction of a hostel in Kirkcudbright, allocating it an astonishing 27% of the Ministry's hostel budget for 1917, thereby making it the largest grant to any hostel in the United Kingdom. According to the Official History of the Ministry: 'The largest

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<sup>109</sup> Gillies and Wood, *Aviation in Scotland*, 39-40; Hume and Moss, 126-7; Worthington-Williams, 5-9; Amyes, typescript.

<sup>110</sup> IWM MUN 17.3/6, p. 2.

grant £1,349 13s. 9d. was made to the Belmont hostel, Kirkcudbright, run by the YWCA for educated women employed as apprentices at the Galloway Engineering Works.<sup>111</sup> The state-of-the-art factory building and the large hostel grant suggest that Beardmore, Pullinger and the Ministry had great faith in the ability of Tongland's middle class women workers to produce the goods.

The high degree of investment in Tongland begs the questions: what could possibly have induced two hard-headed businessmen to engage in such an ambitious and innovative scheme? And how did Tongland metamorphosize into 'an engineering university for women'? According to the explanation given in the press (although no names were ever used), the 'college' was 'the result of the enthusiasm of a young girl for her father's profession.'<sup>112</sup> Pullinger's daughter, Dorothee, was indeed a young woman with an abiding interest in engineering who had wanted to be an engineer from an early age and had persuaded her father of the feasibility of training women as skilled engineers.<sup>113</sup> Dorothee Pullinger was undoubtedly an important factor in persuading her father and his partner to invest in the bold experiment, but we must also consider Beardmore's personality. His biographers have emphasized his drive and enthusiasm for engineering and the experimental nature of his enterprises, calling him 'a man of projects and of action, an experimenter and explorer.'<sup>114</sup> Nevertheless, the question remains: what prompted Beardmore to place such a large degree of faith in the capabilities of *women* workers? Although he was almost undoubtedly the largest employer of female labour in the Scottish munitions industry, he was not always the most enthusiastic advocate of their work. In his April 1919 Victory Dinner speech, his acknowledgment

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<sup>111</sup> *OHMM*, 5, v, 28, note 2.

<sup>112</sup> *Daily Mail*, 2 Oct. 1917, in Tuckwell Collection, 665d/2c.

<sup>113</sup> During the war, Dorothee Pullinger was not part of Tongland's workforce but the welfare supervisor at Barrow in the north of England with responsibility over 7000 women workers. She went on to gain an engineering degree and an MBE; in 1999, a blue plaque was erected at Barrow to honour her achievement as one of Britain's first women engineers. I am grateful to Tim Amyes for this information.

of women's contribution came at the end of his speech, almost as a grudging afterthought: 'Now, before closing my remarks, I would like to pay some little tribute to the women who have accomplished such good work during the war, as I feel that without making reference to them I would be lacking in "gallantry."' <sup>115</sup> Moreover, in January 1916, only a few months before his grand scheme for Tongland hit the headlines, he had made it clear that he did not foresee a long term future for women in his engineering works. At the opening of the Underwood factory canteen, Beardmore told the assembled women workers that 'he wished to impress upon them to remember that [their work] had been started only for the duration of the war,' and he encouraged them to work hard while they had the opportunity and accumulate a 'useful nest egg' by the end of the war. <sup>116</sup> On the other hand, as we have seen, he greeted Moir and Cowan with enthusiasm when they approached him with their scheme for middle class weekend relief workers. It seems therefore that Beardmore was particularly keen to engage the services of middle class women. But why?

Labour supporters such as Sylvia Pankhurst had no hesitation in identifying Beardmore's motivation, declaring Tongland 'another scheme for getting cheaper labour.' In July 1916, a few days after the initial press announcements of the new factory, she wrote with her characteristic forthrightness: 'though we welcome every new opening for women, we cannot countenance payment which simply makes women blacklegs.' <sup>117</sup> Certainly under the 'money for marks' scheme, Tongland women earned considerably less than munitions women workers who were paid according to Ministry guidelines.

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<sup>114</sup> Hume and Moss, preface. For example, the authors point out that Beardmore's firm experimented in developing different types of aircraft, in contrast to Weir's Cathcart factory, which was 'simply a production unit' (124-5).

<sup>115</sup> *Beardmore News*, 14 May 1919, p. 5.

<sup>116</sup> *Glasgow Herald*, 8 Jan. 1916, p. 6h.

<sup>117</sup> *Woman's Dreadnought*, 15 July 1916.

The greatest clue, however, to Beardmore's participation in the Tongland experiment can be found in a confidential Ministry report:

*Employers and Trade Unions.* – The Glasgow chief investigation officer invites attention to the methods whereby Sir William Beardmore... and Mr. Pullinger... are endeavoring in their own words, “to revolutionize the industrial conditions and make middle-class women workers independent of trade union tyranny and the baleful industrial influences which arise from interference by such organisations.” Their plan materialised in the establishment of a factory stated to be reserved exclusively for women of the middle classes.<sup>118</sup>

As well as a source of cheap labour Beardmore also saw middle class women as an antidote to trade unionism. Beardmore's own words go far in explaining his faith in Tongland and his willingness to invest in it. Middle class women would be more likely to work for the long-term benefit of a higher qualification rather than the short-term necessity of a weekly pay packet that was the primary concern of working class women. The prospect of a skilled, committed, intelligent, patriotic workforce, free from ‘trade union tyranny,’ was a very appealing prospect to Beardmore and well worth the risk.

A combination of factors therefore contributed towards the hatching of Scotland's ‘engineering university for women.’ The acute shortage of skilled male labour during the war and the abundance of government contracts impelled Beardmore into exploring alternative avenues for the provision of skilled labour. His willingness to experiment, his previous satisfactory experience with middle class women workers, and his distaste for trade unionism, combined with the Pullingers' commitment to higher education in engineering for women made the bold ambitious venture of Tongland seem a very attractive proposition.

Tongland, however, failed to sustain its original vision as a pioneering educational institution exclusively staffed by middle class women. In two confidential reports, the factory

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<sup>118</sup> PRO MUN 2/28, 17 Nov. 1917, p. 13.

superintendent, Miss Rowbotham, (the 'Girton girl' with the math tripos and the motorcycle) outlined some of the problems in maintaining the educational component of the factory. Not only were there difficulties in finding a lecturer to provide theoretical instruction, but it was impossible for the women to devote much time to instruction, especially given the government's pressing demands for high production levels. Miss Rowbotham also found that some women were 'averse' to examinations, while others were too tired after a day's work to concentrate on theoretical instruction. The course of theoretical instruction became 'no longer compulsory', and the system of payment depending on exam results was also dropped, and an hourly rate was instituted in accordance with Ministry requirements.<sup>119</sup> Increasingly, Tongland functioned as an ordinary factory rather than an exclusive educational institution.

Tongland was also forced to abandon its original plan of employing only middle class women as it failed to attract or retain a sufficient number of them and had to draw instead upon 'local labour' from Kirkcudbright and the small town of Castle Douglas situated eight miles from the factory.<sup>120</sup> One reason dissuading middle class women from coming to Tongland was the lack of suitable accommodation in the area as, despite the Ministry's generous grant, there were only forty hostel places in Kirkcudbright.<sup>121</sup> Women who were looking for more substantial accommodation than a hostel room were also disappointed, as Miss Rowbotham noted: 'There are no cottages... and it is impossible for girls to settle with their Mothers near the works.' The primary factor, however, in failing to enlist the services of middle class women was:

The isolation of Tongland. There is no opportunity to get away for weekends or to have any outside distraction whatever and only the girls with exceptional love of

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<sup>119</sup> IWM MUN 17.3/6, 5-6.

<sup>120</sup> IWM MUN 17.3/11, 'Report of interview with Miss Rowbotham, Galloway Engineering College, December 31<sup>st</sup> 1918.'

<sup>121</sup> There were three hostels in Kirkcudbright, two owned by the company, one with twelve places and the other with eight, as well as twenty places at the Ministry-supported YWCA hostel. (IWM MUN 17.3/6, 5).

engineering are able to stand the dullness for very long. Out of the total number about 60 have thus far shown real love for the work. 30 of them are more or less of the industrial class and wish to take it up professionally. The others are more educated but have the gift.<sup>122</sup>

It is interesting to note that women 'of the industrial class' were also keen in becoming skilled engineers, even to the point of paying for instruction. Miss Rowbotham reported that: 'The technical instruction is given free to all who entered on a studentship basis though many girls who entered as munition workers at a different rate of pay are allowed to attend the classes on payment of a small fee.'<sup>123</sup> Despite their hopes of employing only 'women of good social standing,' Tongland operated under a two-tier system of an educated middle class 'student' body and a group of regular women factory workers. Unfortunately, Miss Rowbotham's reports give us no indication if *The Lady's Pictorial* article was accurate in its prediction that it would be 'distasteful' for the two classes 'to have to mingle.'

Miss Rowbotham's reports do provide us with valuable insight into the quality of the women's work which she rated as 'very satisfactory...from the point of view of accuracy and good workmanship, [it] leaves nothing to be desired.' She could not, however, be so complimentary about their output, which was 'undoubtedly smaller than in the case of men,' adding 'it is imperative that the present standard should be greatly improved.' It is highly likely that Tongland's low output did not escape the notice of the Ministry as, according to the historians of Scottish aviation, 'the bulk of the production orders [of the B.H.P. aero-engine] were handed over to the Siddeley-Deasy Company of Coventry.' Even although Siddeley-Deasy managed to produce 200 engines a week, by the time the engine 'reached the Services in quantity it was so late that it was

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<sup>122</sup> IWM MUN 17.3/11.

<sup>123</sup> IWM MUN 17.3/6, 4.

nearly obsolete.’<sup>124</sup> In its capacity to produce the goods, as well as in its ability to sustain its vision as an experimental institution for the higher technical education of middle class women, Tongland had failed to live up to the high expectations of its owners.

Miss Rowbotham herself was acutely aware of Tongland’s shortcomings, but she also pointed out that it was labouring under ‘the force of war conditions [which]...gradually turned the College into a works.’ It is equally true, however, that without ‘the force of war conditions,’ Tongland would never have existed as an ambitious experiment in women’s labour. Miss Rowbotham nevertheless had a good point. Many munitions factories suffered teething troubles before production reached a level acceptable to the Ministry, but these troubles were more difficult for a brand new and experimental factory to overcome. Her reports also reveal the great amount of effort that Pullinger and a small band of committed women put into securing the success of the enterprise. Moreover, in the face of all the difficulties and government demands, they did manage to maintain the teaching sessions for those interested, and Miss Rowbotham concluded that ‘no women have been able to gain such a good experience of engineering elsewhere.’<sup>125</sup> She was, however, doubtful that the factory could survive in the post-war market: ‘Hitherto the work has been done on government contracts and it remains to be seen whether in competition with other firms the output of the girls is great enough for the works to pay.’<sup>126</sup> Tongland did survive a few years after the end of the war, with a female workforce engaged in the mass manufacture of a light car named ‘the Galloway’, and with Dorothee Pullinger as the superintendent. But in 1922, a difficult year for the motorcar industry, production of the Galloway was transferred to Heathhall,

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<sup>124</sup> Gilles and Wood, 40. The authors, who briefly mention Tongland but not its female workforce or the circumstances of its conception, were perplexed by the transfer of orders.

<sup>125</sup> IWM MUN 17.3/11, 1.

<sup>126</sup> IWM MUN 17.3/11, 2.



and Pullinger and Beardmore's bold experiment in the employment of middle class women closed its doors for the last time.<sup>127</sup>

Whereas working class women had always worked in factories, the employment of middle class women in the factory environment was a completely new phenomenon. The advent of middle class women into factories provided new areas of interaction between middle class and working class women, and has afforded us the opportunity to examine the nature of class relations amongst women. Although some had optimistically hoped that the participation of middle class women in the munitions industry would soften social antipathies, their presence was much more likely to exacerbate class tensions as they generated many areas of resentment in the women workers. It must have seemed to working class women that some middle class women got the top jobs by virtue of their class alone, as they could come into a factory with no previous industrial experience and be quickly promoted to high-paying, supervisory positions many of which carried the power to reprimand, dismiss, or commit working class women to the sheriff court for prosecution. The reality of mixing the classes was quite different from the high expectations of 'mutual benefit.' There was no transference of good influence and no deeper appreciation of the toils of their humbler sister. Rather there was bitterness and resentment on one side, and a superior, condescending attitude, sometimes bordering on disgust on the other. In munitions factories there was a clear disjunction between the rosy hopes and the harsh realities of class interaction

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<sup>127</sup> Worthington-Williams, 7; Amyes, typescript. The Tongland factory still stands today, a testament to its sturdy construction. Known locally as 'the chicken factory,' for many years it functioned as a battery farm for chickens, and is now a recycling plant. According to information in Kirkcudbright library, a tennis court and swimming pool were built on the roof, further evidence of attempts to provide recreational activities which would attract middle class women with 'the gift' for engineering.

## **Chapter Three**

### **Dilution, Trade Unions, and Gender Relations**

In late January 1918, Sir Auckland Geddes, the Minister of National Service, embarked on a short speaking tour of some key munitions districts in Britain to gain support for the government's new manpower proposals. With an acute need for more men on the Western Front, the War Cabinet planned to extend the age of conscription and to cancel skilled workmen's exemptions from military service.<sup>1</sup> The Minister, however, was unprepared for the unruly reception he received on the evening of 28<sup>th</sup> January in Glasgow's City Hall where 3,000 workmen greeted him with a vociferous rendering of 'The Red Flag.' Amidst angry heckling, Geddes struggled to reassure his audience that there was no government plot to introduce industrial conscription and that only 'young and fit men from industry' would be subject to 'combing-out'. But the workers were having none of it, and the meeting concluded with the passing of defiant resolutions:

- 1) that this meeting pledges itself to oppose the Government to the very uttermost in its call for more men
- 2) that we insist on and we bind ourselves to take action to enforce the declaration of an immediate armistice on all fronts
- 3) our attitude should be to do nothing ...in support of carrying on the war, but to bring the war to a conclusion.<sup>2</sup>

The following afternoon, at Georgetown, the massive munitions plant on the outskirts of Glasgow, another mass meeting of workers took place. On this occasion, 4,000 women workers assembled to deplore the action of the 3,000 workmen who, they claimed, did not represent the views of the vast majority of Clyde workers. The women passed a resolution of a different tone:

This mass meeting of Georgetown workers have heard with horror and indignation of the resolution passed by 3,000 workmen of Glasgow at a meeting last night. They herewith pledge themselves to do all in their power to support the

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<sup>1</sup> Chris Wrigley, *David Lloyd George and the British Labour Movement* (Sussex, 1976), ch. 14.

<sup>2</sup> *Glasgow Herald*, 29 Jan. 1918, p. 4e.

Government in carrying on this war until the country can have peace with honour.<sup>3</sup>

This resounding vote of confidence in the government's handling of the war was heard as far away as London where Winston Churchill, the Minister of Munitions, responded with a telegraph to Georgetown declaring his appreciation of 'the loyalty of the women workers.'<sup>4</sup> Over the next two weeks, local newspapers reported similar expressions of patriotic affirmation taking place in engineering and shipbuilding establishments on the Clyde, many of them acknowledging the good example set by the Georgetown women workers.<sup>5</sup>

The 'Georgetown Covenant,' as the resolution became known, raises questions about the nature of women munitions workers in the west of Scotland. Were they patriotic, diligent workers committed to the war effort, as the Georgetown Covenant suggests? Or, is there an alternative picture of discontent, assertiveness, and militancy? Given the volatile nature of the Clydeside male workforce, were the women workers equally receptive to radical ideas? Did they follow a similar pattern of protest and unrest? Did they join unions and participate in strikes? These are important questions especially considering the reputation of Clydeside as a hotbed of industrial militancy during the war. Indeed, R.J. Morris has pointed to an 'apparent paradox' in the history of Clydeside women: why were they so prominent as leaders of the rent strikes of 1915, and yet so conspicuously absent from subsequent disputes?<sup>6</sup> While there is an extensive historiography of wartime industrial unrest on Clydeside, it is marked by an exclusive concentration on the male workforce, and there are no studies of the role of women in the region's industrial struggles.

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<sup>3</sup> *Glasgow Herald*, 30 Jan. 1918, p. 6f.

<sup>4</sup> *Glasgow Herald*, 2 Feb. 1918, p. 5g.

<sup>5</sup> *Glasgow Herald*, 31 Jan. 1918, p. 3d; p. 4f; 1 Feb. 1918, p. 4f; 2 Feb. 1918, p. 5g; 6 Feb. 1918, p. 4e; 7 Feb. 1918, p. 4e; 12 Feb. 1918, p. 5c. James Hinton has argued convincingly that the Ministry, employers and police stage-managed the workplace meetings as part of the counter-offensive against dissent. He also notes that 'such open resistance to the militants... was unprecedented' (Hinton, *The First Shop Stewards Movement*, 264).

<sup>6</sup> R.J. Morris, 'The ILP, 1893-1932: Introduction,' in *The ILP on Clydeside*, ed. Alan McKinlay and R.J. Morris (Manchester, 1991), 12.

The events of 'Red Clydeside' are well known and only a brief synopsis is necessary here. In February 1915, a strike for a wage increase of 2d. per hour in a few engineering workshops spread like wildfire and within days 10,000 men in twenty-six factories had downed tools. Out of the strike emerged the Clyde Workers Committee (CWC), a heterogeneous association of shop stewards who advocated industrial unionism. In June 1915, the passing of the Munitions of War Act further outraged workmen with its provisions for the dilution of skilled labour and the system of leaving certificates. Meanwhile, thousands of working class women in Glasgow were protesting against wartime rent increases by participating in rent strikes, which forced the government to pass the Rent Restriction Act, forbidding rent increases during the war. In late December, Lloyd George visited the Clyde to persuade the men to accept dilution, but the CWC informed him that dilution was acceptable only if it was carried out under worker control. On Christmas Day, an attempt to address a meeting of angry Clyde workmen ended in a humiliating debacle for Lloyd George. On 1 January 1916, police and military authorities suppressed the ILP weekly paper, *Forward*, for carrying a full report of the Christmas Day meeting rather than printing the heavily censored official account. Later in January, the government dispatched Dilution Commissioners to the Clyde to effect dilution, but heightening tensions over dilution and the spread of revolutionary rhetoric culminated in the deportation and imprisonment of shop steward leaders and socialist agitators in March 1916. With the Clyde's hard core of troublemakers removed, dilution proceeded apace as thousands of women entered engineering workshops and shell factories.

Dilution has formed a central issue in the historiographical debate over the nature of 'Red Clydeside,' in which the neo-Marxist historian James Hinton and the liberal revisionist Iain

McLean stand as the two main protagonists.<sup>7</sup> Hinton, concentrating on the history of the syndicalist CWC, claims that the government used worker resistance to dilution as an excuse to mount a deliberate offensive to suppress the CWC and isolate the revolutionary vanguard from the rank and file. McLean, seeing craft resistance to dilution as the central issue, argues that 'Red Clydeside' was not a class movement, but an interest group of skilled engineers whose main concern was to protect the skilled men's trade privileges against the encroachment of female labour. While Hinton's focus is on worker control of industry and the existence of a revolutionary potential on the Clyde, McLean's is on the narrow economic concerns of skilled workers and a deeply divided Glasgow working class.

Although there has been much written about dilution, there is almost nothing about the female dilutees. Hinton does include a short discussion of the women workers at Parkhead Forge, but McLean barely mentions them. His lack of attention to the position of women workers has caused errors in his account which undermine the validity of his argument. McLean is mistaken both in his assessment of Beardmore as a 'conservative employer' who was slow to hire female labour, and in his assertion that 'the first women to come to Parkhead did not arrive until 29<sup>th</sup> February [1916].'<sup>8</sup> Far from being conservative, Beardmore was quick to recognize the possibilities of female labour and became one of the first, and most aggressive, employers of women munitions workers in the Glasgow area. In April 1915, ten months before McLean sees them there, women were employed on shell making in the East Hope St. works at Parkhead Forge. By the summer of 1915, the women had joined the recently established Parkhead branch of the National Federation of Women Workers (NFWW), and by November, they were

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<sup>7</sup> James Hinton, *The First Shop Stewards' Movement*, (London, 1973); Iain McLean, *The Legend of Red Clydeside* (Edinburgh, 1983).

<sup>8</sup> McLean, 72.

threatening strike action over low rates of pay.<sup>9</sup> Significantly, David Kirkwood,<sup>10</sup> convener of the Parkhead shop stewards, had helped the women to organize and was aiding them in their demand for the government-regulated pay rate of £1 per week. Kirkwood's involvement with the organization of women workers weakens McLean's thesis that the engineers were obstructing dilution because of craft conservatism. It makes no sense that Kirkwood would aid women workers in November 1915, and then obstruct their entry into Parkhead workshops in February 1916.

Previous accounts have tended to interpret the dilution struggle as the blanket opposition of male trade unionists to women on the shop floor. While traditional patriarchal resistance to women workers existed on the Clyde, the situation is more complex. The entry of women into the engineering and metal industries constituted one of the thorniest issues on the British Home Front. Even before the war, skilled workmen had felt threatened by increased mechanization and the erosion of their traditional skills and privileges. The government's proposals to mass produce munitions by diluting skilled labour with unskilled and semi-skilled labour heightened their fears that employers would use female labour, notorious for its cheapness and docility, to undercut men's wages and further erode their position in industry. The craft unions responded by demanding a policy of equal pay for women, not because they felt that women deserved equal pay, but because they wanted to lessen the likelihood of employers continuing to hire women in the place of men after the war.

We cannot fully discuss dilution without attention to the issue of women's wages, an area of intense confrontation between employers and male trade unionists. By looking at the wages

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<sup>9</sup> **National Federation of Women Workers** Founded in 1906 exclusively for the organization of women workers, it grew in strength during the war through a number of vigorous campaigns; in 1921, it merged with the Women Workers' Section of the National Union of General Workers.

<sup>10</sup> **David Kirkwood** (1872-1955) ILP member of the CWC and convener of shop stewards at Parkhead Forge until his deportation in 1916; arrested in the George Square riots of 1919; Labour M.P. for Dumbarton, 1922-50, created Baron Kirkwood of Bearsden, 1951; remains a figure of controversy.

and working conditions of female munitions workers on Clydeside, this chapter brings sharply into focus the position of Clydeside employers. While previous accounts have focused on Lang's of Johnstone and craft resistance, this chapter will focus on the Beardmore conglomerate. Beardmore provides an excellent example of an employer who was keen to exploit the new female workforce, expecting them to work for patriotic motives, and accept reduced rates of pay. While publicly heaping extravagant praise on the women munitions workers in his employ, Beardmore consistently avoided paying them fair wages for their labour. Glasgow's male munitions workers were vehemently opposed to employers using dilution as a means of increasing profits and as an instrument of control over the workforce. Engineers may have resented the presence of women in their workshops, but it was the employers that they were fighting. Class confrontation, not craft conservatism, was the primary driving force behind the dilution struggle on Clydeside.

This chapter will look at the murky issue of dilution on the Clyde from the female dilutees perspective. First, we will examine the national developments and debates over the introduction of women into the British engineering industry. Second, we will look at the entry of women into Beardmore's Parkhead Forge, from the early beginnings in April 1915 till the deportation of Kirkwood and other shop steward leaders a year later. This will include an assessment of labour relations at Beardmore's plants, and an examination of his attitude toward women workers. Third, we will examine the extent of unionism among the women workers and their participation in strike activity. Fourth, we will look briefly at the appearance of women before the Glasgow munitions tribunal. Finally, we will examine the nature of gender relationships in wartime Clydeside workshops.

### Agreements, Legislation, and Recommendations

By the spring of 1915, one of the biggest problems facing the government was the inadequate supply of munitions for the British army, and the greatest obstacle to increasing production was the shortage of skilled labour. After various plans, including the release of soldiers from the front and the importation of workers from abroad, had failed to solve the labour shortage, the government decided that a vigorous policy of dilution of skilled labour was 'Britain's last best hope' for producing a sufficient supply of armaments.<sup>11</sup> In August 1915, Dr. Christopher Addison, the Parliamentary Secretary at the Ministry of Munitions, impressed upon representatives from the Ministry's Boards of Management the urgent necessity for dilution, asking them to:

...consider the question of the employment of female labour. The crux of our difficulty is the supply of labour.... The only thing to be done to give immediate relief is to encourage the employment of unskilled and female labour.... Every unskilled man or woman who can be put onto shell making releases a man who could be used to much greater advantage in other work. It is only by the employment of female labour that we can hope to get that large mass of machinery which is at present idle at nights, running at nights.<sup>12</sup>

In forcing through the policy of dilution, the government had to tread carefully between the two hostile camps of the employers and the trade unions. The trade unions, of which the Amalgamated Society of Engineers (ASE) was the largest and most powerful, were determined that employers should not use the introduction of female labour to weaken the position of skilled workers, and demanded government regulation of women's wages as a prerequisite to their co-operation on dilution. The employers, on the other hand, were outraged at the government's conciliatory attitude to the unions and at their attempts to dictate women's wage rates. From the very beginning, deep-rooted suspicions and bitter recriminations marked the dilution struggle.

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<sup>11</sup> R.J.Q. Adams, *Arms and the Wizard* (London, 1978), 71-5, 90-101.

<sup>12</sup> GUABRC, DC 96/17/57, confidential minutes of a conference at the Ministry of Munitions between officials and representatives from the Ministry's twelve Boards of Management, 17 Aug. 1915.



The first national agreement permitting dilution was the Shells and Fuses Agreement signed on 4 March 1915 by the Engineering Employers' Federation (EEF) and the major engineering trade unions. The trade unions agreed to allow female labour, for the duration of the war, to perform a number of repetitive operations in the production of shells, fuses and cartridge cases. In return, the EEF agreed to pay 'the usual rates of the district for the operations performed' to all women employed in the place of skilled tradesman. The agreement, however, was flawed as there were no women qualified to undertake the work of skilled tradesman, and it contained no provision regulating the payment of semi-skilled or unskilled women. Within days of signing, the EEF decreed that women doing the work of unskilled and semiskilled men 'shall be paid the recognized rates in the district for female labour.' The ASE, furious at the employers' interpretation of the agreement, responded that 'female labour undertaking the work of semiskilled or unskilled men must receive the rates paid to the men they displace.'<sup>13</sup>

The failure of the two sides to reach an agreement caused the government to intervene by calling a conference later in March at the Treasury between Lloyd George, then Chancellor of the Exchequer, and thirty three trade unions who were directly involved in the manufacture of munitions. Under the terms of the Treasury Agreement, the trade unions agreed, for the duration of the war, to relax all customs that restricted the output of munitions and to permit the dilution of labour. In return, the government agreed to secure the restoration of previous conditions after the war, to limit the profits of munitions firms, and to ensure that 'the admission of semiskilled or female labour shall not affect adversely the rates customarily paid for the job.' Although the Treasury Agreement was more precise than the Shells and Fuses Agreement, there nevertheless remained uncertainty over the position of women workers. In an open letter to Lloyd George,

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<sup>13</sup> Barbara Drake, *Women in the Engineering Trades* (London, 1917), 16-7; G.D. H. Cole, *Trade Unionism and Munitions* (Oxford, 1923), 84.

Sylvia Pankhurst<sup>14</sup> asked for a precise interpretation of the condition, ‘the admission of female labour shall not adversely affect the rates customarily paid for the job.’ Lloyd George’s reply revealed that the agreement applied to women on piece rates only: ‘if the women turn out the same quantity of work as men employed on the same job they will receive exactly the same pay.’<sup>15</sup> While providing no protection to women on time rates, the agreement offered only scant protection to women on piece rates as there were no customary rates before the war for women in engineering. According to Barbara Drake,<sup>16</sup> the Treasury Agreement was therefore ‘as much a dead letter as the Shells and Fuses Agreement,’ and offered ‘no protection at all to inexperienced workers introduced in the trade during a period of extraordinary upheaval.’<sup>17</sup>

The Treasury Agreement formed the basis of the Munitions of War Act of July 1915 which gave wide-ranging powers to the Minister of Munitions including the authority to prohibit strikes and to make arbitration compulsory, to declare factories ‘controlled establishments,’ to tax the profits of munitions firms, and to enforce the dilution of labour. The most contentious part of the Act, however, was the system of leaving certificates which virtually bound workers to their jobs as it was illegal to hire a workman who had been employed on munitions work unless he held a ‘leaving certificate’ which indicated that his previous employer had agreed to release him; a worker not in possession of a leaving certificate could not be hired for six weeks. Leaving certificates provoked a deep sense of injustice in workers who bitterly resented the power the Act had given to the employers, calling it the ‘Slavery Act’ because of the unprecedented restrictions it placed on their personal freedom. However, although the Act had given the Minister an

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<sup>14</sup> **Sylvia Pankhurst** (1882-1960) Secretary of the East London Women’s Suffrage Federation, champion of the rights of working class women, and severe critic of the government during the war.

<sup>15</sup> Drake, *Women in Engineering*, 17-9; Sylvia Pankhurst, *The Home Front*, (London, 1932), 158-9.

<sup>16</sup> **Barbara Drake** (1876-1963) Fabian Socialist and niece of Beatrice Webb, driving force behind a Fabian investigation into the position of women in industry, and author of two highly respected books on the subject: *Women in the Engineering Trades* (1917), and *Women in Trade Unions* (1920).

<sup>17</sup> Drake, *Women in Engineering*, 20, 19. In addition, unscrupulous employers altered piecework prices with little justification; Drake recounts one foreman stating: ‘What can one do when a girl is earning as much as 15s. a week but lower the piece rate?’

unprecedented degree of control over the labour force, it had actually given him little power to regulate the wages of women munitions workers.<sup>18</sup>

In June 1915, the ASE responded to their unprecedented situation by entering into an informal alliance with the NFWW. After the signing of the Treasury Agreement in March, the ASE, conscious of the necessity of organizing the new female workforce that was about to enter their workshops, had briefly considered the possibility of admitting women to membership, but the overwhelming majority of members rejected the idea as they considered women's presence in engineering workshops a temporary wartime measure. Instead, the executives of the ASE and the NFWW entered into an alliance whereby the ASE offered assistance in the organization of women munitions workers and in their wage negotiations with the government; in return, the NFWW pledged to support the restoration of trade union practices and the reinstatement of ASE members after the war. Although the ASE came in for criticism for its refusal to admit women, Mary Macarthur,<sup>19</sup> the head of the NFWW, defended the alliance by pointing out that women 'could only have been paper members' of the ASE, whereas in the NFWW they gained important experience as officials, collectors and shop stewards.<sup>20</sup>

In August 1915, amid continuing disputes over women's pay, the ASE and NFWW proposed to the Ministry that women munitions workers should receive a minimum rate of not less than £1 per week. In September, under increasing pressure from the ASE, which threatened not to support dilution unless the government took action on women's wages, Lloyd George appointed the Central Munitions Labour Supply Committee, under the chairmanship of Arthur

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<sup>18</sup> Adams, 83-9; Drake, *Women in Engineering*, 25-6; *OHMM*, 4, ii, 47; 4, i, 37. By declaring a factory a 'controlled establishment', the Ministry assumed the power to regulate its workforce, and to limit the profits of the employer, but it did not interfere in the day-to-day management of the factory.

<sup>19</sup> **Mary Macarthur** (1880-1921) After a middle class upbringing in Ayr, Macarthur became interested in trade unionism in 1901; secretary of the Women's Trade Union League in 1903; founder and driving force of the NFWW in 1906; married W.C. Anderson, Labour M.P. for Attercliffe, in 1911; an eloquent speaker and energetic organizer, renowned for her straightforward, 'no-nonsense' manner.

<sup>20</sup> Mary Macarthur, 'The Women Trade Unionists' Point of View,' in *Women and the Labour Party*, ed. Marion Phillips (London, 1918), 22; Drake, *Women in Trade Unions*, 75.

Henderson and including Mary Macarthur as a member, to draw up a scheme for the dilution of skilled labour. In October, the Committee issued a series of recommendations known as the L circulars which governed wages and conditions in munitions factories. Circular L2 recommended that females 18 years of age or over employed on work customarily done by men should be paid a minimum rate of £1 per week, and that women doing skilled men's work should receive the men's rate.<sup>21</sup>

Circular L2 was considered a landmark in the history of women's wages, as it appeared to establish the fundamental principle of equal pay for equal work. But L2 did not solve the growing arguments over women's wages as it failed to take into account the position of women doing *a part* of the skilled man's work, and the probationary period women would need when learning the skilled man's job. In addition, while it was compulsory in national or government owned factories, L2 was only a recommendation in controlled establishments. As a result, many employers, balking at the Ministry's power to regulate wages for women workers, chose to disregard the circular. By issuing Circular L2 as a recommendation, the Ministry had committed itself to the position that £1 a week was a fair rate for women engaged in munitions work, but the 'obstinate refusal' of the employers to observe the circular continued to obstruct the government's dilution scheme.<sup>22</sup> The subject of women's wages remained an area of open conflict between employers and unions, and many women workers, including Scottish dilutees, continued to receive rates of 12s. to 15s. per week for the production of munitions.<sup>23</sup>

At the end of October 1915, the ASE executive council met the Munitions Labour Supply Committee and stated that, in return for their cooperation on dilution, 'it shall be incumbent on [owners of controlled establishments] that they must observe the rates and conditions of labour as

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<sup>21</sup> Drake, *Women in Engineering*, 24; *OHMM*, 4, i, chapter 4.

<sup>22</sup> Drake, *Women in Engineering*, 27-9; Cole, 98-9; *OHMM*, 4, ii, 71.

<sup>23</sup> Adams, 120; Drake, *Women in Trade Unions*, 76-8; *OHMM*, 4, i, 72.

governed by Circular L2.<sup>24</sup> Throughout November, the Ministry met trade union representatives to discuss ‘a long list of amendments’, including the regulation of women’s wages, which would make the Munitions of War Act more palatable to trade union interests.<sup>25</sup> In December, despite opposition from employers over the Ministry’s proposals to assume the power to fix minimum wages for women munitions workers, Lloyd George presented the amending Bill to Parliament, declaring ‘the whole of this Bill consists of concessions.’<sup>26</sup> The Munitions of War (Amendment) Act received Royal Assent on 27 January 1916, giving the Minister statutory powers to regulate the wages and working conditions of dilutees, and Circular L2 became mandatory in all controlled establishments.<sup>27</sup> This was, however, by no means the final word on the thorny issue of women’s wages as different interpretations of L2 allowed employers to circumvent the conditions and continue to pay women what they thought they were worth rather than the government-regulated rates.

The skilled engineering workers were alarmed at the influx of women into munitions work. Their fears, that employers would use cheap female labour to lower the demand for male labour and to undercut men’s wages, were well founded. In October 1915, an editorial in the engineering employers’ journal, *The Engineer*, written one month after an enthusiastic report on the women workers at Beardmore’s Parkhead Forge, carried the following blunt statement:

The fact of the matter is really, not that women are paid too little - or much too little - but that the men are paid too much for work which can be done without previous training.... If girls could learn to get full production from the machine tools at Beardmore’s, as described in recent issues of *The Engineer*, in a week or two, youths could do the same. High wages are paid on the false assumption, now almost obscured by trade union regulations, that it takes long to learn the craft. Everyone knows now, as all managers knew long ago, that no long period

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<sup>24</sup> *OHMM*, 4, i, 68.

<sup>25</sup> Drake, *Women in Engineering*, 31; Adams, 88-9.

<sup>26</sup> *OHMM*, 4, ii, 66.

<sup>27</sup> Adams, 121;

of training is necessary, and the whole argument for high wages, based on long training, has been carried by the board.<sup>28</sup>

In Glasgow, shortly after the signing of the Treasury Agreement, the socialist weekly paper, *Forward*, had already alerted its readers to the employers' anticipation of their new-found opportunities to exploit cheap labour by reprinting a passage from the *Scottish Law Courts Record*, under the heading 'Naked Capitalist Admission':

This is work that could and should be done by women and boys and girls, who could readily be taught; and would quickly learn, and whose pay would be less than that of men. In this matter, however, we have set up a legislative barbed wire fencing under the Factory and similar Acts, which in many ways hampers the freedom of the manufacturer, and of those who are willing to work for him at low wages and for long hours. The war itself, as a great economic force, is helping us to solve this question; the shortage of men now and still more after the peace is giving their chance to working women and even to boys and girls. In regard to our workers, whatever the unions may do, and *notwithstanding any paper guarantee given*, employment can and will never be the same again. The inevitable operation of the law of supply and demand must bring more women and girls into the ranks of our workers. It is only by means of this freedom to hire cheaper labour that our manufacturers can hope either to capture or to keep some of the German markets in low-priced goods of large and widespread sale.<sup>29</sup>

Small wonder that skilled workmen had forebodings that dilution would radically alter and weaken their position in the industrial process.

These fears formed the primary driving force behind ASE efforts on behalf of women workers. There is no doubt that the need to protect the position of the skilled workmen, rather than altruistic concern for women workers, spurred the ASE campaign for women's wages. In August 1915, the ASE monthly journal admitted that pressure for equal pay rates for women was to ensure their dismissal from the engineering industry at the end of the war:

Will women vacate the men's positions they now hold?... And, most important of all, *will the employers be willing to turn women workers out and reinstate men at higher wages?*... How are we to deal with it? Well, there are two ways. In the

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<sup>28</sup> *The Engineer*, 1 Oct. 1915, p. 319. This editorial continued to infuriate the socialist and trade union press for the remainder of the war; see, for example, R.C. Wallhead, "An Open Letter to 'The Engineer,'" *Labour Leader*, 23 Oct. 1916.

<sup>29</sup> *Forward*, 24 Apr. 1915, (italics in original).

first place, we can refuse to work with women, and in the second place, we can demand that they receive the same money for a given class of work as a man... Though there is nothing against women working next to men, there is a lot against the undercutting of men's wages by women... [and] employers won't employ women unless it benefits their pocket.<sup>30</sup>

In November, after the Ministry had issued Circular L2 with its recommendations that women receive the time and piece rates of fully skilled tradesmen, the ASE journal announced that: 'our interests are fully safeguarded.'<sup>31</sup> While the ASE appeared to support L2 and the principle of equal pay for women, its pragmatic purpose was to protect its own position in the engineering industry.

In a similar fashion, the primary beneficiaries of the ASE / NFWW agreement were the skilled craftsmen of the ASE as the pact ensured the withdrawal of NFWW women from engineering jobs after the war. While the agreement was designed to benefit the men, contemporary experts in the field of female labour such as Barbara Drake nevertheless saw 'advantages to be gained by mutual support.'<sup>32</sup> The ASE was able to lend its expertise to the NFWW in forming new branches and in negotiating with the government over payment rates for women. Mary Macarthur stoutly defended the alliance, emphasizing the necessity for working class men and women to work together:

It is a struggle...between men and women on one side and the employers on the other who use female labour to depress the conditions.... Let us organize ourselves and let the men and women determine to stand together in face of the common enemy we shall have to meet.<sup>33</sup>

It is difficult to know to what extent men and women stood together under the new agreement. While the ASE executive had issued a circular to all branches urging its members to assist the NFWW in organizing the new women workers, it left the implementation of the pact to the

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<sup>30</sup> *ASE Monthly Journal and Report [ASEMJR]*, Aug. 1915, p. 58 (italics in original).

<sup>31</sup> *ASEMJR*, Nov. 1915, p. 44.

<sup>32</sup> Drake, *Women in Engineering*, 23.

<sup>33</sup> *TUC Conference Report*, 1916, 247, quoted in Kozak, 322.

decision of individual branches and workshops. According to one contemporary expert, 'in some areas the alliance worked very well, in other areas hardly at all.'<sup>34</sup> At Beardmore's Parkhead Forge in Glasgow, the agreement worked not only well but also swiftly. By July 1915, a few months after women took up work at Parkhead, the NFWW, with the assistance of the ASE, had founded 'the most fully organized and most vigorous body of women shell workers in the district.'<sup>35</sup> How had this come about?

### **The First Women Workers at Parkhead Forge**

Immediately after the signing of the Treasury Agreement in March 1915, Beardmore had lost no time in taking advantage of the new industrial situation by hiring a large body of women workers as operatives in his new shell and fuse factories, including the Underwood works in Paisley, the Speedwell works in Coatbridge, and the East Hope St. extension of Parkhead Forge.<sup>36</sup> The NFWW had also been quick off the mark, launching in the spring of 1915 a campaign to organize the new women workers in the country's most important munitions centres. By July 1915, the NFWW annual report was pleased to announce that, '90% of the workers at the Paisley and Parkhead factories of Beardmore Ltd. have enrolled in the Federation, and branches have been formed in both places.' The report also acknowledged the 'valuable help' rendered by the ASE.<sup>37</sup> In particular, David Kirkwood, convenor of the Parkhead shop stewards, who had already made Parkhead Forge a closed shop, had played an important role in the organisation of the

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<sup>34</sup> Cole, 83-4. Thom found that former workers at Woolwich Arsenal had 'no recollection of ASE members recruiting women into the NFWW' (Thom, 'Women at Woolwich Arsenal,' 63).

<sup>35</sup> Highton, in Drake, *Women in Engineering*, 129.

<sup>36</sup> PRO MUN 5/82/342/22; Hume and Moss, 109-110.

<sup>37</sup> NFWW, *Annual Report* (Aug. 1914 - July 1915), 46; see also Drake, *Women in Engineering*, 23; Cole, *Trade Unionism and Munitions*, 83; OHMM, 4, ii, 39-40; *Forward*, 12 Jun. 1915.



women workers, and within weeks was involved in bringing them to the point of strike action over Beardmore's non-compliance with the recommendations of Circular L2.

We have already seen that some employers, in defiance of the Ministry's recommendations, refused to pay the women £1 per week. According to her biographer, Mary Macarthur was 'on the watch for her opportunity to strike' and chose Beardmore's as the battleground.<sup>38</sup> It is highly likely that the NFWW decided to force the issue of L2 at Parkhead because of the strength of the branch and the support of the ASE. By October 1915, Beardmore's shell business was expanding rapidly, and the company anticipated an imminent rise from 500 to 750 women at Parkhead, and from 700 to 900 women at Paisley. The women were working twelve-hour day and night shifts and earning 15s. per week, while male dilutees were earning 33s. 9d. per week.<sup>39</sup> When the NFWW called on Beardmore to comply with Circular L2 and pay its members the £1 time rate, he refused to negotiate with the women's organizers, or to recognize the union. On 13 October, the NFWW referred the dispute to the Board of Trade for arbitration, and after hearing nothing for three weeks, they threatened to bring the women out on strike.<sup>40</sup>

By November, with the women 'on the verge of strike,' the Ministry applied pressure on Beardmore's to comply with the Circular.<sup>41</sup> However, despite numerous telegrams from London and urgent visits from Ministry officials, Beardmore refused to budge, objecting to the government's interference in his business affairs. Ministry officials noted privately that Beardmore was representative of employers who thought they 'should be free to make their own bargains.'<sup>42</sup> At the beginning of December, W.C. Anderson, the ILP M.P. for Attercliffe and husband of Mary Macarthur, raised the issue in the House of Commons, asking Lloyd George,

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<sup>38</sup> Mary Agnes Hamilton, *Mary Macarthur: a Biographical Sketch* (Westport, Conn., 1926), 154.

<sup>39</sup> PRO MUN 5/82/342/22; *New Statesman*, 27 Nov. 1915, p. 181.

<sup>40</sup> PRO MUN 2/27, 4 Dec. 1915, p. 7. The Munitions of War Act had prohibited strikes, but if an application for arbitration had not been granted within three weeks, it was still legal to strike.

<sup>41</sup> PRO MUN 2/27, 20 Nov. 1915, p. 5; 4 Dec. 1915, p. 7; Drake, *Women in Engineering*, 30.

<sup>42</sup> PRO MUN 2/27, 20 Nov. 1915, p. 5.

‘whether, in view of the dissatisfaction existing... amongst the employees of this firm, he proposes to take any action.’<sup>43</sup> It is unlikely, however, that the Ministry would have intervened if the NFWW women had not had Kirkwood’s solid support and assistance in helping them to prepare for strike action. As Macarthur’s biographer revealed:

At the workers’ meetings... David Kirkwood was in the chair, and resolutions were passed to send in a week’s notice. Had the girls come out, the men on the Clyde would surely have backed them.<sup>44</sup>

As a result, the government, in the midst of ushering in conscription and acutely aware of the need to hasten and extend the dilution program, intensified its pressure on Beardmore to comply with Circular L2. When Beardmore finally capitulated, he did so grudgingly, agreeing to pay the women £1 per week, but ‘without accepting the whole of Circular L2.’<sup>45</sup> The NFWW, meanwhile, was jubilantly reporting the Parkhead women’s victory in their journal, *The Woman Worker*: ‘We hear from Glasgow that a well-known ASE man was carried round the factory in triumph by the girls.... No one has deserved chairing and cheering more.’<sup>46</sup> It is almost certain that the ‘ASE man’ was Kirkwood.

Previous accounts of dilution have focussed on the antagonism of skilled men towards the entry of women into their workplace, as the case at Lang’s demonstrates.<sup>47</sup> On closer inspection, however, we find that the situation was more complicated than a case of gender conflict between working class men and women. By examining the entry of women into

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<sup>43</sup> HC Deb, vol. LXXVI, c. 1562, 9 Dec. 1915.

<sup>44</sup> Hamilton, *Mary Macarthur*, 154.

<sup>45</sup> PRO MUN 2/27, 4 Dec. 1915, p. 7.

<sup>46</sup> *Woman Worker*, Jan. 1916, p. 11.

<sup>47</sup> In August 1915, the firm of J. Lang of Johnstone, near Glasgow, one of the largest machine tool manufacturers in the country, attempted to employ female labour in the simple processes of lathe-making. The skilled workmen, members of the ASE, resolutely opposed the introduction of women into the workshops, announcing that: ‘No woman shall be put to work a lathe, and if this was done the men would know how to protect their rights.’ One of the Dilution Commissioners referred to the Lang’s men as the ‘old trade-union type of bitterness, narrow and selfish’ (McLean, 37-40; GUABRC, DC 96/17/58).

Beardmore's East Hope St works, we find an alternative picture, not of confrontation, but of cooperation between the shop stewards and the first women workers at Parkhead Forge.

The only snippet of information about the Beardmore case to appear in local newspapers was Anderson's question in the House of Commons which the *Glasgow Herald* included as part of its regular report on parliamentary proceedings.<sup>48</sup> Late 1915 was a time of great social and industrial unrest on Clydeside with the rent strikes and the imprisonment of the Fairfield shipwrights forming a daily part of newspaper reports.<sup>49</sup> The lack of coverage of the Parkhead situation, however, does not indicate a lack of awareness of the plight of the women among the local community. At the end of October, the following poem appeared on the front page of one of Glasgow's local weekly papers:

#### THE FAIR SHELL WORKERS

Oh! I'm working thrang in consort wi' a wheen o' queenly belles,  
Engaged in earning glory through the turning oot o' shells,  
And although gey apt and clever like oor brither toilers aye,  
Their employers dinna kill them wi' the bigness o' their pey!

It's fine to hear them singing as they gan aboot their graft,  
Just the same as expert tradesmen well tutored in the craft.  
They can dae as much as men folk, but sorry tak' the shame!  
'Tis unco strange, yet certain, they arena paid the same.

Maybe it's richt to mention, no richt yet organised,  
It's only richt and proper their claims should be despised.  
Still looking to the future the rosy outlook tells,  
There is justice coming shortly to oor sisters at the shells.

They dinna spier for muckle, jist a paltry pound a week,  
To let them dine on humble fare and buy a decent steek.  
That much and naething less they'll hae, or coming danger spells,

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<sup>48</sup> *Glasgow Herald*, 10 Dec. 1915, p. 9c. Even in the days before the suppression of *Forward*, it was almost unknown for newspapers to report cases of industrial dispute concerning women munitions workers, whom the press consistently portrayed as patriotic, dedicated workers.

<sup>49</sup> The workmen's anger over the restrictions of the Munitions of War Act intensified with the imprisonment of the Fairfield's shipwrights which threatened to shut down production in the shipyards, prompting the government to dispatch Lord Balfour of Burleigh and Lynden Macassey to Glasgow to conduct an official inquiry into the Clyde workers' grievances. For the rent strikes, see Joseph Melling, *Rent Strikes: People's Struggle for Housing in West Scotland, 1890-1916* (Edinburgh, 1983).

We'll be having heaps o' trouble wi' the lassies at the shells.

If oor sisters hae responded beyond oor highest hopes,  
And proved their worth as workers in the engineering shops,  
Then just as shairly, readers, there is justice in the claim,  
That a pound a week's expected for demonstrating same.<sup>50</sup>

As this poem indicates, there was considerable support and sympathy in Glasgow for the new women munitions workers and for their claim for £1 per week.

No previous account of wartime Clydeside has noted the strike threat of women workers at Parkhead Forge in November 1915. It is, however, of historical importance for several reasons. First, it suggests that women did benefit, at least in the short term, from the ASE /NFWW agreement. Second, it shows that women munition workers, although they had been on the job for only a few months, contributed to the industrial militancy of the Clyde in 1915. Third, and most importantly, it reveals errors in Iain McLean's account of the 'legend of Red Clydeside' and casts new light on the March 1916 crisis when Kirkwood and other shop stewards were deported from the district, supposedly for obstructing the government's program of dilution.

### **The Dilution and Deportation Crises**

McLean sees the dilution crisis at Parkhead as an example of craft conservatism, claiming that 'Kirkwood had only one end in view: the protection of the rights of the craftsman.'<sup>51</sup> According to McLean, 'the first women to come to Parkhead did not arrive until 29<sup>th</sup> February [1916].'<sup>52</sup> McLean's version therefore omits Kirkwood's interaction with the women workers in 1915 when he performed a central role both in the organization of an NFWW branch, and in their

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<sup>50</sup> *Partick and Maryhill Press*, 22 Oct. 1915, p. 1.

<sup>51</sup> McLean, 108.

<sup>52</sup> McLean, 72. McLean's source of evidence, the Labour Party Report on Kirkwood's deportation, actually states that women were introduced into the *Howitzer Shop* of Parkhead on 29 February. McLean also cites the wrong paragraph for this information.

fight against Beardmore over the recommended wage rate. Despite the ambiguities of the ASE/NFWW agreement, the example of Kirkwood and the NFWW women in November 1915 shows evidence of cooperation between working class men and women against employer exploitation. Just as in the rent strikes, which took place concurrently, the support of male workers for women activists forced the government to intervene and insist that Beardmore pay the women according to Circular L2.

In addition, McLean has completely misrepresented Beardmore's attitude to women workers by presenting Beardmore as a 'conservative' employer who was tardy in providing accommodation for the new women workers, thereby delaying their arrival.<sup>53</sup> In fact, Beardmore was widely recognized as a progressive leader in the field of female employment, not just in Clydeside but in all of Britain. It is strange that McLean failed to notice the presence of women at Parkhead Forge long before 29 February 1916 as there is ample evidence to show that they were there. In June 1915, *The Glasgow Herald* and its recently established sister newspaper, *The Bulletin*, ran enthusiastic reports, accompanied by photographs, of Beardmore's women munitions workers.<sup>54</sup> In September 1915, the British engineering employers' journal, *The Engineer*, praised Beardmore's brave venture into the brand new field of female labour: 'Sir William Beardmore has looked far ahead and has treated the subject in a broad and statesmanlike manner...the results achieved are astonishing.' The journal also carried a two-page photographic supplement of 'Girl Workers in a Beardmore Munitions Factory.'<sup>55</sup> Even out of the public eye, Beardmore was singled out for praise. At a conference at the Ministry of Munitions in August 1915, Addison announced: 'Beardmore's have introduced female labour on a very large scale and they have had the most satisfactory results,' and encouraged other industrialists to follow his

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<sup>53</sup> McLean, 72.

<sup>54</sup> *Glasgow Herald*, 19 Jun. 1915, p. 11f; 23 Jun. 1915, p. 3; *The Bulletin*, 23 Jun. 1915, p. 1, 4.

<sup>55</sup> *The Engineer*, 3 Sept. 1915.

admirable lead.<sup>56</sup> Beardmore, moreover, knew all about ‘providing accommodation’ for female workers, which meant the provision of canteens, toilets and cloakrooms. Both the East Hope Street works and the Underwood factory in Paisley included modern, state-of-the-art canteen facilities.<sup>57</sup> In the spring and summer of 1915, Beardmore had been quick to see the possibilities in the large-scale employment of women workers, and there was nothing tardy or conservative in his approach towards them.

The November 1915 strike threat also shows that Beardmore was furious at the unionization of the women, refusing to negotiate or even to recognise the NFWW. We have already seen in our discussion of Tongland in the previous chapter, that Beardmore was prepared to go to great lengths, even to the extent of building an ambitious new ‘engineering university for women,’ to keep his female workers from the baleful effects of ‘trade union tyranny.’ Before the war, Beardmore had succeeded in keeping the men’s trade unions out of his works, and it was only due to Kirkwood’s efforts after his arrival in 1912 that Parkhead became a ‘closed shop.’ Although he officially recognized male trade unions at Parkhead in late October 1914, Beardmore continued to resent their power.<sup>58</sup>

When women were first introduced into the engineering industry in 1915, Beardmore, like other engineering employers, thought it highly unlikely that they would join unions, far less participate in strike action. In October 1915, *The Engineer* noted with satisfaction that the advent of women would greatly increase the available labour market, and have an adverse effect on trade unions:

Hence the power of the unions will be diminished – until the women are swept or driven into those organizations. Luckily, that will prove a difficult matter on account of the transitory nature of women’s work in engineering factories, and

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<sup>56</sup> DC 96/17/57.

<sup>57</sup> *The Bulletin*, 12 Oct. 1915, p. 12; 8 Jan. 1916, p. 1.

<sup>58</sup> Hume and Moss, 117.

the less need on their part, with the prospect of marriage always before them, to make provision for the future.<sup>59</sup>

By introducing women into his works, Beardmore had fully anticipated a cheap, docile female labour force, who would be fired by ‘patriotic enthusiasm... [and] put their whole hearts into the making of shells.’<sup>60</sup> Instead, he ended up with ‘most fully organized and most vigorous body of women shell-workers in the district, looking on the Parkhead fire-brands as heroes.’<sup>61</sup> Livid at this unexpected turn of events, Beardmore was determined to thwart any future attempts by Kirkwood to ‘interfere’ with his new female workforce.

This, of course, brings us to the crux of the dilution and deportation crisis, and to a question that has puzzled historians: why did Beardmore suddenly decide to restrict Kirkwood’s long-standing freedom of access to all the shops at Parkhead? Quite simply, Beardmore revoked Kirkwood’s privileges because he did not want him organizing any more women into the NFWW and threatening strike action over their rates of pay. It was an attempt to keep his female workforce docile, malleable, and ‘free from trade union tyranny.’<sup>62</sup> The organization of the women workers and the involvement of Kirkwood hold the key to the mystery of the deportation crisis.

We will now review briefly the events between the framing of the Parkhead dilution agreement on 28 January 1916 and the deportation of Kirkwood from the district two months later. It is not our intention here to re-hash the high-level political manoeuvrings that took place on Clydeside between the unions, the employers, the CWC, and Ministry officials in the first

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<sup>59</sup> *The Engineer*, 1 Oct. 1915, p. 320.

<sup>60</sup> *Glasgow Herald*, 19 June 1915, p. 11f.

<sup>61</sup> Highton, in Drake, *Women in Engineering*, 129.

<sup>62</sup> Hinton has puzzled over Beardmore’s sudden revocation of Kirkwood’s rights, surmising that it might have been the result of Beardmore’s managers objecting to the closeness of the Beardmore / Kirkwood relationship, see Hinton, 155-6, note 5. Braybon has pointed out that employers often attempted to keep men and women separate to minimize the possibility of women’s unionization (Braybon, 70).

months of 1916.<sup>63</sup> Rather, we will keep our focus on the women workers at the shop floor level which we hope will help to explain part of the tangled, contorted dealings that took place on the Clyde in early 1916.

In late January 1916, when the government's three Dilution Commissioners arrived in Glasgow to effect the introduction of female and unskilled labour into the engineering workshops, they immediately went to Parkhead and within days had formulated an agreement. Both Hinton and McLean have accorded great significance to the Parkhead dilution agreement, using it to further their arguments. According to Hinton, Kirkwood broke the solidarity of the CWC by agreeing to meet the Commissioners separately, and the Parkhead agreement 'represented a resounding defeat for "the CWC principle of workers control."'”<sup>64</sup> In McLean's version, the Parkhead dilution agreement showed that Kirkwood was only concerned with obtaining the best deal for his members and protecting the position of the skilled men at Parkhead Forge.<sup>65</sup> Joseph Melling, however, has questioned the argument that Kirkwood broke the united front of the CWC by instituting a separate dilution scheme for Parkhead, pointing out that the Parkhead scheme was only one of several dilution agreements on the Clyde, and that other CWC leaders were involved in negotiating dilution agreements with their firms.<sup>66</sup> Indeed, it was the intention of the commissioners to visit each factory and consult with representatives of the workers in order to provide a clear explanation of the proposed alterations in workshop practices. According to Cole, it was necessary for each individual works or workshop to hammer out its own agreement, as

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<sup>63</sup> For a full account of the complexities surrounding the dilution crisis, see Hinton, chapter 4; McLean, chapters 6-7.

<sup>64</sup> Hinton, 150-1.

<sup>65</sup> McLean, 71-6.

<sup>66</sup> Melling, 'Work, Culture and Politics on 'Red Clydeside': the ILP during the First World War,' in *The ILP on Clydeside*, ed. A.J. McKinlay and R.J. Morris (Manchester, 1991), 103-4.



dilution was 'essentially a workshop problem... there remained inevitably countless points of detail which had to be adjusted separately for each works or department.'<sup>67</sup>

Of the several clauses in the Parkhead agreement, the first two are the most significant:

- 1) That the income of the new class of labour be fixed, not on the sex, previous training, or experience of the worker, but upon the amount of work performed, based on the rates presently obtaining for the particular operation.
- 2) That a committee appointed by the workers be accepted by the employers, with powers to see that this arrangement is loyally carried out.<sup>68</sup>

The first clause ensured that the cost of labour would not be less than it was before and that employers could not use dilution to introduce cheap labour. In the heightened atmosphere of suspicion and distrust between management and workers, the second clause was equally important as it provided for the establishment of a shop committee of workers' representatives to keep a close eye on attempts by employers to readjust processes or to lower wage rates. The introduction of new machinery and the vast range of sub-divided tasks allowed employers ample opportunity to downgrade women's work and reduce their pay rates by claiming that they were performing only simple operations. The purpose of dilution was to increase the output of munitions, not the profits of employers, making the vigilance of a shop committee an essential part of the agreement.

On 29 February 1916, when women started work in the new Howitzer department at Parkhead, Kirkwood approached them and introduced them to the two departmental shop stewards, Mr. Hanton and Mr. Currie, telling them: 'These are the two Shop Stewards in this Department, and if anything is wrong—and everything is not right as you know—just let them know.'<sup>69</sup> The following day, Hanton returned to the women and encouraged them to join the NFWW, whereupon Miss Taylor, the welfare supervisor, complained to Mr. Chisholm, the

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<sup>67</sup> G.D.H. Cole, *Workshop Organization* (Oxford, 1923), 50.

<sup>68</sup> *The Herald*, 12 Feb. 1916; Tuckwell Collection, 664h/2.

<sup>69</sup> *Labour Party Report*, para. 60-2. Kirkwood's phrase, 'everything is not right,' suggests that the firm had already taken steps to under pay the women.

manager of Parkhead works, that Kirkwood and Hanton had ‘interfered with the girls under her control.’<sup>70</sup> Chisholm summoned Kirkwood and Hanton, telling them that:

If any of the Shop Stewards ... interrogated [the girls] as to the conditions they were working under or the rates of pay they were receiving they would be dismissed, as the Shop Stewards had no right to ask the girls such questions.

At the same time, Chisholm told Kirkwood ‘to remain at his bench,’ and issued instructions that he was not to enter the Howitzer shop.<sup>71</sup> Outraged at the sudden revocation of his privilege of free access to the works, Kirkwood resigned as shop steward convenor on 3 March.

On 15 March 1916, after two weeks of fruitless negotiations, Beardmore, Chisholm, Kirkwood and other shop stewards held various meetings, the men insisting that their convenor should have free access to all departments at Parkhead, ‘but Sir William Beardmore declined to accept this view.’<sup>72</sup> As a result of Beardmore’s refusal, on 17 March, the men struck work, issuing a ‘Manifesto from Parkhead Forge Engineers’ in which they fulminated against Beardmore’s renegeing on the terms of the dilution agreement:

The employers pledged themselves not to use this scheme for the purpose of introducing cheap labour and also to give a Committee appointed by the skilled workers an opportunity of seeing that this pledge was kept.... On our Shop Stewards visiting the [Howitzer] shop to ascertain the conditions of female labour the management strongly protested and contended that Bro. Kirkwood ... had no right to discuss the question of wages or conditions with the women workers.<sup>73</sup>

The men were determined to stay on strike ‘till the convenor is restored to his former position,’ and Beardmore was equally determined to refuse Kirkwood free access to the works. The strike continued and spread to other works in the district.

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<sup>70</sup> *Labour Party Report*, para. 64-5.

<sup>71</sup> *Labour Party Report*, para. 66-69.

<sup>72</sup> *Labour Party Report*, para. 73-6.

<sup>73</sup> *Labour Party Report*, para.96. Copy of manifesto in GUABRC, UGD 102/3/2, Highton papers.

On 25 March, at three o'clock in the morning, military authorities raided Kirkwood's home, roused him from his bed, and deported him to Edinburgh along with other shop steward leaders from Beardmore's and Weir's. On 28 March, Addison issued a statement on the deportations in the House of Commons, representing the actions of Kirkwood 'as a systematic and sinister plan' to impede the production of the 'most important munitions of war.'<sup>74</sup> Although some sympathetic strikes took place in Glasgow to protest against the deportations, by 5 April, they had petered out. The main troublemakers had been removed from the district, not to return till the summer of 1917. The deportations had a significant effect on the NFWW branch at Parkhead; writing in July 1916, Highton noted that the 'most fully organized and most vigorous body of women workers in the district collapsed... and only a few remain faithful to their union and to the idols of the early days.'<sup>75</sup>

In January 1917, at the Annual Labour Party Conference in Manchester, Kirkwood appeared on the platform to present his case 'before the representatives of British Labour.' Addressing the conference in an emotional tone of righteous indignation, Kirkwood emphatically protested: 'I am no criminal.' He attributed the deportations to the chagrin of Lloyd George after his humiliating treatment in Glasgow in late December 1915, pointing out that: 'every Clyde worker who questioned Mr. George's methods is now deported or imprisoned.'<sup>76</sup> So seriously did the conference regard his position that they ordered a full inquiry and published a report.

The Labour Party's report dissected in minute detail the circumstances surrounding the deportation of Kirkwood, paying particular attention to the revocation of his access around Parkhead Forge. At the showdown between Beardmore and Kirkwood on 15 March, Kirkwood repeated the wording of Clause 2 of the Parkhead dilution agreement to Beardmore, insisting that

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<sup>74</sup> HC Deb. vol. LXXXI, c. 564-6, 28 Mar. 1916. *Labour Party Report*, para. 133.

<sup>75</sup> Highton, in Drake, *Women in Engineering*, 129.

<sup>76</sup> For the full text of Kirkwood's speech, see Tuckwell Collection, 557/9.

the phrase 'power to see' gave him the right to travel freely round the plant and interrogate any worker, but Beardmore 'at once declined to accept that interpretation of that clause.'<sup>77</sup> The deadlock also hinged on the constitution of the shop committee formed under Clause 2 of the dilution agreement. While there was a tacit understanding among the men that Kirkwood and the shop stewards *were* the committee, Beardmore contended that the men had not appointed a shop committee expressly for the purpose of checking the dilution arrangements.<sup>78</sup> The Labour Party investigators decided that the case against Kirkwood was flimsy, finding it 'not unreasonable' for him to continue having access to all parts of Parkhead to see that the dilution agreement was 'loyally carried out.'<sup>79</sup> They were much more critical of Beardmore's managers and of Beardmore himself. Finding that 'the Firm brought the trouble upon themselves,' they were particularly critical of Beardmore's inflexibility over the constitution of the shop committee:

In our opinion Sir William Beardmore... should not have made such a technical point (the omission to expressly appoint a Shop Committee for the purposes of the Agreement) the pivot of a strike in a time of national crisis, when in fact an adequate and representative Committee existed, by whatever name it was called, and was virtually before them at that moment.<sup>80</sup>

If Beardmore had adopted a less rigid stance, the investigators concluded, 'he might thereby have averted the Strike.'<sup>81</sup>

Too often historians have interpreted the dilution struggle on Clydeside as the narrow conflict of skilled men determined to protect their position in industry by fighting the encroachment of women into their trades. While that view certainly existed, the dilution struggle also involved deep conflict between the skilled tradesmen and the employers. In addition, there

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<sup>77</sup> *Labour Party Report*, para. 115.

<sup>78</sup> *Labour Party Report*, para. 112-4.

<sup>79</sup> *Labour Party Report*, para. 119.

<sup>80</sup> *Labour Party Report*, para. 132, 116.

<sup>81</sup> *Labour Party Report*, p. 52, point 12. The investigators also suggested that the military authorities would have been equally justified in arresting Beardmore as they had been in arresting Kirkwood (*Labour Party Report*, para. 149).

was more cooperation between the men and women workers than historians have previously recognised. The 1916 NFWW Biennial Delegate Conference discussed the crisis on Clydeside and passed a resolution, ‘amid great enthusiasm,’ regretting the deportation of Kirkwood and the other shop stewards and demanding their immediate release and return to their homes. Miss Macgregor, one of the Glasgow delegates, addressed the conference:

This Resolution is mild for Glasgow. If I had drafted it as strongly as I feel I would not answer for the consequences. The deportees are trade unionists, and many of them helped to organise the women. David Kirkwood is a hero in our eyes. We feel that his deportation is partly due to the manner in which he laboured to organise and help the women in Glasgow.<sup>82</sup>

The concentration of previous historical accounts on the example of Lang’s has obscured the extent to which men and women workers on the Clyde came together in opposition to the exploitative work practices of employers like Beardmore.

### **Sir William Beardmore**

We have already refuted McLean’s suggestion that Beardmore was a conservative employer who was slow in employing women. We will now examine in greater detail Beardmore’s exploitative work practices and his appallingly bad record of labour relations. Beardmore’s management consistently tried to avoid paying their women workers the recognised rates for the job. In cases of industrial dispute, they often refused to submit to arbitration, and when eventually they were forced to do so, they either refused to implement the terms of the arbitration award, or they dismissed the women who would have benefited from them.<sup>83</sup> The picture which emerges of Beardmore’s labour relations practices in his treatment of women workers is in direct contradiction to McLean’s portrayal of Beardmore as a benign, paternalistic

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<sup>82</sup> *Woman Worker*, June 1916, p. 14 (original in bold). Mrs. Lauder, another Glasgow delegate, also spoke out: ‘Don’t forget Tom Clark... no one has fought better than he for the women in Glasgow.’

<sup>83</sup> *Woman Worker*, May 1916, p. 11; Aug. 1916, p. 10; Dec. 1917, p. 14; Dec. 1917, p. 11; Jan. 1918, p. 2; *Glasgow Herald*, 18 Oct. 1917, p. 5g; HC Deb., vol. 98, c. 2078, 6 Nov. 1917.

employer who was 'prepared to cooperate with the craftsmen in regulating the supply of labour.'<sup>84</sup> To validate his suggestion of cooperative and collegial effort between men and management, McLean recounts a lengthy story about Isaac Beardmore who used to call for assistance from workers on the street corner when his horses 'got stuck' carrying heavy loads up the steep hill at Parkhead Cross: 'Once on the straight road the men and Beardmore would adjourn to the corner public-house, and all engage in drinks at Isaac's expense.'<sup>85</sup> McLean, however, neglects to mention that Isaac was Beardmore's uncle who retired from the firm in 1887, leaving Beardmore as the sole partner.<sup>86</sup> McLean explains that, due to the rapid expansion of the company in the pre-war years and tensions created by the February 1915 strike, the authority structure at Beardmore's was changing from a traditional, community-based style of management as exemplified by Isaac Beardmore, to a more modern style based on contractual obligations. Nevertheless, McLean maintains, there remained an atmosphere of 'continued paternalism' in which Beardmore 'encouraged cooperation with the craftsmen.'<sup>87</sup>

The most bitter and prolonged industrial dispute of women munitions workers on wartime Clydeside took place at Beardmore's East Hope Street factory between late October 1917 and early January 1918. The root motive behind the dispute was Beardmore's reluctance to pay workers increases on certain time and piece rates granted by a Special Arbitration Tribunal award. Although the NFWW was pleased with the terms of the award, it noted ominously: 'the situation at Messrs. Beardmore is, however, as bad as it can be.'<sup>88</sup> For several months, Beardmore's management had been accusing the women employed in the 18-pdr. shell

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<sup>84</sup> McLean, 80. See, for example, *Glasgow Herald*, 18 Oct. 1917, p. 5g.

<sup>85</sup> Tom Bell, *Pioneering Days*, 29, quoted in McLean, 79.

<sup>86</sup> Hume and Moss, 345.

<sup>87</sup> McLean, 80.

<sup>88</sup> *Woman Worker*, Dec. 1917, p. 11; Jan. 1918, p. 2; IWM EMP, 73/121. The Special Arbitration Tribunal for Women's Wages was constituted in March 1916 under the Munitions Act to settle disputes and advise on women's wages.

department of restriction of output. The fact that the night shift workers, of whom 50% were NFWW members, produced 24% more shells than the day shift workers, all of whom were in the NFWW, convinced the management that the women were deliberately restricting output on the instructions of their union. On 31 October, the situation came to a head when the firm decided 'to make an example' by sacking four women whose 'restriction of output' was particularly noticeable. Fifty-five of their colleagues immediately struck work 'without complaint or warning,' and within the week, 284 out of the 370 women in the shop were on strike.<sup>89</sup>

*The Woman Worker*, the organ of the NFWW, explained the circumstances of the dismissed women, three of whom had been at the factory for two years. Indeed, one had gained the reputation of being 'the best fine borer the firm ever had,' earning the highest bonus ten weeks in succession. After two years, however, they were exhausted by long hours of working and traveling. The women came from Airdrie and had to catch the 5.25 a.m. train for Glasgow every morning, not returning to the station until 7.30 p.m. The NFWW complained that the dismissed women were 'being cast aside when worked out.' The union was even more indignant over the case of the fourth woman, a widow with four young children, who had nursed her paralysed husband until his death, which had occurred three weeks before the firm dismissed her 'because her output had gone down.' As the *Woman Worker* noted indignantly: 'sorrow, bereavement, sickness, fatigue--these are no excuses for reduced output at Messrs. Beardmore's.' Furthermore, not satisfied with dismissing the women, the firm was also threatening them with prosecution. The NFWW paper fumed angrily: 'We hope with all our heart that they will prosecute; and that the story of this poor widow can be told to the whole of Scotland.'<sup>90</sup>

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<sup>89</sup> PRO MUN 2/28, 1 Sept. 1917, p. 16; 10 Nov. 1917, p. 17; 17 Nov. 1917, p. 14; CAB 24/32, GT 2639, p. 8; *Woman Worker*, Dec. 1917, p. 11.

<sup>90</sup> *Woman Worker*, Dec. 1917, p. 11; HC Deb. vol. XCIX, c. 1017-8, 20 Nov. 1917; PRO MUN 2/28, 10 Nov. 1917, p. 17. Chapter 4 contains a discussion of the debilitating effects of munitions work.

The following week the strike entered a new phase when the district committee of the ASE, the bastion of craft conservatism according to McLean, instructed its members to cease setting tools for the women workers who had refused to strike. In addition, the ASE men in a number of shops at Parkhead resolved to come out if the women's demands were not met, and there were reports that the strikers were receiving much sympathy from other works in the district, several of them expressing the intention of striking to support the East Hope Street women.<sup>91</sup> Furthermore, the CWC took an interest in the case, and at a meeting of several thousand people on Glasgow Green on 25 November, it extended 'moral support' to the women of East Hope Street, threatening to bring out 'the whole of the Clyde' over the matter.<sup>92</sup> The victimisation of the four women even reached the ears of members of Parliament, where W.C. Anderson asked pointed questions in the House over Beardmore's treatment of women workers.<sup>93</sup> Under mounting pressure from several fronts, Beardmore's finally capitulated. On the condition that the ASE withdrew its embargo on tool setting, the firm agreed to re-engage the women who had quit and to refer the case to Arbitration. On 28 November, the women resumed work, with an arbitration date set for 10 December.<sup>94</sup> But this was by no means the end of the matter.

On 30 November, two days after they had returned to work, the women found notices posted throughout the works stating that the factory would be closed on Friday 7 December and reopened on Tuesday 11 December, when the firm would take on workers 'as required.' Although the official reason for the temporary closure of East Hope Street was completion of a contract, it was obvious both to the NFWW and to the Labour Department of the Ministry that Beardmore's had closed the factory as a pretext for the wholesale dismissal of a large number of 'undesirable'

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<sup>91</sup> PRO MUN 2/28, 17 Nov. 1917, p. 14 ; CAB 24/33, GT 2716, p. 7.

<sup>92</sup> CAB 24/33, GT 2799, p. 6-7.

<sup>93</sup> HC Deb. vol. XCIX, c. 1017-8, 20 Nov. 1917. Anderson, Mary Macarthur's husband, had already questioned Lloyd George in December 1915 about the first incident at East Hope St.

<sup>94</sup> PRO MUN 2/28, 1Dec. 1917, p. 15.



women. On 11 December, the firm refused to re-hire about 170 of the former workers and took on new workers instead, making it clear that no other Beardmore establishment would hire the women. According to the *Woman Worker*, the firm 'openly boasted' that it was their intention to punish the women.<sup>95</sup> Moreover, on 10 December, the date set for arbitration, Beardmore's refused to take part in the negotiations between the NFWW representatives and the arbitrator, Sir Richard Lodge. As the Ministry's confidential labour report noted: 'the most unfortunate feature of the case has been the refusal of the employer to submit to arbitration.'<sup>96</sup>

It took another month and the intervention of Lord Askwith, the Chief Industrial Commissioner, to finally resolve the dispute. In that month, according to Hinton, the CWC intensified its involvement with the East Hope Street women, bringing together shop stewards from all of Beardmore's works to discuss joint action, and calling together representatives from all classes of workers to demand the reinstatement of the women. Feelings were running so high that the CWC was considering organizing a general strike throughout all of Scotland.<sup>97</sup> Beardmore's, under great duress, grudgingly agreed to reinstate the women. On 9 January 1918, at the Central Station Hotel in Glasgow, Askwith, Mary Macarthur, and a representative of Beardmore's management hammered out a settlement. The Commissioner found that there had been restriction of output, but that the four dismissed women 'did not do worse than many others.' The firm agreed, 'without prejudice to rights of making or terminating contracts of service,' to give the four women employment in a Beardmore factory other than East Hope Street, providing they apply to the head office of the firm within a fortnight.<sup>98</sup>

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<sup>95</sup> *Woman Worker*, Jan. 1918, p. 2; CAB 24/35, GT 2952, p. 6; CAB 24/36, GT 3062, p. 4.

<sup>96</sup> CAB 24/38, GT 3293, p. 2; PRO MUN 2/28, 15 Dec. 1917, p. 16.

<sup>97</sup> Hinton, 251-2. Hinton also suggests that involvement in the strike gave the CWC a boost in expanding their industrial and political actions in early 1918.

<sup>98</sup> *Glasgow Herald*, 10 Jan. 1918, p. 6g.

Beardmore's role in the debacle came under much criticism from the other two parties.

The Ministry noted about the behaviour of the company:

Underlying the symptoms... in the East Hope Street matter there is... a serious state of feeling between Beardmore's management and the employees of the firm. It would ...be no exaggeration to say that in its relation to its employees the management is considerably behind the times.<sup>99</sup>

Mary Macarthur had stronger words. Furious at Beardmore's handling of the case, she made it the lead article of the January 1918 edition of the *Woman Worker*. 'A Glasgow Scandal' the paper screamed from its decorative front page, angrily demanding: 'It is time that the government dealt severely with Sir William Beardmore and Co.... [who have] flouted openly both the Ministry of Labour and the Ministry of Munitions, and ... this has been done with perfect impunity.' After describing the essentials of the case, the paper concluded:

Now we would ask, in all seriousness, how long the Government intend to permit this firm of Sir William Beardmore and Co. to be a law to itself, and how long are its high-handed methods and vindictiveness to be allowed to be so fruitful a source of industrial unrest?<sup>100</sup>

We should not believe, as McLean has suggested in the Kirkwood deportation crisis, that the impetus for action in the East Hope Street dispute came from his managers and that Beardmore was an unaware or unwilling participant. Beardmore's biographers have pointed out his 'totally autocratic' style, adding that he 'managed all the businesses he controlled himself.' Even though he had able managers, 'the day to day control was borne entirely by Sir William.'<sup>101</sup> Beardmore knew exactly what was going on with the women workers in his employ and was well acquainted with the NFWW. Indeed, when Mary Macarthur first visited East Hope Street in the winter of 1915 to negotiate the settlement of the first East Hope Street dispute, she dealt

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<sup>99</sup> CAB 24/42, GT 3606, p. 2.

<sup>100</sup> *Woman Worker*, Jan. 1918, p. 2. See *Woman Worker*, Jan. 1918, title page.

<sup>101</sup> Michael S. Moss, 'William Beardmore,' in *Dictionary of Scottish Business Biography*, ed. A. Slaven and S. Checkland (Aberdeen, 1990), vol. 1, p. 93. Hume and Moss, *Beardmore*, 149.

personally with Beardmore.<sup>102</sup> When Macarthur fulminated in the pages of the *Woman Worker* against Beardmore's invidious treatment of the East Hope Street women, she was directing her ire at the top man in the organization.

The strike of the women workers at East Hope Street factory is significant for a number of reasons. First, it shows Beardmore's resentment at the unionization of women and his ruthless attempts to suppress such actions. Second, it shows his cavalier, arbitrary attitude, not just to the women workers and the NFWW, but also to the officials in the Ministry of Labour and the Ministry of Munitions. Third, it reveals the nature of women's strikes with their strong feelings of solidarity and outrage at victimisation. Fourth, it shows cooperation and support from the men of the ASE and the CWC. Finally, and not least importantly, it refutes the notion of a paternalistic, cooperative management structure at Beardmore's that Iain McLean has propounded with his cosy story of uncle Isaac.<sup>103</sup>

We should not think that the East Hope Street scenario was an isolated incident. There is a long litany of appallingly bad labour relations at Beardmore's other plants. Running concurrently with the East Hope Street situation was a strike of 1,400 women workers at the Underwood works in Paisley. In a dispute over the reduction of piece rate prices, the women 'declined to proceed at a normal pace' on 26 and 27 November, and struck on 28 and 29 November.<sup>104</sup> The following week, also at Underwood, the most serious strike that week in all of Britain, in terms of the number of working days lost, occurred when 2,100 workers came out for seven working days in a dispute over an alteration of the output bonus.<sup>105</sup> That same week, at Parkhead Forge, a strike of 300 men in the howitzer shop threatened to escalate to a strike of

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<sup>102</sup> *Woman Worker*, Feb. 1916, p. 10.

<sup>103</sup> In their otherwise excellent biography, Hume and Moss have also underestimated the degree and extent of industrial militancy in the Beardmore conglomerate during the war (Hume and Moss, 122).

<sup>104</sup> PRO MUN 2/28, 8 Dec. 1917, p. 16.

<sup>105</sup> PRO MUN 2/28, 29 Dec. 1917, p. 14, 17.

5,000.<sup>106</sup> The first two months of 1918 saw a heightened state of industrial militancy on Clydeside that was most evident at Beardmore's works where there were seven strikes in nine weeks, culminating in a lock-out of 4,000-5,000 men at Parkhead, and creating a 'storm of indignation' among the workers. This strike and lock-out resulted in the loss of 35,000 working days, which represented over one third of all the working days lost in all industrial disputes in Britain in February 1918.<sup>107</sup> W. Pringle, the radical Liberal M.P. for North East Lanarkshire, pointed out in the House of Commons that as it was an offence under the Munitions Act for workmen to go on strike, it was equally an offence for employers to lock-out, and he suggested that Beardmore's were liable for prosecution for delaying the production of munitions.<sup>108</sup> Although the Ministry ignored Pringle's suggestion, it was only too well aware of Beardmore's appallingly bad labour relations record, as revealed by a confidential Ministry report: 'the fault does not by any means lie entirely on the side of the workman. Cases have arisen in which the employer has been seriously to blame—notably that at Beardmore's.'<sup>109</sup>

Another example of exploitative practices carried on at Beardmore's works does not concern the employment of women workers but of another form of dilution of labour: the employment of children. Reading more like an episode from Dotheboys Hall than the practices of a reputable engineering firm, it further shatters the myth of Beardmore as a paternalistic employer. In 1916, the Underwood works employed boys from the Miss Kibble Reformatory in Paisley as labourers on both the day and the night shifts, causing 'a good deal of uneasiness and dissatisfaction' in the town.<sup>110</sup> The matter reached the attention of the Labour M.P. Will Thorne, who questioned the Secretary for Scotland in the House of Commons on the issue, pointing out

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<sup>106</sup> PRO MUN 2/28, 29 Dec. 1917, p. 18.

<sup>107</sup> CAB 24/44, GT 3855, p. 1; GML, GTCM, 6 Feb. 1918.

<sup>108</sup> HC Deb. vol. 103, c. 1311-2, 26 Feb. 1918.

<sup>109</sup> CAB 24/45, GT 3910, p. 2.

<sup>110</sup> *Workers' Union Record*, Oct. 1916, p. 8.

that the boys were paid 4d. per hour, their wages going directly to the Reformatory and not to the boys or their parents. The Scottish Secretary assured Thorne that the boys were ‘temporarily employed at Messrs. Beardmore’s’ and informed him that a ‘substantial portion’ of their wages was set aside to be given to the boys when they left the institution.<sup>111</sup>

Despite the Secretary’s reassurances that it was a temporary measure, two years later the boys were still working at Beardmore’s. J. Paton, Secretary of the Underwood Shop Committee, prepared a statement describing the boys’ work regimen.<sup>112</sup> Between eighty and ninety boys were ‘marched in military formation’ to the works every day accompanied by a warder who remained to supervise them. Half of the boys worked day shift and half the night shift. Although it was claimed that the day and night shift boys had reached the statutory ages for employment of fourteen and sixteen respectively, Paton noted that they were ‘so small in stature and so juvenile in appearance... that we are sceptical on the point.’ These small boys undertook the work of adult labourers, loading and pushing shells in trolleys from the machines to the inspection tables, which Paton described as ‘one of the most laborious jobs, if not indeed actually the heaviest job in the works.’<sup>113</sup> The boys not only performed the same tasks as adult males, they also worked longer hours, doing a thirteen-hour night shift, from 7 p.m. to 8 a.m., compared to the adult twelve-hour shift. Between 7 a.m. and 8 a.m., after the men had gone home, the boys removed the shell cuttings from the machines in preparation for the next shift, a task described as ‘particularly objectionable work.’ Paton noted that the boys took advantage during the night of the few, brief intervals in the shift ‘to curl up on their “bogies,” on a bench, or on the floor, and snatch forty winks.’ In 1918, the boys were still being paid 4d. per hour, and their wages were still going to

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<sup>111</sup> HC Deb. vol. LXXXVII, c. 1027-8, 16 Nov. 1916.

<sup>112</sup> Scottish Record Office, *The First World War* (Edinburgh, 1986), p. 32 contains a photograph of the original typewritten statement on which this paragraph is based.

<sup>113</sup> This was in contravention of the Factory Act of 1901 which prohibited children working with heavy weights likely to cause them injury. However, as we shall see in the following chapter, many provisions of the Factory Acts were ignored during the war in the great push to produce munitions.

the Reformatory, with a portion, apparently, set aside to be given to them when they left the institution at age eighteen.<sup>114</sup> The firm of Sir William Beardmore, it appears, was willing to exploit all forms of war labour, not just that of women workers.

A short examination of labour relations at Beardmore's has cast new light on some events of Red Clydeside. As a result of previous concentration on the confrontation between the skilled men's unions and the government, there has been too little attention to the employers of the Clyde district. However, as John Foster points out, there was a 'perpetual battle' on Clydeside against management, and the sectionalism of the workforce was 'always qualified and limited by a basic "us and them" identity against the employers.'<sup>115</sup> In the same vein, there may have been gender conflicts on the Clyde stemming from resistance to female dilutees, but they were minimal compared to the level of animosity directed against exploitative employers.

### **Women in Trade Unions and their 'Week-Ends Off'**

We will now examine the nature of the new female munitions workforce, their membership in trade unions, and their participation in industrial action during the war. In the years immediately preceding the war, there had been an increase in union membership and industrial activity among women in the west of Scotland where a number of significant strikes had taken place. The NFWW had been active among textile workers, resulting in successful strike action by women in the Neilston thread mills in 1910, and amongst the Kilbirnie net workers in 1913. There had also been a massive strike in 1911 at Singer's in Clydebank where the

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<sup>114</sup> In July 1918, Ramsay MacDonald took up the issue of the Kibble Reformatory boys in the House of Commons, forcing the Secretary for Scotland to initiate an inquiry into their treatment. It is doubtful, however, that it caused much improvement, as some months later, although 'new arrangements' were in place at Underwood, the most significant difference was the reduction of the shifts by one hour. (HC Deb. v. 108, c. 695-6, 15 July 1918; v. 109, c. 647-8, 1 Aug. 1918; v. 110, c. 957, 24 Oct. 1918).

<sup>115</sup> John Foster, 'A Proletarian Nation? Occupation and Class since 1914,' in *People and Society in Scotland*, vol. 3, ed. A Dickson and J.H. Treble (Edinburgh, 1992), 218.

spontaneous action by a number of women resulted in 11,000 operatives coming off the job. These strikes were characterized by a high degree of support for the women from their local communities as well as from the broader labour movement in the west of Scotland.<sup>116</sup>

During the war, there was an upsurge in the number of women joining unions throughout Britain, although it is impossible to know the exact numbers as there are widely conflicting reports, even in authoritative sources.<sup>117</sup> It is equally impossible to know how many Clydeside women munitions workers were unionized during the war. Writing in June 1916, Highton estimated that approximately 4,000 were in unions, of whom roughly 3,000 belonged to the NFWW, with the others distributed amongst the Workers' Union (WU), the Gas and General Workers' Union, and the National Amalgamated Union of Labour.<sup>118</sup> Highton also remarked on the 'notorious' difficulties of organizing women, giving the impression of a timid, hesitant female workforce by pointing to their 'narrowed outlook; temporary nature of their industrial life...inability to pay for efficient organisation; [and] difficulty of training voluntary workers to officer the branches.'<sup>119</sup> Women did not have the strong tradition of trade unionism that Clydeside men had, but nevertheless, despite Highton's pessimistic view, evidence suggests that they unionized in significant numbers, and participated in several instances of industrial militancy.

The Scottish Union of Dock Labourers (SUDL) owed most of its wartime growth to the influx of women members. The SUDL admitted women for the first time in 1916, and throughout the war enrolled several hundred women munitions workers from Nobel's Ardeer plant in

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<sup>116</sup>Eleanor Gordon, *Women and the Labour Movement in Scotland, 1850-1914* (Oxford, 1991), 242-54; Glasgow Labour History Workshop, *The Singer Strike Clydebank, 1911* (Clydebank, 1989). For a valuable account of the upsurge in industrial unrest in the west of Scotland before the war, see William Kenefick and Arthur Melvor, ed. *Roots of Red Clydeside. 1910-1914?* (Edinburgh, 1996).

<sup>117</sup> Drake, *Women in Trade Unions*, 97, 182-3, Table II in appendix; Cole, *Trade Unionism and Munitions*, 198-9; Kirkaldy, *British Labour: Replacement and Conciliation, 1914-1921* (London, 1921), 85-6; Irene O. Andrews, *Economic Effects of the War upon Women* (New York, 1921), chapter 8.

<sup>118</sup> Highton in Kirkaldy, *Labour, Finance, and the War*, 131-2.

<sup>119</sup> Highton in Drake, *Women in Engineering*, 129.

Ayrshire.<sup>120</sup> The British membership of the NFWW grew from between 7,500 and 10,000 in 1914 to between 60,000 and 80,000 by the time of the Armistice. We do not know how many of these were in Scotland, although it is likely that a good proportion were, as the union was active in a number of areas, and in September 1917 formed a Scottish district council to manage affairs north of the border.<sup>121</sup>

Fortunately, we have fuller information on the WU, which made great inroads into the organization of women workers in Scotland during the war. Before 1911, the WU was practically unknown in Scotland, with only five branches and approximately 300 members. After the appointment in December 1911 of George Kerr as the Scottish organizer, the WU experienced great growth in Scotland, but it was not until the war that the union energetically encouraged women into its ranks. In the summer of 1915, the WU sent Julia Varley, its principal woman organizer, to boost the organization of women in Scotland, and in December 1915 it appointed Eleanor Stewart as its first, full time, female Scottish organizer. Echoing Highton's sentiments, Varley found it an uphill battle in 1915 getting women to join the union, at one point lamenting that it seemed 'almost a hopeless venture.'<sup>122</sup> Hard work and persistence paid off, however, and the WU succeeded in organizing women in a number of unskilled occupations as well as munitions workers at Singer's, Georgetown and the Armstrong-Whitworth works in Alexandria.<sup>123</sup> By the time of the Armistice, there were women members in over sixty Scottish WU branches, with the total female Scottish membership standing at roughly 16,000, which

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<sup>120</sup> *Ardrossan and Saltcoats Herald*, 'Ardeer Workers,' 27 Oct. 1916; SRO FS 10/3, Scottish Union of Dock Labourers, Annual Returns. There were 833 women workers in the SUDL in 1917, all of them munitions workers. I am grateful to Billy Kenefick for this information and the SRO reference.

<sup>121</sup> *Woman Worker*, Oct. 1917, p. 7; Nov. 1917, p. 6; and passim.

<sup>122</sup> *Workers' Union Record*, Jun. 1915, p. 11; July 1915, p. 15; Aug. 1915, p. 4.

<sup>123</sup> *Workers' Union Record*, Jan. 1917, p. 8; IWM MUN 24.



compared favourably to the national WU female membership of 60,000.<sup>124</sup> Scotland, it seems, was a fertile ground for the recruitment of women into unions.

Several factors accounted for the great increase in women's union membership during the war. The system of mass production in munitions factories fostered a 'spirit of comradeship' among the women, which was conducive to union organization. Encouragement from men unionists, who recognized the importance of keeping up women's rates of pay, was another factor. The women also saw the benefits of membership in negotiated pay rises, and some may also have joined as a way of asserting their independence from domineering employers.<sup>125</sup> But probably the most important factor was money. Compared to their abysmally low pre-war wages, women's wartime earnings enabled them to afford union dues, which generally ranged between 2d. and 4d. per week.<sup>126</sup> A range of factors therefore contributed to the increased union membership of women during the war.

There was also a growth in the number of women in administrative positions within the unions, and an increase in the number of women delegates to both the Glasgow Trades Council and to the Scottish Trades Union Congress (STUC). While there had been very few women delegates to the STUC before the war, by 1920 there were nineteen females out of a total of 240 delegates.<sup>127</sup> Although this may seem a small number, it compares favourably to the female representation at the English Trades Union Congress (TUC), where there were thirty-two women out of a total of 851 delegates in 1919.<sup>128</sup> Nevertheless, no Scottish woman succeeded in being

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<sup>124</sup> Workers' Union, *20<sup>th</sup> Annual Report* (1918), p. 3. Shortly after the Armistice, the number had dropped to 12,000, reflecting the wholesale lay-off of women from war industries.

<sup>125</sup> Kirkaldy, *British Labour* (1920), 87-91; Gordon, 260.

<sup>126</sup> Drake, *Women in Trade Unions*, 182-4.

<sup>127</sup> Sheila Lewenhak, 'Women in the Leadership of the Scottish Trades Union Congress, 1897-1970,' *Scottish Labour History Society Journal* 7 (1973): 14.

<sup>128</sup> Sarah Boston, *Women Workers and the Trade Union Movement* (London, 1980), 127-8. The STUC ratio of female to male delegates was 1:12, compared to the TUC ratio of 1:26.

elected to the Parliamentary Committee, the chief executive body of the STUC.<sup>129</sup> Indeed, despite the enormous increase in female membership during the war, there were no women on the executive committee of any of the general labour unions in Britain.<sup>130</sup> There was therefore an increase in the number of women organizers and officials, but they did not penetrate the top echelons of mixed unions.

It is difficult to unearth evidence of wartime strikes by women munitions workers as the government threw a heavy blanket of censorship on any newspaper report which might have an adverse effect on the production of munitions. Before the war, *Forward* provided copious information on the Neilston and Kilbirnie women's strikes, but during the war it revealed no hint of the bitter dispute at East Hope Street in late 1917, or of any other strike by the area's munitions women.<sup>131</sup> The largest and noisiest instance of women's industrial militancy took place on Friday 25 and Saturday 26 May 1917, when several thousand Georgetown workers struck work and returned by train to the city, creating a 'good deal of disturbance' in Glasgow's Central Station:

They took possession of a number of luggage barrows, wheeling them recklessly about the station and causing considerable inconvenience and annoyance. The rowdyism was continued at intervals as further batches of the workers returned to the city.<sup>132</sup>

The disturbance had been too tumultuous for the press to ignore, and on Monday morning, *The Bulletin* ran photographs of the women, but with mild, inoffensive captions, omitting the use of the word 'strike' or any details of their grievances. After the war, one political commentator included the Georgetown strike in a list of the 100 most important strikes of the war, in terms of

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<sup>129</sup> Lewenhak, 'Women in STUC,' 14.

<sup>130</sup> Drake, *Women in Trade Unions*, 99.

<sup>131</sup> *Forward* was especially cautious after its suppression by the government in January 1916, writing in March 1916, 'it is impossible for us to discuss or report any strike at any munitions work' (25 Mar. 1916, p. 2). Interestingly, it is possible to plot the development of the Women's Peace Crusade through the pages of *Forward*, but not the activities of women workers.

<sup>132</sup> *Glasgow Herald*, 26 May 1917, p. 5b; 28 May, 1917, p. 8g.

the number of people involved.<sup>133</sup> Yet in May 1917, *The Bulletin* had referred to it as ‘West of Scotland Munitionettes Have a Week-end Off.’<sup>134</sup> This euphemistic account was the most detailed report of a strike by women munitions workers in Glasgow newspapers during the war.

The best sources of information on women munitions workers’ strikes are confidential reports in the archives of the Ministry of Munitions. Although they contain only fragments of information, they nevertheless indicate that many women munitions workers in Scotland were not docile, quiescent women committed to the war effort, but rather were strong, assertive and willing to take direct action to get their demands met. Take, for example, the May 1917 strike of Georgetown women. For a number of months the women had a ‘whole budget of grievances’ regarding their pay, dating back to the previous summer when the management had refused to pay them time and a half in lieu of holidays, and more recently when they had refused to pay a night shift allowance.<sup>135</sup> Although the women had eventually won these demands, which had taken ‘four solid months to squeeze out of the management,’ their frustration came to boiling point on 25 May when the board of directors refused to pay them a negotiated output bonus. A stay-in strike in one department quickly escalated until ‘practically the entire works was affected,’ and almost 12,000 women went on strike, resulting in the noisy demonstrations on Friday evening when the women returned to Glasgow by train and vented their frustration in the station.<sup>136</sup> One of the most remarkable things about the strike is the speed with which the local Ministry officials acted to resolve the dispute. On Saturday, the women assembled at Glasgow Green to further publicize their cause, and hasty meetings were held between the Georgetown management, Ministry officials and representatives of the workers. As a result, the management agreed to the

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<sup>133</sup> Milton Moses, ‘Compulsory Arbitration in Great Britain during War,’ *Journal of Political Economy*, 26 (1918): 891, 888

<sup>134</sup> *The Bulletin*, 28 May 1917, p. 1.

<sup>135</sup> *Workers’ Union Record*, Jan. 1917, p. 8.

<sup>136</sup> PRO MUN 2/28, 26 May 1917, 13; *Workers’ Union Record*, Jan. 1917, p. 8; IWM EMP 73/66.

women's demands, promising to pay the output bonus to all workers who had been at the factory for more than four weeks, effective immediately.<sup>137</sup>

Apart from fighting for higher wages, women munitions workers had other reasons for going on strike, one of the most common of which was to express support for a dismissed colleague. We have already seen that this was the spark that set off the East Hope Street dispute, and there are many other examples. In September 1917, sixty women in the firm of Messrs. W. McGee in Paisley struck in support of a colleague whom the firm had dismissed for disobeying a foreman. On the walkout of the women, the company quickly withdrew the dismissal notice and work resumed after only a one-day strike. The following month at the Caledonian Wire Company in Airdrie, seventy-four out of ninety women workers struck to force the company to re-instate two women whom they had dismissed for alleged bad timekeeping. And, in November 1917, in a case displaying solidarity of both male and female workers, ninety-eight men and twenty-two women struck at Babcock and Wilcox when a woman was dismissed 'for neglect of work.'<sup>138</sup> Within a three-month period, there were three examples of strong workplace solidarity where workers took strike action to demand the re-instatement of a dismissed colleague.

There were also several instances of women taking strike action without the involvement of a union, showing that they were perfectly capable of taking matters into their own hands to pursue grievances and demand retribution. In September 1916, women at Mile End NPF downed tools when the company attempted to reduce the piecework price of copper banding 60-pdr. shells.<sup>139</sup> Similarly, at a small engineering firm in Glasgow in September 1917, fourteen women struck to enforce their demand for an increase in piecework prices. On investigation, the company discovered that, 'owing to a clerical error,' the women had not received the negotiated price,

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<sup>137</sup> *OHSFF*, 151. The agreement appeared to take effect immediately as photographs show the women receiving their wages on the Saturday evening at St Andrews Hall (*The Bulletin*, 28 May 1917, 1).

<sup>138</sup> PRO MUN 2/28, 22 Sept. 1917, p. 15; 20 Oct. 1917, p. 18; 10 Nov. 1917, p. 15.

<sup>139</sup> PRO MUN 2/27, 30 Sept. 1916, p. 13.

which they quickly rectified, resulting in the women's immediate resumption of work.<sup>140</sup> In some cases, the spontaneous action of walking off the job brought faster results than protracted negotiations between union officials and management representatives. Unorganized women were also capable of negotiating and pursuing their claim through the official government channel that regulated women's wage claims. In 1918, a group of women workers from Babcock and Wilcox 'Ypres' factory, who had no union affiliation, negotiated a favourable settlement through the Special Arbitration Tribunal, forcing the company to restore the night shift allowance and to pay an increase for overtime, night shift, Sunday and holiday work.<sup>141</sup> Women did not always need the mechanism of an official union to redress a grievance or fight a pay dispute.

Some women displayed great persistence in pursuing their claims for wage increases long after the unions had given up on them. The WU had made a particular effort to break into the giant Singer's complex in Clydebank, which had over 8,000 wartime women workers. The union succeeded in establishing ten branches with several thousand members, and undertook a number of wage negotiations on behalf of their members.<sup>142</sup> At least one case remained undecided at the end of the war, and the WU stopped pursuing it, probably due to the post-war depletion in their ranks. However, Helen MacDonald, a former Singer's employee, was not prepared to let the company escape from its obligation to pay the award, and brought a test case against them, claiming that they owed her £15. 18s. 5d. If Singer's had agreed to pay MacDonald, it would have cost them £50,000 in payments to the 3,000 other women who were also covered by the award. An acrimonious and prolonged battle ensued, the company and the complainant fighting the claim through a succession of arbitration and civil courts, with Singer's repeatedly appealing

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<sup>140</sup> PRO MUN 2/28, 15 Sept. 1917, p. 16. See also, 14 Apr. 1917, p. 17; 28 July 1917, p. 20.

<sup>141</sup> IWM EMP 73/290.

<sup>142</sup> *Workers' Union Record*, Dec. 1917, p. 15; IWM EMP 73/157; *12<sup>th</sup> Report of Conciliation and Arbitration, 1914-1918*, PP 1919, xiii (391), vol. 3, p. 353; *Report of Conciliation and Arbitration, 1920*, PP 1921, (185), p. 252.

judgments that went against their favour until the case eventually reached the Court of Session in Edinburgh at the end of February 1922.<sup>143</sup> The case of Helen MacDonald, along with the other examples of industrial action and union activity cited above, demonstrates the great strength, tenacity, resolve and determination on the part of Scottish women who displayed increasing assertiveness and self-confidence throughout the course of the war, contradicting Highton's early impression of them as weak, timid, and 'notoriously difficult' to organize.

### **Munitions Tribunals**

Another method of measuring the agency of Clydeside women munitions workers is to examine their appearance before the Glasgow munitions tribunal. In order to administer the provisions of the Munitions of War Acts, the government set up munitions tribunals, which consisted of an impartial chairman, who was usually a lawyer, and two assessors, one representing the employers, and the other the employees. Both employers and workers could lodge complaints before the tribunal for infringements of the Act. For example, workers could report an employer to the tribunal for unfair dismissal, or for refusing to give them a 'leaving certificate.'<sup>144</sup> Employers, on the other hand, could report workers to the tribunal for breaking workshop rules which enforced regular attendance, diligent work and good conduct. This allowed employers to bring workers in front of the tribunal for a broad range of offences from bad timekeeping to striking; indeed, for almost anything that caused the restriction of production. The labour movement resented the power that tribunals had given to employers, calling them a 'new

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<sup>143</sup> A. Dorman, *A History of the Singer Co. (U.K.)*, (typescript, Clydebank Public Library), ch. 3.

<sup>144</sup> As already mentioned, the Munitions Act had made it illegal for an employer to hire workers who had previously been employed at munitions work unless they were in possession of a 'leaving certificate' from their previous employer to show that they had left with his consent.

weapon of tyranny' as employers could now enforce obedience from workers by threatening to 'drag them up before the tribunal.'<sup>145</sup>

According to contemporary British accounts, it was a terrifying experience for a woman to appear before a munitions tribunal. There were reports of women being shy, nervous, embarrassed, 'tongue-tied with terror,' and in one extreme case, a young girl in Birmingham threw herself into a canal rather than appear before the court.<sup>146</sup> The Munitions of War (Amendment) Act of January 1916 authorized the appointment of women assessors, who were usually trade union organizers, to advise and guide the women who came before the tribunal.<sup>147</sup> Drake considered the presence of women assessors vital as, 'an inexperienced young girl has not always the initiative, the knowledge, the courage, to venture into court at all.'<sup>148</sup> Despite the appointment of female assessors, however, it remained a formidable ordeal for women to appear in court. According to *The Woman Worker*:

The worker is naturally shy and frightened, and very apprehensive as to what is going to happen next; her heart thumps uncomfortably, her voice sounds to her as if it belonged to somebody else, the questions asked her seem unnaturally difficult to understand, and she is a very unusual young lady if she is not quite too flustered to do herself justice and to state her case clearly.<sup>149</sup>

Some contemporary observers believed therefore that employers might use munitions tribunals as a means of enforcing industrial discipline, and others thought that the strain of appearing in front of the tribunal would be too stressful for women. However, while this description may have been true for a number of women appearing before tribunals in Britain, when we look specifically at Glasgow, we find a very different picture. An analysis of the caseload of women workers before

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<sup>145</sup> Drake, *Women in Trade Unions*, 76.

<sup>146</sup> Woollacott, 99-100.

<sup>147</sup> Drake, *Women in Trade Unions*, 76-78. The Glasgow panel of women assessors included Lois Young, Agnes Adam, Ethel Weaver and Mabel Mackenzie, all of the NFWW, as well as Agnes Dollan, well-known ILP member, peace crusader, and community activist (PRO LAB 2/47/MT 107/1).

<sup>148</sup> Drake, *Women in Engineering*, 71; Tuckwell Collection, 668/9.

<sup>149</sup> *Woman Worker*, Jan. 1917, p. 6.

the Glasgow munitions tribunal reveals that women used the tribunal to gain reparation from employers to a far greater extent than employers used it to discipline recalcitrant women workers. Forty cases involving women appeared before the Glasgow tribunal. In only eight of these cases did employers take women to court. In the remaining thirty-two cases, the women applied to the tribunal for either compensation or a clearance certificate. Rather than quaking in fear at the thought of being hauled in front of the tribunal, some Glasgow women initiated proceedings and dragged their employers to court.

The thirty-two cases in which women were the complainants comprised thirteen applications for compensation for unfair dismissal, and nineteen applications for clearance certificates. The tribunal chairman granted a certificate in ten cases, refused it in four, told three that they did not need one, and in two instances adjourned the case until he investigated fine points of the law.<sup>150</sup> Sheriff Fyfe, the tribunal chairman, readily granted certificates to women who wanted to take up munitions work, or to find a better paying munitions job, and he even granted one to a young woman who complained about the abusive behaviour of her foreman.<sup>151</sup> However, he refused to grant a certificate if he was not convinced that his decision would maximize the production of munitions. For example, he turned down the application from a woman who wanted to leave her job at an NPF to find one closer to home when the factory opposed the case, stating that she was a proficient worker whom it was necessary to retain for the continuity of urgent work.<sup>152</sup> Fyfe also had little sympathy for four women who refused to carry out a new work order requiring them to scrub the factory floor. When the women protested that

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<sup>150</sup> Fyfe needed a few days to consider if a waitress in a munitions canteen was classified as a munitions worker under the terms of the Act (*Glasgow Herald*, 8 Aug. 1916, p. 6g). Confusion over the definition of munitions work caused some women to apply for a certificate when they did not need one (*Glasgow Herald*, 28 Jan. 1916, p. 11a; 31 Mar. 1916, p. 4f; 9 Feb. 1917, p. 8g).

<sup>151</sup> *Glasgow Herald*, 3 Feb. 1916, p. 3g; 19 Jun. 1916, p. 11d; 24 Oct. 1916, p. 5g; 20 Dec. 1916, p. 5d.

<sup>152</sup> *Glasgow Herald*, 26 Feb. 1917, p. 9g.



scrubbing floors was not munitions work, Fyfe reminded them that 'ladies washed the floor in railway station canteens.'<sup>153</sup> Nevertheless, the majority of women applying to the tribunal for a leaving certificate won their case.

The thirteen women who applied to the tribunal for compensation, claiming that their employer had dismissed them without a week's notice or wages in lieu of notice, had even better results, as all but one of them won their case. An examination of these cases shows that the women had not only a considerable degree of confidence in bringing their cases to court, but also a high level of dissatisfaction with workplace conditions and the determination to do something about it. For example, one firm moved a twenty-year-old woman from a machine that required her to lift 50 lb. shells to another that required her to lift 61 ½ lb. shells. After consulting with her father, the girl refused to work on the new machine, saying the work was too heavy and would involve lifting about six tons per day, whereupon the company dismissed her for insubordination. Granting the woman compensation, Fyfe lectured the company: 'I wish you people would read the Munitions Act and understand that you must either give your employees a week's notice or take the risk of justifying their dismissal.'<sup>154</sup> In a similar case, forty women applied for compensation after being dismissed for refusing to submit to a new scheme of work, which had previously been done by men and involved lifting heavy shell cases. The women claimed that the cases were too heavy and were dismissed for 'misconduct' in refusing to obey the orders of management. Fyfe found the women's complaint justified as their refusal to perform work that they believed was injurious to their health was not 'misconduct' under the terms of the Act, and awarded each of the women a week's wages in lieu of notice.<sup>155</sup> In other cases where companies

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<sup>153</sup> *Glasgow Herald*, 1 Mar. 1917, p. 5g.

<sup>154</sup> *Glasgow Herald*, 8 Aug. 1916, p. 6g.

<sup>155</sup> PRO MUN 2/28, 15 Dec. 1917, p. 17.

had summarily dismissed women for challenging their authority by disputing wages or refusing to do overtime, the tribunal awarded the women compensation.<sup>156</sup>

Even in cases where women were dismissed for being troublemakers and strike agitators, Fyfe insisted that the company pay the women their wages. In one case where a company had dismissed three women 'ringleaders' for circulating a round robin protesting their wage rates, Fyfe found that the dismissal was not justified, and granted the women compensation.<sup>157</sup> In another case where a company had dismissed a woman for allegedly trying to stir up a strike, Fyfe was not convinced that her behaviour was so bad to warrant dismissal and granted her compensation. The complainant, however, was not satisfied with mere financial retribution and was just launching into 'a long statement,' when Fyfe cut her short, whereupon she announced she would take her case to the House of Commons.<sup>158</sup> Rather than being meek, timid and tongue-tied in front of the court, some Glasgow women used the tribunal as a forum in which to air their grievances against their employers.<sup>159</sup>

In the eight cases in which women were the defendants, their offences included bad timekeeping, walking off the job, and disobeying a foreman. In seven of the cases, the chairman delivered a lengthy lecture on the national importance of munitions production, and in only one case, that of a woman refusing to work on a new machine, did he impose a fine, and even then the amount was small.<sup>160</sup> The tribunal's leniency was remarkable, especially given that one of the

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<sup>156</sup> *Glasgow Herald*, 11 Apr. 1916, p. 3d; 11 Oct. 1916, p. 5e; 24 Oct. 1916, p. 5g; 21 Feb. 1917, p. 8b; 1 Mar. 1917, p. 5g.

<sup>157</sup> *Glasgow Herald*, 1 Nov. 1916, p. 8d.

<sup>158</sup> *Glasgow Herald*, 29 Sep. 1916, p. 8e. There were also instances, not included in this analysis, of women successfully speaking up in court on behalf of their husbands or sons (*Glasgow Herald*, 8 May 1916, p. 4e; 15 Aug. 1916, p. 4c; 19 Mar. 1917, p. 9c).

<sup>159</sup> The case in which Fyfe did not grant compensation involved a relatively minor infraction of workplace rules where four young women refused to wear trousers, protesting it was unnecessary, as they did not work on machines. Fyfe, in this instance, decided in favour of the company as they had posted notices stating that all women had to wear trousers and tunics (*Glasgow Herald*, 27 Dec. 1916, p. 5b).

<sup>160</sup> *Glasgow Herald*, 10 Jan. 1917, p. 9f. A 'lady witness,' testifying there was no difference between the work of the new machine and that of the former machine, may have swayed Fyfe's judgment.

cases involved a strike of thirty-six women who made silica bricks for steel furnaces. Rather than imposing a hefty fine, Fyfe severely rebuked them for committing 'a very grave offence, chiefly against their own country,' and sent them back to their work.<sup>161</sup> This was the only occasion in which a strike of munitions women came before the tribunal.

Gerry Rubin, who has made a valuable study of women's appearance before the Glasgow munitions tribunal, also finds it remarkable that female strikers escaped the heavy hand of the law.<sup>162</sup> He believes that Fyfe was more lenient in his treatment of women workers than of their male counterparts, which he attributes to the wide recognition of women's contribution to the war effort.<sup>163</sup> While this may be true, it is also likely that the government was anxious to keep news of women's industrial action from the notice of the general public. As the proceedings of munitions tribunals received wide newspaper coverage, it is possible that the authorities took steps to discourage the prosecution of women for strike activity. We have already noted the lack of newspaper reports of women's strike activity, and the government's concern to maintain the carefully cultivated image of munitions women as patriotic workers.

Rubin makes another interesting observation. When reviewing women's appearance before the tribunals at the national level, he finds more evidence of contentment than of dissatisfaction, stating: 'as a crude and inexact index of industrial unrest, resort to the munitions tribunal in the case of women throughout the country is suggestive of an occasional ripple of discontent rather than of an unremitting storm of protest.'<sup>164</sup> However, when he concentrates on the Glasgow tribunal alone, Rubin finds that this assessment 'requires modification,' as he sees

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<sup>161</sup> *Glasgow Herald*, 10 July 1916, p. 5d.

<sup>162</sup> Rubin's text on the government's wartime controls over industrial relations, *War, Law, and Labour* (Oxford, 1987), has omitted a discussion of women, but his Ph.D. thesis includes an insightful chapter on their appearance before the tribunals. See G. Rubin, 'The Enforcement of the Munitions of War Acts 1915-1917, with Particular Reference to Proceedings before the Munitions Tribunal in Glasgow, 1915-1921,' Warwick University Ph.D. (1984), chapter 10.

<sup>163</sup> Rubin, 'Enforcement,' 526-31.

<sup>164</sup> Rubin, 'Enforcement,' 495.

more evidence of assertiveness and militancy among Glasgow women than among British women in general. He surmises that:

the local Glasgow tradition of protest (cf. the rent strikes) the high degree of politicization, the influence and example of male workers... could steel groups and individuals to promote issues and pursue grievances with a confidence lacking in those with no comparable traditions of history, culture and intellectualism.<sup>165</sup>

Rubin's suggestion that Glasgow women were more receptive to protest than women in other parts of Britain gains support from the evidence presented in this chapter. While the protests and industrial action of Clydeside's women munitions workers rarely appeared in the pages of local newspapers, a study of other sources, many of them confidential Ministry documents, reveals that they joined unions in significant numbers, engaged in industrial action, often of a sporadic and spontaneous nature, and some even went so far as to haul their employers up before the munitions court. Although we have to look hard to find it, the women of Clydeside were far from timorous creatures cheerfully churning out munitions.

In this chapter we have addressed what Bob Morris has called an 'apparent paradox' in the history of wartime Clydeside: why were Glasgow women so prominent as the leaders of the most successful working-class protest movement of the war, the rent strikes of 1915, and yet absent from the region's intense industrial struggles? Why was there such a high level of activity and protest among working class Glasgow housewives, but not amongst the city's female workers? Although pale in comparison to the militant action of the Clyde workmen, women workers nevertheless were affected by what Rubin has called 'the infectious, heady atmosphere of a city prone to dissidence,' and we have presented evidence of female assertiveness and militant action which the government was at pains to conceal.<sup>166</sup> The Press Bureau, anxious to maintain the image of munitions women as dedicated patriotic workers, prevented reports of their

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<sup>165</sup> Rubin, 'Enforcement,' 493-4.

<sup>166</sup> Rubin, 'Enforcement,' 517.

industrial action filtering through to the public consciousness, and, up until now, to subsequent historical accounts.

However, while there were significant pockets of industrial agitation and protest among women workers, large swathes of the female workforce did not join unions or participate in strikes. In the following chapter, we offer a further explanation for the apparent docility of the female workforce by conducting an extensive study of working conditions in Clydeside munitions factories and their impact on the health of the women workers. After a twelve-hour day standing at a lathe or pushing a heavy trolley, women munitions workers were simply too exhausted to engage in any form of industrial action. We therefore offer two explanations to the paradox of Glasgow's women in the Great War. One, some women did take industrial action, but the government concealed it. Two, many women did not engage in industrial protest, but we should regard it as a measure of their bone weariness, not of their docility.

### **Gender Relations**

What was the nature of gender relations among the working class men and women employed in Clydeside engineering workshops during the war? Scottish historians have pointed to the intensely patriarchal nature of Scottish society, one even going so far as to coin the phrase 'gender apartheid.'<sup>167</sup> The gender division of labour, common throughout early twentieth century Britain, was particularly pronounced on Clydeside where the heavy nature of the region's main industries, shipbuilding, steel making, locomotive manufacturing and coal mining, excluded women from the mainstream job market. Women were segregated into unskilled and poorly paid work in the clothing and textile industries and in domestic service. According to Arthur McIvor, employment inequalities and gender discrimination persisted throughout the century, and 'deep-

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<sup>167</sup> Arthur McIvor, 'Gender Apartheid?: Women in Scottish Society,' in *Scotland in the Twentieth Century*, ed. T.M. Devine and R.J. Findlay (Edinburgh, 1996), 188-209.

rooted patriarchal concepts of the “lesser value” of female labour’ proved difficult to eradicate.<sup>168</sup> In addition, as Eleanor Gordon suggests, the notion of ‘domestic ideology’ was particularly strong on Clydeside where the home was considered a woman’s natural domain, and it was a measure of respectability and masculinity for a working class man to have a non-working wife. Moreover, the Scottish trade union movement did little to alleviate gender inequalities as it ignored women’s concerns and pursued exclusionary policies, further contributing to the marginalisation of women in the labour market and in society in general. The confinement of women to unskilled, low paid work was a major factor contributing to the fragmentation of the Scottish working class.<sup>169</sup>

R.J. Morris presents a sympathetic and subtle view of male attitudes towards women’s work and the skilled man’s desire to have a non-wage earning wife. Looking at the subject from the harsh realities of working class life, he suggests that men wanted to protect the ‘family wage’ not because of patriarchal notions of keeping women in subservient positions in the home, but to save their wives from ‘the exhausted nightmare of the working wife.’ He refers to William Gallacher’s memories of his ‘mother’s grey faced exhaustion,’ and his satisfaction as a boy when his earnings enabled her to give up waged work.<sup>170</sup> Taken in conjunction with our discussion in the following chapter of the bitterly hard, daily grind of women’s factory work, this argument has validity.

What was the impact of the war on the state of Scotland’s working class gender relations? What was the attitude of the skilled workers and the militant shop stewards to the women entering their trades? Did the government’s dilution policy, which forced the men to accept, or at least to tolerate, women workers, exacerbate or alleviate gender antipathies? On the shop floor level, both

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<sup>168</sup> Arthur McIvor, ‘Women and Work in Twentieth Century Scotland,’ in *People and Society in Scotland*, vol. 3, ed. A. Dickson and J.H. Treble (Edinburgh, 1992), 138-173.

<sup>169</sup> Gordon, *Women and the Labour Movement*, chapter 2.

<sup>170</sup> R.J. Morris, ‘Skilled Workers and the Politics of the ‘Red’ Clyde: a Discussion Paper,’ *Journal of the Scottish Labour History Society* 19 (1984): 11; ‘The ILP, 1893-1932: Introduction,’ in *The ILP on Clydeside*, ed. A. McKinlay and R.J. Morris, 13.

Woollacott and Braybon found a variety of responses including resentment, hostility, sabotage, physical and verbal abuse, as well as civility, friendliness, cooperation and even romance.<sup>171</sup> In Glasgow there was a similar wide range of reactions from antagonism and misogyny to companionship, solidarity, and jocularly. For example, when Jeanie Riley started her work at Fairfield's she wrote to her husband: 'We were told that the amount of work we do in three weeks would have taken the men three years and Jamie the men are quite mad at us.' A few weeks later, however, Jeanie sent another letter describing a workplace incident which gave a very different view: 'We had to go down and put them in the condensers and Jamie it was a right laugh at that job. All I could hear was push it in now. Mr Burns could not but laugh himself when he heard the fellows roaring it to us.'<sup>172</sup> On the other hand, a surviving photograph from another engineering yard reveals that such light-hearted joking was not found in all workshops. As a reminder of the transient nature of their jobs, the men had chalked a message on the wall behind the women's workbench: 'When the boys come home we are not going to keep you any longer girls.' Judging by the sullen expression on the women's faces, the men had achieved their objective of making the women feel excluded and unwelcome.<sup>173</sup>

The experience of Harry McShane, the last surviving Clydesider, offers yet another view, one of gender solidarity. As a shop steward at Parkhead during the war, McShane had angered the Beardmore management when he tried to get the men to reject the firm's collective bonus scheme. Making his life difficult by keeping him under close surveillance from a glass box in the middle of the shop floor, the management eventually sacked McShane for alleged bad workmanship, which resulted in both male and female workers refusing to start work after lunch:

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<sup>171</sup> Woollacott, 201-2; Braybon, 67-82.

<sup>172</sup> Courtesy of the People's Palace Museum, letter dated 17 Mar. 1916. Employers, often for the purpose of goading the skilled workmen, frequently made unfavourable comparisons between their output and that of the new women workers.

<sup>173</sup> Michael S. Moss and John R. Hume, *Workshop of the British Empire* (London, 1977), 128-9.

The men sat at their benches playing cards and the girls sat singing songs. I had never had any contact with the girls in the shell department, never spoken to them; but this was the sort of spirit there was. Everybody just sat there enjoying themselves.<sup>174</sup>

Responses, ranging from friendly cooperation to blatant confrontation, varied in each individual workshop. The attitude of male workers to their female colleagues was a complex and often contradictory subject which cannot be categorized simply as patriarchal hostility to women workers.

The craft unions tended to be the most vocal and rigid opponents of women workers, some regarding them simply 'as pawns in the battle between capital and labour.'<sup>175</sup> The Scottish Brassmoulders Union (SBU), a small, conservative union whose motto was 'For Defence, Not Defiance,' would have been typical of many Scottish trade unions in their reaction to the intrusion of women into their workshops. In early 1916, the SBU threw up its hands in collective horror at the very thought of women sharing the same workplace and performing the same tasks as its members, noting with relief that, while many of the trades 'have been flooded with female labour,' they 'have not been encroached upon so far.'<sup>176</sup> A few months later, however, their worst fears were realized:

After being able to stave off "Dilution" for more than a year ... we were compelled to allow women to work in almost all the foundries of any note. Thus some of our members have had the undreamt-of experience of working alongside females.

Although they had no choice but to tolerate women during the war, the SBU vowed to 'take every precaution in the way of safeguarding our position, so that this form of labour will not be

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<sup>174</sup> Harry McShane and Joan Smith, *Harry McShane: No Mean Fighter* (London, 1978), 91. For more on McShane, see *Militant Workers: Labour and Class Conflict on the Clyde, 1900-1950: Essays in Honour of Harry McShane (1891-1988)*, ed. Robert Duncan and Arthur McIvor (Edinburgh, 1992).

<sup>175</sup> Braybon, 75.

<sup>176</sup> Glasgow Mitchell Library (GML), TU F 331.881733 SCO, Scottish Brassmoulders Union, *Financial Report for the First Quarter, 1916*, p. 4.



competing with us when trade returns to normal.<sup>177</sup> The union was as good as its word. On the cessation of hostilities, the SBU reminded Scottish firms of 'their moral obligation to remove the females.' When one firm, J. McPhail and Sons of Glasgow, persisted in employing women, the union took vigorous steps, engaging in a lengthy battle through a series of tribunals and appeal courts, and eventually winning their case in November 1920.<sup>178</sup> It is highly likely that the SBU attitude to women workers would have been common in many other Scottish trade unions.

But what was the attitude of the CWC to women workers? The shop stewards' movement was committed to the radical goal of worker control of production. They rejected the sectionalism and exclusiveness of the craft unions, which had fragmented organized labour, advocating instead the organisation of all grades of workers on a workshop basis. Their aim was to transform the industrial system by overthrowing capitalism and substituting some form of worker control of industry rooted in workshop organization. We have to consider, however, if the shop stewards' commitment to the idea of a united working class included equality for women. Did their re-ordering of organized labour include an end to the trade union movement's patriarchal resistance to women?

According to J.T. Murphy, the movement's most articulate advocate and leader of the Sheffield shop stewards, the exclusion of women from industry had seriously weakened the working class. 'The problem of the woman worker,' he wrote in 1917, was 'certainly the most stupendous we have to face. Thousands of them new to workshop life, without the traditions and experiences of wage-slavery behind them, are irresponsible and easy victims of the employers' wiles.'<sup>179</sup> The blame for this situation, he admitted, did not lie entirely with the women.

We men and women of today have now to pay the price of man's economic dominance over women which has existed for centuries. Content to treat women as subjects instead of equals, men are now faced with problems not to their liking.... The only way the mutual interests of the wage earners can be secured,

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<sup>177</sup> SBU, *Annual Report for 1916*, p. 1.

<sup>178</sup> SBU, *Annual Report for 1919*, p. 5; *Report of Conciliation and Arbitration, 1920*, PP 1921 (185), p. 244.

<sup>179</sup> *Solidarity*, Mar. 1917, p. 4.

therefore, is by united effort on the part of all interdependent workers, whether men or women.<sup>180</sup>

Murphy encouraged men to integrate the women workers into the movement by educating and organizing them: 'Agitate with literature and meetings whenever possible. Get [female] shop stewards where you can.... It may be a long road, but it seems to me to be the only road.'<sup>181</sup> It is unknown to what extent male workers heeded Murphy's exhortations. Kozak has noted that there were no women representatives at the shop steward conferences in either Sheffield or Manchester in March 1918.<sup>182</sup> It seems likely, therefore, that his stirring words failed to change the hidebound habits of the male workforce.

What was the situation on the Clyde, the birthplace of the shop stewards' movement? In its public pronouncements the CWC seemed determined to include women in its vision. Its manifesto stated that: 'Only by organizing as a class regardless of Craft, Creed, or Sex, can we as workers ever hope to successfully combat and overcome the Employing Class.' It urged workers:

[to] change the tactics we have clung to so closely in the past, and organize *now* at the point of production... on a class basis... and not as formerly... out to defend our craft against members of our own class, even though they were forced to encroach in order to make a living.<sup>183</sup>

The CWC's views on dilution were equally advanced and far removed from those of the 'old-fashioned and steady-going,' conservative trade unionists who rigidly opposed dilution, fearing the threat it posed to their status and job security.<sup>184</sup> By contrast, the CWC claimed to welcome dilution, seeing it as a progressive stage in the evolution of industry. On 23 December 1915, Kirkwood put forward the CWC view to Lloyd George during his ill-fated, three-day visit to Glasgow to persuade the area's workmen to accept dilution: 'As Socialists, they welcomed dilution of labour, which they regarded as the natural development in industrial conditions. They

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<sup>180</sup> J.T. Murphy, *The Workers' Committee: an Outline of its Principles and Structure*, (n.d.), 8 (GUABRC, UGD 102/3/7).

<sup>181</sup> *Solidarity*, Mar. 1917, p. 4.

<sup>182</sup> Kozak, 329. Braybon has also noted that few women penetrated the shop stewards' movement despite their claims to support the equality of men and women in industry (Braybon, 68).

<sup>183</sup> *Manifesto of the Clyde Workers' Committee* (1917?), app. XVIII, Scott and Cunnison, 214.

<sup>184</sup> Cole, *Workshop Organization*, 93-4.

were not like the Luddites of another generation, who smashed the new machinery.’<sup>185</sup> They feared, however, that dilution would become a tool that employers would use to further increase their power and profits.

The following day, 24 December, at a meeting which the CWC had finagled with Lloyd George, their spokesman, John Muir, further clarified the CWC position on dilution:

The employers have long wished for an opportunity to try just such an experiment on a large scale, and the war has given them that opportunity practically free of risk and on a scale far beyond their dreams. ... They stand to gain too much by it.

As the recommended rate of £1 per week for women fell considerably below the rates of skilled men, dilution would result in a ‘gain to the employers and a loss not only to the skilled man but to the entire working class. It means, in fact, a lowering of the whole working class standard.’ The CWC, Muir continued, would agree to dilution only under three conditions: ‘Its benefits should not accrue to one class in the community; it should not react detrimentally on any grade of labour; organised labour must have a share in controlling it.’<sup>186</sup> The CWC opposition to dilution, therefore, was based not on gender exclusion, but on deeply rooted class antagonism. Gallagher’s account of the meeting underlined the depth of CWC hostility:

If [Lloyd George] is so keen on winning the war, let him tackle the employers, stop their profits. They’re piling up profits at our expense. However, that’s *our* war, the war against the employers.... While there are employers reaping profits we’ll carry on the war against them.<sup>187</sup>

The CWC bitterly resented the powers, such as leaving certificates, which the Munitions Act had conferred upon employers, and were determined to oppose the use of dilution to further downgrade their position in industry.

Evidence suggests that the CWC leadership did attempt to make women an integral part of workshop organization. We have already examined in great detail Kirkwood’s interaction with

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<sup>185</sup> *OHMM*, 4, iv, 102; *Forward*, 5 Feb. 1916, p. 1. Kirkwood continued in a belligerent tone: ‘But this scheme of dilution must be carried out under the control of the workers otherwise cheap labour would be introduced. Unless their demand was granted, they would fight the scheme to the death.’

<sup>186</sup> Tuckwell Collection, 6651/35; *OHMM*, 4, iv, 103-4; *The Worker*, 8 Jan. 1916.

<sup>187</sup> Gallacher, 87.

the new women workers at East Hope Street in late 1915, when he anticipated Murphy's directives, helping the women organize and co-opting them into the organized labour movement. Unfortunately, there are very few surviving CWC records and further evidence of its interaction with women workers is sparse. We do know, however, that two women workers formed part of the CWC deputation to Lloyd George on 24 December, and addressed the Minister after the CWC men had had their say.<sup>188</sup> In addition, the audience at the tumultuous St Andrews Hall meeting with Lloyd George the following day included at least one woman delegate: Jane Rae, a leader of the Singer's strike of 1911.<sup>189</sup>

We have also seen that the CWC extended moral and financial support to the women strikers of East Hope Street during their prolonged period of industrial action between November 1917 and January 1918. Moreover, the CWC also encouraged the appointment of women shop stewards onto shop committees. Indeed, gender relations seemed particularly harmonious at Mile End NPF in Bridgeton, where Arthur MacManus, a leading member of the CWC and one of the Clyde deportees, was convenor of the shop stewards. On 10 January 1919, men and women shop stewards, NFWW organizers, and CWC leaders Gallacher and Kirkwood held a social gathering to mark the retirement of MacManus, which was probably due to ill health. Agnes Adam of the NFWW hoped that he would be 'long spared,' and Mrs Lauder gave a moving speech, telling the audience the 'best thanks' they could give to MacManus 'was to remain loyal to the Trade Union movement after the strenuous fight he had put up.'<sup>190</sup>

Women also performed various functions during the Forty Hour Strike movement on Clydeside in late January and early February 1919. As well as joining the men in strike action, the women held meetings, delivered speeches, formed noisy pickets, and sold copies of the daily *Strike Bulletin* on street corners. The Scottish section of the NFWW and Mary Macarthur pledged their full support, and area housewives, many of them strikers' wives, also conducted a vigorous

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<sup>188</sup> Gallacher, 90, 94.

<sup>189</sup> Clydebank Local History Library, A 2309, Rae's delegate's ticket to meeting, 25 Dec. 1915.

<sup>190</sup> *Woman Worker*, Feb. 1919, p. 13. MacManus, the proposer of the resolutions carried at the Auckland Geddes meeting on 28 January 1918, died in 1927 at the age of 38 (Gallacher, 26, 179-84).

campaign.<sup>191</sup> In its last issue, the *Strike Bulletin* paid tribute to the women's contribution:

The working class women have proved themselves heroines in the fight! Strikers never had better supporters than the women who have helped us in the struggle, and their making common cause with us marks a new era in the conflict for the industrial emancipation of the workers from wage-slavery! Whether as pickets, strikers, or counsellors, the women have given sterling service, and have shown a rebel spirit which has sustained all of us in the darkest hours of the struggle.<sup>192</sup>

The Forty Hour Strike movement ultimately failed, marking the end of the CWC, but women's support and participation in the industrial action does suggest that the war, rather than driving men and women into opposing camps, actually bound some sections of working class men and women more closely together. Although patriarchal resistance towards women in the workplace remained a prominent feature in west of Scotland industrial life, the heightened class antagonisms of the war strengthened working class bonds. Issues such as leaving certificates, food queues, and profiteering incensed many workmen to a greater degree than the presence of women in their workshops. Compared to the intensity of the class war raging on Clydeside, gender skirmishes were relatively minor confrontations.

As far as the Georgetown Covenant, the starting point for this inquiry into the nature of Clydeside's new women munitions workers, is concerned, it is highly likely that it was an orchestrated rather than an organic event. Hinton believes that the numerous expressions of patriotic affirmation carried in the shipyards and workshops of the district after the Auckland Geddes meeting in Glasgow were the result of the War Aims Committee's vigorous counter-offensive against dissent.<sup>193</sup> The National War Aims Committee's targets included women munitions workers. The Women's Party, composed of former members of the Women's Social and Political Union (WSPU) who became fervent supporters of the war at the outbreak of hostilities, was very active in Glasgow. Flora 'General' Drummond, the old WSPU warhorse,

<sup>191</sup> GUABRC, UGD 102/1/6-17, *Strike Bulletin*, passim.

<sup>192</sup> GUABRC, UGD 102/1/17, *Strike Bulletin*, No. 14, 12 Feb. 1919, p. 2.

<sup>193</sup> Hinton, 264. In November 1917, the War Cabinet had instructed the War Aims Committee to 'direct its attention to the Glasgow area, in which the counter-propaganda seems urgently necessary,' (CAB 24/33, GT 2716, Nov. 1917).

frequently visited the area's munitions factories to address the women workers, boosting their morale and urging them to keep up the output of munitions. Her visits often coincided with outbursts of industrial dispute, and she was particularly active during the dilution crisis in early 1916 and the extended East Hope Street dispute in late 1917.<sup>194</sup> Drummond also charged into action after the Geddes debacle in January 1918, visiting several munitions workshops in the area, inducing the women to pass resolutions of loyal support for the government.<sup>195</sup>

The national leaders of the Women's Party, Christabel Pankhurst and Annie Kenney, periodically arrived in Glasgow to add further weight to the campaign, conducting stirring 'War till Victory' meetings.<sup>196</sup> Uniformed munitions women, potent symbols of patriotism, would appear on the platform with the speakers, usually accompanied by the Cardonald choir performing a repertoire of patriotic songs.<sup>197</sup> On 14 February 1918, in the wake of the Geddes meeting and as a crowning touch to Drummond's two weeks of workplace rallies, Pankhurst and Drummond, accompanied by Provost Dunlop, held a 'No Compromise Peace' meeting at St. Andrews Halls to emphasise further the loyalty of the Clyde district. However, on this occasion, a socialist and pacifist contingent had infiltrated the meeting, causing a raucous disturbance as strains of 'Rule Britannia' competing with rousing renditions of the 'Red Flag' made it impossible for the platform speakers to be heard. Running out of patience, Dunlop threatened that if 'Miss Pankhurst did not get a hearing he would let loose upon the interrupters the women munitions workers.' In the resulting melee of fists and sticks, Helen Crawford, the leader of the WPC, strode down the centre of the hall, mounted a table in front of the platform and shouted: 'Shame on you Christabel Pankhurst, to make such use of these young women! Why don't you go

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<sup>194</sup> *The Bulletin*, 22 Feb. 1916; Tuckwell Collection, 665II/63; *Glasgow Herald*, 31 Oct. 1917, p. 4c; *The Bulletin*, 22 Feb. 1916. In a letter to the *Glasgow Herald*, Drummond wrote: 'It may not be generally known that the WSPU carried on a vigorous campaign among the workers which extended over three months during the critical time of the strikes on the Clyde (*Glasgow Herald*, 15 Nov. 1916, p. 5e).

<sup>195</sup> *Glasgow Herald*, 2 Feb. 1918, p. 5g; 12 Feb. 1918, p. 5c.

<sup>196</sup> There was a close association between the Women's Party and Glasgow employers, of whom Weir at least contributed to the Party's funds, sending a £10 cheque in July 1917 to Annie Kenney for her 'propaganda work on the Clyde' (GUABRC, DC 96/1/43, letter dated 7 July 1917).

<sup>197</sup> *The Bulletin*, 30 Nov. 1917, p. 9; *Beardmore News*, 6 Nov. 1917, p.1.

yourself and do your own dirty work?'<sup>198</sup> Years later, when Crawford remembered the incident in her autobiography, she noted the presence of 'rows of women in white overalls from the munition factories,' thereby inadvertently providing a clue to the background of these pugilistically patriotic munitions women.<sup>199</sup> At Georgetown, white overalls were the uniforms of the forewomen, who ranked highly on the Georgetown occupational hierarchy, falling just below assistant works managers, but above assistant forewomen, overlookers, and of course, workers.<sup>200</sup> It is highly likely that the core of support for the Georgetown Covenant lay with the largely middle class forewomen and supervisors. Although the official history claimed that the Covenant arose from the initiative of the workers themselves, it is almost certain that the managers and forewomen at the filling factory stage-managed the mass meeting of the 4,000 women workers and the passing of the patriotic resolution.

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<sup>198</sup> *Glasgow Herald*, 15 Feb. 1918, p. 7a. There is also evidence that women munitions workers were offered bribes to attend this meeting; according to *Forward*, 'Jessie Honeyman, 14 Robb St., Springburn says she was offered a bribe of £1 by a well known Junkeress to attend the St Andrews Hall Pankhurst-Dunlop exhibition. The girls at the Mons Shell Factory told the Junkeress they would stand alongside the engineers in their fight' (*Forward*, 2 Mar. 1918, p. 2).

<sup>199</sup> Autobiography of Helen Crawford, 157-8, (typescript, Marx Memorial Library, London; photocopy held in the William Gallacher Memorial Library, Caledonian University, Glasgow).

<sup>200</sup> IWM MUN 13/3.

## Chapter Four

### **The Mystery of the 'Disappearing Woman': The Health and Welfare of Women Munitions Workers**

In late June 1916, Ministry officials met at the Armaments Building in London with Sir William Beardmore to express their concern over the disappointing lack of productivity at Cardonald NPF. As one of the country's new National Projectile Factories, Cardonald was an essential part of the Ministry's drive to produce large quantities of heavy shell in as short a time as possible. In March 1916, construction of Cardonald, a massive building covering eight and a half acres of ground, had been completed, but by June its output was far below expectations. The officials attributed Cardonald's poor performance to the weak leadership of Mr. Smith, Beardmore's appointed manager, and they had called the meeting to persuade Beardmore to accept as a replacement, Cecil Walton, the Ministry's superintendent engineer in eastern Scotland. Although Beardmore believed that Cardonald's troubles were primarily due to a shortage of pig iron supplies, he nevertheless agreed to their suggestion and Walton was immediately dispatched to Cardonald to replace the incompetent Smith. Within days Walton had identified the main problems as poor management and a discontented workforce, and he resolved to bring Cardonald to a 'pitch of perfection in manufacturing large quantities of shell,' adding that 'nothing approaching efficiency can possibly be obtained...until at least we have a happy crowd of workpeople.'<sup>1</sup>

Cecil Walton was the very model of a modern factory manager. Familiar with the latest ideas on scientific management and the author of a treatise on welfare work, Walton assiduously applied their principles to Cardonald. He conducted time and motion studies, hired a large staff of

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<sup>1</sup> PRO MUN 5/278, 'Organization of Cardonald NPF,' letter from Walton to Weir, 23 June 1916; report by Walton, 8 July 1916. See also *OHMM*, 8, ii, 127.



welfare supervisors, re-organized the canteen system, fought tirelessly to establish a crèche for workers' children, organized factory sports days in aid of charities, encouraged the formation of a factory choir, instituted a factory newspaper which he himself edited, and rewarded exceptional employees with a specially-designed silver gilt brooch bearing the factory's name.<sup>2</sup> Under Walton's exemplary management, Cardonald thrived, its output surpassed all expectations, and it was often held up as a shining example of an efficiently run modern munitions factory. Shortly after the end of the war, Walton wrote a report of Cardonald's system of welfare provision including a chart of the length of service of the female workforce which noted proudly that 879 of the 2400 women employed at demobilization had been with the factory for over two years. On closer examination, however, the figures give little cause for satisfaction as they reveal that Cardonald experienced a very high turnover of its female labour force. The 879 who had remained for two years comprised only 13% of the 6121 women who had been hired during the factory's two and a half years existence. The largest proportion, over one-third of the women, had remained at Cardonald for a period ranging between two weeks and six months. In addition, the chart did not include 664 women, who had been hired but failed to show up for work.<sup>3</sup> This raises an intriguing question: what could possibly have induced so many women to give up well-paid jobs in a modern factory that utilized the latest and much-lauded welfare measures?

Cardonald was by no means the only factory in Britain to experience a high turnover rate of its female workforce. Indeed, the Chief Factory Inspector noted in 1917 that it was 'common knowledge that women are constantly leaving their work and changing their employment'

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<sup>2</sup> IWM MUN 12/6, 'Souvenir booklet of Cardonald,' passim; IWM MUN 12/2, letter from Walton to Lady Norman; *OHMM*, 5, v, 29.

<sup>3</sup> PRO MUN 5/92/346/26, p. 1. The official history of the Ministry contains a slightly altered report and chart (*OHMM*, 5, iii, 161-4).

although he admitted that it was ‘not easy to understand why.’<sup>4</sup> Recognizing that ‘a woman worker cannot obtain her maximum degree of efficiency until she has been engaged some weeks on her task,’ the Ministry was alarmed that the labour turnover prevented factories from attaining their desired level of output and they instigated a number of inquiries into its possible causes. Major Greenwood, a statistician in charge of the Ministry’s Medical Research Branch, headed an investigation of almost 40,000 women munitions workers that revealed some sobering facts. In calculating the length of service of women in any one factory at a given time, Greenwood’s study showed that large numbers of women gave up munitions work after a very short trial. The highest percentage, 13.33%, stayed for only one month, and a mere 10.81% remained for twelve months and over.<sup>5</sup> While the transient nature of women workers had been an ‘acknowledged difficulty’ before the war, the Ministry admitted that ‘the problem of the “disappearing woman” ... was a phenomenon among women munitions workers’ during the war.<sup>6</sup> Yet the problem received scant attention in the contemporary press which continually portrayed munitions manufacturing as an attractive form of war work, fired by patriotic impulse, and performed by fit, lively, and healthy young women.

It is the purpose of this chapter to probe the mystery of the “disappearing woman” in munitions factories by examining the circumstances that may have induced them to leave lucrative employment in large numbers. Following Greenwood, who noted, in the language of the industrial hygienist: ‘a high rate of leaving at any industrial concern suggests the existence of conditions ill-suited to the human machine,’ we will look at working conditions in Clydeside

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<sup>4</sup> *Annual Report of the Chief Inspector for Factories and Workshops for 1917*, Cd 9108 (1918), p. 7. Hereinafter referred to as *Factory Inspector’s Report*.

<sup>5</sup> Ministry of Munitions, Health of Munitions Workers Committee, *Industrial Health and Efficiency, Final Report*, Cd. 9065 (1918), p. 163. Hereinafter referred to as HMWC, *Final Report*.

<sup>6</sup> *OHMM*, 5, iii, 34, note 1.

factories paying particular attention to their impact on the health of the women workers.<sup>7</sup> In this manner we will question the conclusions of J.M. Winter who has famously expounded ‘the Paradox of the Great War’ in which he claims that, despite the rigours and deprivations of wartime, there was an improvement in the health and life expectancy of the civilian population.<sup>8</sup> Linda Bryder has challenged some of Winter’s arguments, in particular his ‘inadequate’ explanation for the rise in the death rate due to respiratory tuberculosis, claiming that he has underestimated the influence of malnutrition in the spread of the disease.<sup>9</sup> However, both Angela Woollacott and Marion Kozak, historians of women munitions workers, have concurred with Winter’s hypothesis that the health of working class women improved during the war. Although fully acknowledging the debilitating effect of long hours of hard work, Woollacott and Kozak both claim that, on balance, the women enjoyed better health than in pre-war days, as the ill-effects of industrial work were counterbalanced by the new welfare measures in the factories, the most important of which was the provision of nutritious food in the factory canteens.<sup>10</sup>

This thesis re-evaluates the validity of the ‘better health’ argument by using Clydeside as a regional case study. Part of Bryder’s criticism of Winter’s argument concerns his use of national statistics which ignores regional variations, for she believes that a study of local conditions will provide a more accurate picture of the true state of health of the working class during the war. This examination of health occupies two chapters and is structured under three broad sections. In this chapter, we will look at the hours, nature, and pace of the work in Clydeside munitions factories, as well as the incidence of industrial accidents and occupational diseases. In the following chapter, we will first examine the welfare measures instituted in Glasgow factories, and

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<sup>7</sup> E.L. Collis and Major Greenwood, *The Health of the Industrial Worker* (London, 1921), 360.

<sup>8</sup> J.M. Winter, *The Great War and the British People* (London, 1986), 103-245.

<sup>9</sup> Linda Bryder, ‘The First World War: Healthy or Hungry?’ *History Workshop Journal*, 24 (1987): 141-57.

<sup>10</sup> Woollacott, chapter 3; Kozak, chapter 6.

question the extent to which these measures counteracted the harmful effects of war work. How effective, or relevant even, to many of the women workers were the hostels, day nurseries, and the new sport and social clubs that sprang up during the war? Then, as it is impossible to examine the health of the women in the vacuum of factory conditions alone, we will extend our study beyond the walls of the workplace and look briefly at the influence of other factors such as housing conditions and food supply on the general health and well-being of working class families in Glasgow during the war. We will assess Winter's assertion that the war raised family incomes and thereby standards of nutrition, especially among the poorest sections of the community. While working class health is an extremely difficult subject to evaluate, and it is impossible to draw firm conclusions owing to the nature and scarcity of the evidence, it is nevertheless our aim to examine the validity of the 'better health' argument when applied to the vast number of women munitions workers in the west of Scotland

### **Hours of work**

One of the first consequences of the war on the Home Front was the introduction of a very long working week for many British men, women, boys and girls. Although the hours of employment of 'protected persons' (women and children between the ages of thirteen and eighteen) had long been restricted by law, the national emergency and the urgent need to equip the fighting forces led to an immediate relaxation of the conditions of the Factory Act of 1901. Under the terms of the Act, the Home Secretary had power 'in case of any public emergency' to exempt from hour restrictions any factory engaged on work 'on behalf of the Crown.'<sup>11</sup> Applications for exemption orders poured into the Home Office and the employment of workers

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<sup>11</sup> H.A. Mess, *Factory Legislation and its Administration, 1891-1924* (London, 1926), 126-7; *OHMM*, 5, iii, 87-92. In June 1915, the Secretary of State's powers of exemption were further strengthened under the Defence of the Realm Regulations.

on excessively long hours of work was evident in many industries, but was most marked in the munitions industry. Indeed, when engineering firms received contracts for munitions work, they applied 'almost automatically' for an exemption order, and overtime on munitions work became practically 'universal.'<sup>12</sup> While the factory inspectorate recognized that 'latitude on a very wide scale must be permitted' to munitions factories to extend their hours of work, there were also deep concerns over exemption orders that allowed the employment of women and children on night work, Sunday work and long hours of overtime. With complaints surfacing of workers doing sixty, eighty, and even one hundred hours a week, and with the realization that the war would not be a short one and that the munitions-producing capacity of the nation had to be preserved, the government was forced to take measures 'to balance the nation's need for munitions with the workers' need for rest.'<sup>13</sup>

In September 1915, Lloyd George appointed the Health of Munitions Workers Committee (HMWC) 'to consider and advise on questions of industrial fatigue, hours of labour, and other matters affecting the personal health and physical efficiency of workers in munitions factories and workshops.' The Committee sat for two and a half years, producing two reports and twenty-one memoranda, which contained, among other things, its recommendations for the most favourable conditions of work 'if the maximum output of which women are undoubtedly capable is to be secured and maintained for an extended period.'<sup>14</sup> The HMWC instigated a number of detailed scientific investigations into the incidence of industrial fatigue, sickness, and accidents,

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<sup>12</sup> *OHMM*, 5, iii, 92, 87.

<sup>13</sup> *OHMM*, 5, iii, 91-3; Mess, 127.

<sup>14</sup> HMWC, *Final Report*, 28. Two additional government bodies published reports on the health, working conditions and efficiency of munitions workers. The Industrial Fatigue Research Board (IFRB), constituted in July 1918, continued the research of the HMWC, investigating hours and other conditions of employment producing fatigue. The Medical Research Committee (MRC), which pioneered great advances during the war into the treatment of wounded and gassed soldiers, also investigated serious health issues affecting women munitions workers including tuberculosis and TNT poisoning. See Helen Jones, 'Industrial Health Research under the MRC,' in *Historical Perspectives on the Role of the MRC*, ed. Joan Austoker and Linda Bryder, (Oxford, 1989), 137-62; Linda Bryder, 'Tuberculosis and the MRC,' in *Historical Perspectives on the Role of the MRC*, ed. Austoker and Bryder (Oxford, 1989), 1-22.

and conducted medical inspections of workers including two inspections of women workers under the supervision of Dr. Janet Campbell, Senior Medical Officer at the Board of Education. The Committee's recommendations included the appointment of welfare supervisors, the conduct of medical examinations, and the provision of factory canteens. Throughout its entire existence, the most emphatic and persistent recommendations of the HMWC concerned hours of work. Fully aware of the detrimental effects of long hours on the health of the female workforce, and, by extension, on the productivity of munitions, the HMWC were unequivocal in recommending a reduction of hours and an increase of rest periods, both daily and weekly, for women workers. They conducted studies which revealed that a reduction in hours did not necessarily lead to a reduction in output, and in some cases a reduction in hours actually increased output. The HMWC concluded that munitions workers 'have been allowed to reach a stage of reduced efficiency and lowered health which might have been avoided without reduction of output by attention to the details of daily and weekly rests.'<sup>15</sup> They advocated a reduction in the length of shifts, restrictions on hours of overtime, and the abolition of Sunday labour. As we will see, however, a great gulf existed between the recommendations of the HMWC and the practices of Glasgow munitions factories.

One of the greatest causes of fatigue was the employment of women on punishingly long twelve-hour shifts. In order to meet the demands of the armed forces, most munitions factories operated twenty-four hours a day, usually on three eight-hour shifts or on two twelve-hour shifts. The HMWC strongly favoured the three-shift system, finding that 'less strain is put upon the worker, with a resulting reduction in the amount of ill health, disability and lost time.'<sup>16</sup> While the shortage of skilled male labour forced many factories in Britain to adopt the two-shift system,

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<sup>15</sup> Ethel E. Osborne, *The Output of Women Workers in Relation to Hours of Work in Shell-making* (IFRB Report no. 2, 1919). See also H.M. Vernon, *The Speed of Adaptation of Output to Altered Hours of Work* (IFRB Report no. 6, 1920).

<sup>16</sup> HMWC, *Final Report*, 26.

some nevertheless managed to synchronize an eight-hour shift for women with a twelve-hour shift for men.<sup>17</sup> In Glasgow, on the other hand, shell factories operated under the two-shift system, with women putting in the same hours as the men.<sup>18</sup> A confidential Ministry of Munitions report into ‘some of the more extreme cases of long hours at particular factories’ named two examples of long hours worked by women, both of which were in the Glasgow area: Beardmore’s and Babcock and Wilcox.<sup>19</sup> The only consideration granted to women workers in one Glasgow factory was to allow them ‘to knock off work five minutes before stopping times to remove their overalls and be clear of the gate before the men are released.’<sup>20</sup> According to Walton, during Cardonald’s two and a half years in operation, ‘our shifts were never reduced from the 11 ½ hours day and the 12 ½ hours night.’<sup>21</sup> Until May 1917, when the Ministry restricted the employment of women on Sundays, Cardonald’s hours included a Sunday day shift, which meant that women worked Sunday to Friday, 6:00 a.m. to 5:30 p.m., with two hours off for meals, and Saturday, 6:00 a.m. to midday, with ¾ hour off. On the night shift, the women worked Sunday to Friday, 5:30 p.m. to 6:00 a.m., with two hours off.<sup>22</sup> Although Walton calculated 62 ¼ hours on the day shift and 63 hours on the night shift, the women, unless in the unlikely event that they went home for lunch and dinner, were incarcerated within the factory walls for seventy-five hours per week. When we add on travelling time and the daily struggle to get a seat on overcrowded trams, it is hardly surprising that Cardonald experienced a very high turnover rate of its female workforce.

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<sup>17</sup> *OHMM*, 5, iii, 126. A study of Britain’s national projectile factories showed that 76% of the male employees and 25% of female employees worked on the two shift system; by comparison, no men and 59% of the women worked on the three shift system (IWM MUN V/26, Table XXVII, p. 19).

<sup>18</sup> Kirkaldy, *Industry and Finance* (1917), 34. At Armstrong-Whitworth’s plant in Alexandria, 96% of the women employees were on the two-shift system (IWM MUN V/28, p. 30).

<sup>19</sup> IWM MUN V/27, p. 22.

<sup>20</sup> Highton, in Drake, *Women in Engineering*, 119.

<sup>21</sup> IWM MUN 21/13, p.2.

<sup>22</sup> PRO MUN 5/278, letter from factory inspector concerning Sunday work, 26 Mar. 1917.

Walton was acutely aware of the drawbacks of working such long hours. In a post-war, confidential analysis of Cardonald's operations, he suggested to Miss Broughton, the Ministry's inspector of NPFs, measures that might have reduced the high wastage rate at Cardonald:

From personal observation, I have come to the conclusion that the pace set by women in war was too fast to be maintained; secondly, that *eight hours per day should be the maximum*; and thirdly that alternating day and night shifts are a mistake. You will notice that this is borne out by the figures on Page 1, giving the percentages of the total employees who stayed with us over varying periods, 35% of which only stood it for something like six months.<sup>23</sup>

Although aware of the correlation between long hours and high turnover, Walton was either unable or unwilling to reduce the length of the women's working day. Cardonald was renowned for its exemplary provision of welfare measures, which unfortunately did not extend to a reduction in the length of the working day, a measure which would have done much to improve the well-being of its women workers.

Cardonald was by no means the only Glasgow factory that subjected its women workers to unconscionably long hours. At Babcock and Wilcox's 'Aisne' factory in Renfrew, where the women were allowed only ninety-five minutes away from their machines during a twelve-hour shift, a post-war confidential report by the welfare supervisor revealed some of the shocking consequences of long hours of munitions work on women's health:

The hours on the Day Shift were from 5:45 a.m. to 5:45 p.m. with half an hour for breakfast, three quarters for dinner, and two intervals of ten minutes, one at 11 a.m. and the other at 4:15 p.m. when tea was provided by the Firm. The Night Shift hours were 6 p.m. to 6 a.m. with the same intervals for meals. *Very few women were able to stand the strain of the work for more than a year.* There were several cases of nervous prostration and anaemia caused by overwork. Also cases of internal derangements caused by strain. Among the married women the percentage of still-Births was high.<sup>24</sup>

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<sup>23</sup> IWM MUN 21/12 (italics added). By the 'figures on Page 1,' Walton is referring to the table already mentioned at the beginning of the chapter.

<sup>24</sup> IWM MUN 21/20 (italics added).



Apart from exposing the appalling medical conditions of some women workers, this report also points to the daily hardships they had to endure. To arrive at work at 5:45 a.m., women would have to rise from their beds at a very early hour, and, depending on the distance between their home and the factory, and the availability of public transport, many would face a long, dreary walk in darkness and often in cold, wet weather.<sup>25</sup> On arriving at the factory, the women had to work for two to three hours before stopping for breakfast, a common practice in west of Scotland factories.<sup>26</sup> The lack of nourishment would have made it difficult for women to perform relatively easy and sedentary jobs such as fuze assembling, but at Aisne, where women were employed in the heavy work of manufacturing 60 pdr. shrapnel shells, the effects must have been extremely debilitating. A combination, therefore, of insufficient sleep, early rising, two to three hours of work before eating breakfast, and a twelve-hour day undoubtedly contributed to the situation in Aisne where ‘very few women were able to stand the strain of the work for more than a year.’

To work twelve-hour shifts during the day had a debilitating effect on women’s health, but not as debilitating as working twelve-hour shifts at night. Night work for women was a wartime exigency. Since the Factory Act of 1844, the night employment of women in British factories had been banned, but the urgent need during the war to keep munitions-producing machines running at all hours of the day and night revived the practice. Expert opinion, from the HMWC to the British Association, agreed that night work for women was ‘among the chief factors of fatigue,’ and ‘too heavy a burden for the average married women.’ Night work reversed the body’s natural rhythms, severely disturbed sleep patterns, and was particularly injurious to married women with families and households to manage, who tried to perform their domestic

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<sup>25</sup> At a munitions tribunal, two young women complained of rising at 4 a.m. to walk five miles from their home in Cambuslang to their work in Glasgow (*Glasgow Herald*, 9 Feb. 1917, p. 8g).

<sup>26</sup> The practice of working before breakfast was widely condemned, and discontinued after the war. See Health of Muniton Workers Committee, *Industrial Efficiency and Fatigue, Interim Report*, Cd. 8511 (1917), p. 66. Hereinafter referred to as HMWC, *Interim Report*; *OHMM*, 5, iii, 155; Andrews, *Economic Effects of the War upon Women*, 145; *Glasgow Herald*, 24 May 1916, p.3h.

duties during the day instead of getting some sleep. One study of factory work showed that married women on night shift managed to get only four and a half hours sleep during the day.<sup>27</sup> Some women in Glasgow would have considered themselves lucky if they managed to get four hours of sleep, as it must have been almost impossible to sleep during the day in the city's noisy, overcrowded tenements. Highton noted in his report on the women workers on Clydeside:

Night-shift work accounts for more broken time than day-shift work, especially among married women.... Sleeping during the day is not, as a rule, restful, particularly where it has to be done in an unquiet and undarkened room, and these disadvantageous conditions certainly are found in the homes of many of the women workers.<sup>28</sup>

It was not uncommon for women to fall asleep on the job. For example, at Armstrong-Whitworth works at Alexandria, one woman observed her fellow employees:

I have watched her, hammer in hand and type in the other, fast asleep. Then all of a sudden she would realize herself and stamp a few more, than off again... Another time I was looking at an Operator threading safety caps, believe me, she was threading as fast as she could, and yet fast asleep, until she had the whole squad of girls in an uproar, whose noise awoke her.<sup>29</sup>

The light-hearted tone of the anecdote is in sharp contrast to the tone of angry indignation in a letter which arrived, typewritten and unsigned, in William Weir's office in September 1916:

Dear Sir,  
This letter is being written on behalf of the girls employed by you in your different factories, especially 'Flanders' and 'Albert.' It is a positive disgrace that girls should be asked to work for a month on a night shift of 12 ½ hours per night.... The girl's health in the majority of cases is being very much impaired by the long hours on the night shift, and unless there is a change made, an appeal on behalf of the girls is being made to the Board of Trade.... It is scandalous that girls should be asked to work for one month from 5:40 p.m. until 6:10 the next morning.... For the sake of the girls health the matter should be looked into at once.<sup>30</sup>

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<sup>27</sup> HMWC, *Final Report*, 25-6, 146; *Factory Inspector's Report for 1917*, Cd. 9108 (1918), 6; Andrews, *Economic Effects*, 196-7; H.M. Vernon, *The Health and Efficiency of Munition Workers* (London, 1940), 49-54.

<sup>28</sup> Highton, in Kirkaldy, *Labour, Finance and the War*, 113.

<sup>29</sup> IWM MUN 24/15, p. 90.

<sup>30</sup> GUABRC, DC 96/1/43.

It is uncertain what action the Board of Trade would have taken, as continuous night work was not illegal. Scientific expert opinion, from the HMWC to the British Association, unanimously agreed that night work was ‘too heavy a burden for the average married women.’<sup>31</sup> Yet, in its many memoranda, the HMWC never recommended its abolition, regarding it as ‘undesirable’ but ‘inevitable’ for the duration of the war.<sup>32</sup> As for the women on continuous night shift at Weir’s, it is likely that Scotland’s Director of Munitions ignored the demands of the anonymous letter writer as a few months later, while staying in London, he received another letter, this time from one of his managers, giving him a report on the progress of his Glasgow factories:

Flanders is marking time fairly well but no great progress, and to increase the output I think we will have to come to shorter shifts, as the number of absentees through illness and heavy work during the winter months has been considerable.<sup>33</sup>

Overworking women to the limit of their endurance was both harmful to the women and counterproductive to their employers.

While it may be argued that some industrialists were too busy producing munitions to read the many HMWC’s reports, this argument could not be applied to Weir. In his position as Director of Munitions for Scotland, he was fully aware of the Committee’s recommendations that warned against the employment of women on excessively long hours. Indeed, Weir was one of the few people to give evidence before the Committee when it visited Glasgow as part of its nationwide search for opinions on the subject.<sup>34</sup> Despite his close knowledge of the HMWC’s recommendations, Weir chose to ignore their advice in the daily operations of his own factory.

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<sup>31</sup> Andrews, *Economic Effects*, 196-7. Adelaide Anderson, the chief woman factory inspector, reported: ‘I constantly meet the girls coming off the night shift... and they look very done up, a very bad colour, and often rather dazed looking.’ (SRO, HH/31/27/2, part. 2, confidential report by Miss Anderson to Advisory Committee on Women’s Employment, 28 Nov. 1916).

<sup>32</sup> Andrews, *Economic Effects*, 137, 141.

<sup>33</sup> GUABRC, DC 96/17/17. Men also worked excessively long hours at Weir’s, some working 100 hours a week for a pay of up to £12 (GUABRC, DC 96/17/31, Statement as to Piecework Earnings).

<sup>34</sup> HMWC, *Final Report*, 130.

In contrast to its equivocation on the subject of night work, which it deemed undesirable but inevitable for the duration of the war, the HMWC emphatically condemned the employment of women on Sundays, referring to the practice as ‘a serious evil which should be steadily and systematically discouraged and restricted.’<sup>35</sup> Indeed, the HMWC felt so strongly about its ill-effects that Sunday labour formed the subject of the Committee’s first memorandum issued in November 1915. Convinced of the benefits of a weekly day of rest both to the health of workers and to the production of munitions, they recommended that Sunday work should be restricted to temporary emergencies and repair work. In December 1915, the Ministry issued a circular to that effect, and in April 1917, it tightened the restrictions, allowing the Sunday employment of women and young persons only under special exemption orders granted by the Home Office.<sup>36</sup>

Once more, however, we find a discrepancy between the carefully considered recommendations of the HMWC and the daily operations in Glasgow factories. At Cardonald, Cecil Walton himself, the renowned promoter of industrial welfare, persisted in the Sunday employment of women which prompted an official at the Ministry to write testily to Captain V.B. Stewart, Sir William Beardmore’s nephew and Walton’s immediate supervisor: ‘it seems that your Manager at Cardonald has been working under a misapprehension in thinking that it lay within his discretion to employ Sunday labour just as it suited him.’<sup>37</sup> While Stewart admitted ‘that the management have found it necessary to use discretion in administering to the varied instructions of the Ministry and the Home Office,’ he nevertheless claimed that Walton was not alone in favouring the continuation of Sunday labour at Cardonald as: ‘the stoppage of Sunday labour was ... strongly resented by the majority of the workers who... did not feel the strain

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<sup>35</sup> HMWC, *Sunday Labour*, Cd. 8132, (1916), 5.

<sup>36</sup> HMWC, *Final Report*, 44-6; Andrews, *Economic Effects*, 141-4, 133-6.

<sup>37</sup> PRO MUN 5/278, letter from Firth to Stewart, 11 May 1917.

affecting their health.’<sup>38</sup> The Ministry, however, refused to let the matter drop and sent Glasgow’s District Inspector of Factories to investigate. In his report, the Inspector recorded his impression of Walton: ‘He was very courteous, but seemed to think that the importance of the production of shells was being lost sight of in Government offices in London, and I rather gathered that whether sanctioned or not he intended to work a Sunday shift,’ adding that Walton ‘intended to adopt every means in his power to increase production – Sunday work included.’ By refusing to conform to guidelines, Walton had placed the Home Office in an awkward situation as the loosening of the Factory Acts had reduced its powers of enforcement. The Inspector concluded in his report: ‘the Ministry of Munitions should be asked to definitely instruct Mr. Walton to cease Sunday work,’ noting that, ‘the Factory Inspector has no means of forcing Mr. Walton to conform to the General Order – a prosecution being of course unthinkable.’<sup>39</sup>

Sunday work illustrates the large difference between the clean, clinical guidelines governing munitions workers and the actual operations in the factories. It also provides a good example of the latitude afforded to employers by the loosening of the Factory Acts, a subject we shall discuss in greater detail later in this chapter. In addition, it shows that even the greatest proponents of welfare work put the production of their factory far above the health of their workers. We should, however, be careful not to malign Walton as, in comparison to the vast majority of other factory managers and owners, he was indeed a shining example. The District Inspector included in his report: ‘Mr. Walton is the author of a... booklet on ‘Welfare’ and practices what he preaches, for I have not seen another Factory where the arrangements for the comfort of the workers are so complete as in the Factory at Cardonald.’<sup>40</sup> We can only imagine the excesses in contravention of the Factory Acts undertaken by less scrupulous managers and

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<sup>38</sup> PRO MUN 5/278, letter from Stewart to Lobnitz, May 1917.

<sup>39</sup> PRO MUN 5/278, letter from Glasgow office of Factory Inspector, 26 Mar. 1917.

<sup>40</sup> PRO MUN 5/278, letter from Glasgow office of Factory Inspector, 26 Mar. 1917.

factory owners. It is difficult to substantiate Walton's claim that the workers also resented the stoppage of Sunday labour. One HMWC report recorded a 'strong and wide-spread feeling against Sunday work' amongst workers, and some certainly objected on religious grounds.<sup>41</sup> Any objection on the part of the workers to the abolition of Sunday labour must have been fuelled by the need to earn extra money, as there could be no other possible explanation for women wishing to extend their time within the factory walls beyond seventy-five hours per week.

### **Heavy, Strenuous Work**

When examining the working conditions in west of Scotland munitions factories which contributed to the mass resignations of women, we must consider the nature of the work undertaken. A large number of women workers in west of Scotland munitions factories were employed on very heavy, strenuous labour, arguably to a greater extent than in other industrial centres in Britain. Women on Clydeside formed a high percentage of the workforce in the government's new National Projectile Factories (NPF's) which had been specially built in the winter of 1915 - 1916 to manufacture heavy shells for field guns and howitzers.<sup>42</sup> Efficiency experts and medical consultants all agreed that women engaged on heavy work were more likely to be sick, to lose time, to suffer injuries, or to leave their employment than women engaged on lighter work. For example, Vernon's study drew clear parallels between the heaviness of the work and the time lost from sickness; in fact, the study showed that lost time through sickness was three times greater in women engaged in 'heavy lathe work' than in women engaged in lighter

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<sup>41</sup> HMWC, *Interim Report*, 112; GUABRC, DC 96/17/9.

<sup>42</sup> For the special nature of NPF's which were government factories erected and managed by engineering firms, see Chapter 2. It is because they were government-owned that we know so much about the factories as the government required the managing companies to file reports on their operations, providing us with a good source to piece together information on the nature of women's work.

processes such as viewing, gauging, or assembling fuzes.<sup>43</sup> An examination of the women employed in Clydeside's NPF's provides us with a good example of the strenuous nature of their work and will contribute to our understanding of why so many women left lucrative employment in west of Scotland munitions factories.

There was a very high concentration of NPF's on Clydeside. Of the fifteen NPF's erected in Britain, six were in Clydeside, two were in Sheffield, and the rest distributed in various regions of England. Beardmore's managed three of Clydeside's NPF's: Mossend NPF in Coatbridge forged the raw steel billets which were dispatched either to Cardonald NPF in Govan where they were machined into 8-inch High Explosive (H.E.) shells and 6-inch chemical shells, or to Mile End NPF in Bridgeton which manufactured 6-inch H.E. shells and 60-pounder H.E. shells.

Babcock and Wilcox managed two NPF's in Renfrew: 'Aisne' which manufactured 60-pounder shrapnel, and 'Ypres' which made 9.2-inch H.E. shell. Finally, Weir's managed the Cathcart NPF which made 8-inch H.E. shell until it was converted to aircraft manufacture in May 1917.

Referring to shell size in inches, which denotes the diameter of the shell, disguises the weights of these massive projectiles. A 60-pounder is self explanatory, weighing 60 lbs. in its raw state and 50 lbs. after machining. A 6-inch shell weighed 130 lbs. in its rough state and 86 lbs. when completed; an 8-inch shell weighed 200 lbs. and a 9.2-inch shell weighed 440 lbs. in their rough states.<sup>44</sup> Anybody working in an NPF therefore was handling very heavy weights on a daily basis.

When the government conceived the idea of NPF's in the summer of 1915, it was anticipated that they would utilize male labour. However, by the spring of 1916, when the factories were ready to go into production, the government and employers realised that they

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<sup>43</sup> HMWC, *Interim Report*, 19; See also, Major Greenwood, 'Problems of Industrial Organisation,' *Journal of the Royal Statistical Society*, 82 (1919): 186-221; Vernon, *Industrial Fatigue*, 146-9.

<sup>44</sup> HMWC, *Final Report*, 133.

would have to make extensive use of female labour.<sup>45</sup> Just under half of the workforce in all British NPF's were women, but in the Clydeside NPF's, with one exception, the percentage of women was considerably higher. Taking June 1918 as a sample month, labour reports show that at Cardonald women formed 63% of the workforce; at Mile End 59%; at 'Ypres' 52%; and at 'Aisne' 80%.<sup>46</sup> The one exception was Mossend, which forged the steel billets, where women made up one-third of the workforce. However, even this number is high as many considered forge work entirely unsuitable for women, one NPF manager admitting: 'I do not think it was ever anticipated by the greatest believer in dilution, that it was work which women would ever tackle.'<sup>47</sup> In addition, women in the Scottish factories made up a quarter of the total female NPF workforce. In our sample month of June 1918, out of a total of 21,543 women employed in British NPF's, 5655, or 26 %, of them worked in the Clydeside factories.<sup>48</sup> Given that Scottish women formed only 10% of Britain's female population, we can see that a disproportionately large number of the female workforce of NPF's worked in the Clydeside factories. It may be suggested that the significance of these figures is that Scottish employers were more disposed to put women onto heavy work than employers in English factories.

Although a few women in Britain had been employed before the war in the manufacture of small 2-pounder naval shell, no women had worked on projectiles the size and weight of those produced by the new NPF's. Before the war, the manufacture of large projectiles had been the work of a skilled man operating a multi-task machine. In NPF's, designed for the rapid and mass production of large shells, the skilled man's work was subdivided into multiple tasks which were

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<sup>45</sup> IWM MUN 19/4, p. 2.

<sup>46</sup> IWM MUN V/48. Calculated from the government's confidential monthly *Report of Labour in Controlled Establishments*, June 1918, Table IV. Before Weir's converted to aircraft manufacture, it also employed a high percentage of women; for example, in March 1917, shortly before its conversion, 61% of its workforce were female (IWM MUN V/32, Table XIX). See also, *OHMM*, 8, ii, 130.

<sup>47</sup> IWM EMP 70/ D17, evidence of Mr. J. Bean, Managing Director of Dudley NPF, to War Cabinet Committee on Women in Industry, 28 Oct. 1918. Hereinafter referred to as WCCWI.

<sup>48</sup> IWM MUN V/48.



performed by women on new machines specially designed to perform one operation in shell production. The skilled men instructed the women in the use of the single-purpose machines, supervised their work, ground the tools and set up the machines. The work of the female machine operator, although frequently termed 'dull and repetitive', was also strenuous, physically difficult, and often dangerous. As well as running her machine, the operator also had to lift the shells in and out of the machine and tighten the clamp gripping the shell onto the machine which often required 'a series of violent jerks at the end of a long crow bar.'<sup>49</sup> Hoists and overhead cranes were provided to assist with the lifting, but there were numerous reports that the women found the lifting devices cumbersome and refused to use them. Women working on 6-inch shells, which weighed 86 lbs. when finished and were therefore just possible to lift without devices, often preferred to forgo the lifting devices and tackle the job themselves. As a result, Janet Campbell considered work on the 6-inch shell 'the most likely to cause overstrain and fatigue.'<sup>50</sup> Mr. Bean, the general manager of Dudley NPF in England, concurred in her opinion:

The 6-inch shell is in my opinion the worst possible shell for a woman to manufacture. It is far harder for her to manufacture them than it is a 9.2 or a 15-inch, for this reason, that it is just so light that she thinks she can lift it; it is just so heavy as to do her damage if she does.

Women on piece work were even more likely to do themselves damage as they found it was much quicker to lift the shells in and out of the machines themselves than to use the time-consuming lifting devices. As Mr. Bean explained:

The machines can only go at a certain speed. The [women] can only complete the operation in the machine in a certain time. Where they gain their time is in the handling, putting the shell in and taking it out. If they used the crane it meant craning up the shell and then lowering it down to the ground. It was too slow and they would far sooner take it into their arms and throw it on the floor.

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<sup>49</sup> IWM EMP 70/ D8-D12, D16, evidence of Mr. Good, Assistant Controller in the Ministry of Munitions, Gun Ammunitions Department, to WCCWI, 28 Oct. 1918. See also Highton in Kirkaldy, *Labour, Finance and the War*, 106.

<sup>50</sup> HMWC, *Final Report*, 145, 148.

'The consequence' to such impatience, noted Mr. Bean, 'was we had a very heavy amount of broken time.'<sup>51</sup> Considering that both Cardonald and Mile End manufactured large quantities of 6-inch shells, it is highly likely that their female employees were taking similar risks. In his report on women shell makers on Clydeside, Highton revealed another reason why women on 6-inch shell work were reluctant to use the lifting devices:

In one national factory 6-inch shells are lifted by a block and chain tackle with a broad hook into which the body of the shell is placed.... There have been a number of cases of crushed feet owing to carelessness in seeing that the weight was properly balanced in the hook before lifting clear of the floor or machine.<sup>52</sup>

Lifting tackle, therefore, could be dangerous as well as cumbersome. The prospect of having a 100 lb. weight thudding down on their feet would make the women very cautious about their use, and even more inclined to haul the heavy weights themselves.

Female labourers in NPF's also performed strenuous work which could lead to accident or injury. As well as helping the operators to move the shells in and out of the machines, the female labourers had to move the shells from one process to another by means of trolleys on to which the shells were loaded. In some factories the trolleys were the same height as the tables so that the shell could be rolled instead of lifted. But owing to a lack of table space, the women often had to stack the shells onto the floor and later lift them from the floor to the tables which were about three feet high. There were reports of women lifting exceptionally heavy weights in the course of the day. According to one observer, the weight of shells handled in a day of nine and three-quarter hours varied from one and three-quarter tons to nine tons.<sup>53</sup>

Although male labourers formed a small proportion of the workforces in NPF's, we should not imagine that the women were receiving help from strong, able-bodied men. With all physically fit men conscripted into the armed forces, the only ones available for labouring jobs

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<sup>51</sup> IWM EMP 70/ D45-D46, evidence of Bean to WCCWI, 28 Oct. 1918.

<sup>52</sup> Highton, in Drake, *Women in Engineering*, 126. The factory would most likely be Cardonald.

<sup>53</sup> A.W. Kirkaldy, *Industry and Finance*, (1920), 50.

had either been rejected as unfit for service, or had been discharged from the army because of injury or disability. Scott and Cunnison noted that in Glasgow, 'a large proportion of the scanty male population to be seen in the streets was obviously affected by some grave physical disability.'<sup>54</sup> According to Dr. Elizabeth Butler, the medical superintendent at Georgetown, all the men they had hired at the filling factory were either 'rejected' or 'discharged', adding that she 'could quote instances where they have very rapidly broken down, and been quite unfit for any work.'<sup>55</sup> One observer noted the presence in factories of 'physically inferior men' including former recipients of parish relief and workhouse inmates, and he concluded: 'Aged, decrepit men to whom charitable persons used to give occasional light jobs in a garden now form part of the regular body of employees in controlled establishments.'<sup>56</sup> The only male assistance available to the women, therefore, was from men disabled and broken by military service, or the old and infirm, leaving women in munitions factories to rely on their own strength and resources and the support of their female co-workers to help them cope with the daily strain of heavy manual labour.

The consequences of heavy work on women's health were very damaging, amounting to much more than strained backs and crushed feet, although these conditions were serious on their own. Apart from muscular strains and pains, women suffered from a number of gynaecological conditions and disorders of menstruation. Women suffering from dysmenorrhoea, which ranged from 'bearable pain' to 'total physical disablement,' reported 'increased pain since undertaking munitions work and this was most noticeable among women engaged in heavy work.'<sup>57</sup> For women who had borne children, the strain involved in heavy lifting could result in a prolapsed

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<sup>54</sup> Scott and Cunnison, 181.

<sup>55</sup> PRO MUN 5/87/342/17, J.35-J.36, evidence of Elizabeth Butler, Medical Officer of Georgetown, to WCCWI, Physiological Sub-Committee, 24 Oct. 1918.

<sup>56</sup> HMWC, *Interim Report*, 55.

<sup>57</sup> HMWC, *Final Report*, 150, 139.

uterus, a condition aggravated by the substandard obstetric care that many working class women had received during their pregnancies.<sup>58</sup>

Janet Campbell conducted a medical examination of a group of munitions women working twelve-hour shifts on the production of 6-inch shells, the same conditions as women in Cardonald and Mile End. Out of 146 women examined, only fifty-one, just over one-third, were physically fit and able 'to continue at the present pressure of work'; ninety-five of the women showed varying signs of fatigue from being 'moderately tired' to being 'completely exhausted'; and seven were 'entirely broken down in health.' The report continued:

The most notable point about these women was a general appearance of weariness and loss of tone. There seemed to be a general want of alertness as though it needed a definite effort of concentration before they could bring their minds to bear upon any given question.... They are not physically fit to continue indefinitely on these long hours. Some will voluntarily leave at an early date, and others from economic necessity will continue to work above their strength and will become permanently damaged members of society. The ones who will remain at work at all costs are those who have many dependents. These threaten to become prematurely old, losing all the joy of life and continually haunted by the fear of a breakdown in health.<sup>59</sup>

While many women 'disappeared' from their jobs in munitions factories because they could no longer stand the strain of the job, others, out of sheer financial necessity, clung onto their work.

### **Speed of work**

In addition to long hours and heavy labour, the speed at which the women worked also contributed towards the incidence of fatigue, accidents, and high turnover in munitions factories.

We have already noted Walton's confidential letter to Miss Broughton in which he included 'the

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<sup>58</sup> PRO MUN 5/87/342/17, J.22, evidence of Elizabeth Butler, Medical Officer of Georgetown, to WCCWI, Physiological Sub-Committee, 24 Oct. 1918. Butler reported that: 'married women who have had children and who come from the slummy districts of Glasgow are in a certain percentage injured. They have had bad attention at their confinements and they have got tears and perhaps infection and they are left in a permanently injured condition.'

<sup>59</sup> HMWC, *Final Report*, 139.

pace set by the women in the war was too fast to be maintained' as one of the reasons for the high wastage rate of women workers.<sup>60</sup> There are several reasons why women worked at such a fast and often frenzied pace. First, women were determined to do their utmost to aid the men at the Front by churning out incredibly high numbers of shells, especially in 1915 in the wake of the May Shell Scandal, when newspapers ran numerous reports of the patriotic, zealous manner with which the new women workers tackled their jobs. In addition, the majority of the women were new to factory work and therefore 'had no customary usages of sparing themselves' to conserve their energy so they would be able to finish the week's work, or even the day's work.<sup>61</sup> Others threw themselves into their work with great gusto because of the novelty of the job and the opportunity it gave them 'to prove their mettle.' For various reasons, many women drove themselves too hard and, according to the Fabian Socialist Barbara Drake, 'no small number' broke down and dropped out altogether.<sup>62</sup>

It was, of course, not just the women who were setting the pace, but also the employers who encouraged them to accelerate their work by instituting a piecework system of wage payment. Winter sees piecework as one of the factors that allowed the working class to earn more money so that they could enjoy a higher standard of living and an improved level of health.<sup>63</sup> However, piecework was also detrimental to the health of women workers as it caused them to overexert themselves, often to a dangerous level. Employers were fully aware that the women were 'so unused to the high wages they can make on piece-work, that they are apt to overwork themselves in order to secure them.'<sup>64</sup> Some employers prodded the women to speed up further by paying a bonus to the worker who turned out the highest number of shells per shift. Highton

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<sup>60</sup> IWM MUN 21/12.

<sup>61</sup> HMWC, *Interim Report*, 13.

<sup>62</sup> Drake, *Engineering*, 47-8.

<sup>63</sup> Winter, 214.

<sup>64</sup> Kirkaldy, *Industry and Finance*, (1920), 50.

noted that this was a common practice in one large factory in Glasgow, calling it 'an unqualified evil from the point of view of health,' as it offered a 'very strong temptation to injurious over-exertion.' He cited the example of one woman who had earned a five shillings bonus by producing 32% above the shop average but who was confined to bed the next day and was absent from work for a fortnight.<sup>65</sup> For some women, therefore, piecework payments did not increase their earning potential, and in many cases it was unlikely to lead to an improved standard of health, despite the extra earnings.

Georgetown adopted a system of payment by results that had a mixed effect on the women workers. In 1917, the management, in an effort to increase output, introduced a collective bonus system for all female productive workers, despite some reservations at the Ministry of the dangers of speeding up causing accidents in an explosives factory.<sup>66</sup> The workers at Georgetown were subdivided into small groups of twenty to thirty women and girls working in individual huts on the same process. Under the new system, the women continued to receive a time rate but could now earn a bonus each week based on the output of their room, which was divided equally among the workers. The management attached further conditions to the system to enforce punctuality and improve the quality of the product. For example, workers who lost time on any day did not receive the bonus for that day; and the bonus applied only to articles which had passed inspection, thereby ensuring more careful work as the operative had to rectify faults in her own time. According to the official history of the factory, the scheme was 'an unqualified success' that benefited both parties: the workers were rewarded with higher wages, and the management with

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<sup>65</sup> Highton, in Drake, *Engineering*, 126; and in Kirkaldy, *Labour, Finance and the War*, 116-7.

<sup>66</sup> PRO MUN 5/82/342/22, Second Report on the Question of Women's Wages in Filling Factories.

increased output and lower production costs.<sup>67</sup> Certainly, the management had good reason to be pleased, as revealed in Lobnitz's 1919 report on Scotland's war activities:

It is clearly shown that in every instance there was a drop in the cost of production, and an increase in the output per unit. On the Shell side of the Factory, 4.5" H.E. shell gave 42.65 shell per worker per week in April; and in September, after bonus had been running for three months, the output increased to 90.86 with a drop in the cost per unit from 8.25d. to 6.52d.<sup>68</sup>

But were the workers as delighted with the new system? How did they feel about the accelerated pace of work? What was the effect of such intensive speeding up on their health? Unfortunately, we have no evidence from the workers themselves, but we do have some comments from Dr. Elizabeth Butler, the factory's medical officer, about the women and girls traveling home in the train after their shift:

One finds that the girls are very sleepy by the time they go home. Travelling up in the train with the girls at night they are very noisy and always singing and very cheerful when they leave the station but I get out at a Suburban station just before the town. I get out before the girls do and I walk along the train and I find 99 per cent of the girls sound asleep with their heads on each others shoulders.... They really look as if they had taken everything out of themselves that they had. They look thoroughly tired.... They are working on bonus [and] the last hour gets a very great deal put into it. Because they are trying so hard to make a little extra money and the last hour they make an extra spurt.<sup>69</sup>

The Georgetown management claimed that the collective bonus system benefited the workers as well as themselves, but the little bit of extra money earned would have been awarded only to those with sufficient energy to return to work, on time, the following day.

Piecework payments were a mixed blessing for women munitions workers. On one hand, they allowed women to earn unprecedented amounts of money which permitted them to buy better quality food. On the other hand, they tempted women to overstrain themselves, causing fatigue and even injury, and contributing to the high turnover rate of munitions factories. An

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<sup>67</sup> *OHSFF*, 159-163.

<sup>68</sup> PRO MUN 5/364/11213/1, appendix 10, 'Scottish Filling Factory, Georgetown,' p. 4.

<sup>69</sup> PRO MUN 5/87/342/17, J.15-16, evidence of E. Butler to the WCCWI, Physiological Subcommittee, 24 Oct. 1918.

examination of the conditions of work in Glasgow munitions factories has presented other reasons that might have induced large numbers of women to leave munitions work. According to Janet Campbell, the two most prominent causes of fatigue in women workers were long hours and physically demanding work. We have seen that both of these conditions existed to a considerable degree in Glasgow area factories. We have also seen that the HMWC's recommendations made almost no impression on employers. Campbell wondered why employers persisted in subjecting women to such arduous conditions despite the many memoranda and studies which indicated that excessively long hours were good neither for the health of the women nor for the productive capacity of their factories. She wrote: 'to put the case at its lowest it is not economically sound to exhaust and cast aside women who have become experienced and capable workers.'<sup>70</sup> One explanation may be found in the evidence of a munitions factory manager to the War Cabinet Committee on Women in Industry, replying to a query on women workers' health:

The question that one has always got to consider in running a works is not how comfortable you can make [workers].... Generally from the manufacturer's point of view... all he troubles about is how much he can get out of that person: he does not trouble whether it is a man or a woman. The second consideration is the question of cost: how cheap can I get it done for? And probably the last thing is the question of either the male or the female operator's health.<sup>71</sup>

The psychology of businessmen industrialists, driven by the motivation of maximum economic gain, was antithetical to the views of those promoting a healthy environment for the new munitions labour force.

### **Carnage on the Factory Floor: Accidents, Explosions, and TNT Poisoning**

Excessively long hours of heavy manual labour often performed at a very fast pace contributed not only to widespread fatigue but also to a high incidence of industrial accidents

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<sup>70</sup> HMWC, *Final Report*, 139, 146.

<sup>71</sup> IWM EMP 70/ D41, evidence of Bean to WCCWI, 28 Oct. 1918.



among munitions women. Unfortunately, we do not know how many industrial accidents, whether fatal, serious, or minor, occurred during the war, as, unlike the pre-war reports, the wartime annual reports of the Chief Inspector of Factories contained no information on the subject. It was not until the 1918 report, issued in August 1919, that accident data reappeared, showing a 42% increase in fatal accidents over the pre-war figures.<sup>72</sup> But even this significant increase greatly underestimated the extent of industrial accidents. According to H.M. Vernon, the HMWC's leading authority on the subject, 'industrial accidents are much more numerous than is generally supposed':

These figures tell nothing as to the actual number of accidents occurring. In my own experience, which is limited to munition factories, minor and unreported accidents occur about thirty times more frequently than the notified and compensated accidents.<sup>73</sup>

Wartime factory inspector reports tended to be optimistic documents emphasizing improved conditions and avoiding the issue of accidents. In the 1917 annual report, Adelaide Anderson, the principal female factory inspector, noted briefly that accidents had resulted from the rapid substitution of women in industry, but sidestepped a discussion on the subject, stating: 'Analysis is not yet possible of the exact increase in injury to women due directly to accidents from machinery and other mechanical causes in the occupations newly opened to them.'<sup>74</sup> It was not until the 1919 report that the factory inspectorate acknowledged there had been 'laxity in reporting accidents throughout the country.'<sup>75</sup>

The paucity of information on industrial accidents caught the attention of certain M.P.'s who were concerned and often infuriated over the wartime administration of the Factory Acts.

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<sup>72</sup> Vernon, *Industrial Fatigue*, 179-80. Under the 1906 Notification of Accidents Act, it was compulsory to report all accidents that resulted in an absence from work of at least seven days to the Chief Inspector of Factories and Workshops.

<sup>73</sup> Vernon, *Industrial Fatigue*, 179-80.

<sup>74</sup> *Factory Inspector's Report for 1917*, Cd. 9108 (1918), 15.

<sup>75</sup> *Factory Inspector's Report for 1919*, Cmd. 941 (1920), 12.

The most outspoken amongst them, Colonel Lord Henry Cavendish-Bentinck,<sup>76</sup> a champion of exploited factory labour, protested strongly against ‘the cutting down of the factory report’:

One cannot expect any great striking improvement in our factory administration during a time of war, but one can protest against the tendency which I detect on the part of the Home Office to surrender its functions and minimize its activities during war time. I think good proof of that is furnished by the miserable proportions of the factory report itself.... It is most disrespectful to this House that we are not told, for instance, what is the number of accidents during last year – a year of great activity.<sup>77</sup>

Another wartime measure contributing to the underreporting of factory accidents was a recommendation by the Committee on Public Retrenchment, later implemented by the government, to save £12,500 per annum by eliminating the investigation and reporting of accidents in factories by certifying surgeons.<sup>78</sup> This again caused outrage amongst M.P.’s, one pointing out that: ‘The changed labour conditions due to the War make it not less but more important to preserve every safeguard against factory accidents, which generally arise from inexperience or fatigue.’<sup>79</sup> M.P.’s periodically asked in the House for statistics relating to factory accidents, but Herbert Samuel, the Home Secretary in the Asquith coalition, for one reason or another, was never able to provide any figures.<sup>80</sup> With the carnage taking place on the battlefield never far from the public mind, perhaps the Home Secretary considered it impolitic to make the public aware of the extent of the carnage taking place on the factory floor.

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<sup>76</sup> **Bentinck, Lord Henry** Conservative M.P. for South Nottinghamshire, 1910-1929, and elder brother of the pacifist Lady Ottoline Morrell.

<sup>77</sup> *Parliamentary Debates, House of Commons*, vol. XCV, c.1667, 9 July 1917. Hereinafter referred to as HC Deb.

<sup>78</sup> *Factory Inspector’s Report for 1916*, Cd. 8570 (1917), 3. Before the war, it had been a statutory requirement for the owner of a factory to report accidents to the certifying surgeon; during the war the surgeon was required to investigate only those cases referred to him by the District Inspector.

<sup>79</sup> HC Deb., vol. LXXXII, c. 2110-1, 24 May 1916. See also, vol. LXXXI, c. 2602-3, 2 May 1916; vol. LXXXII, c. 682-3, 10 May 1916; vol. LXXXII, c. 1642-3, 18 May 1916. M.P.’s expressing outrage included Sir William Byles (Liberal, N. Salford), Lewis Haslam (Liberal, Monmouth Boroughs), and MacCallum Scott (Liberal, Glasgow-Bridgeton).

<sup>80</sup> See HC Deb., vol. LXXXVII, c. 1238, 21 Nov. 1916.

It is impossible to know how many accidents occurred, but it is highly likely that there were very large numbers of them as the circumstances in munitions factories were highly conducive to accident causation. In the first place, a great many of the women and girls who streamed into munitions factories had no previous experience of factory work, far less of the metal trades which had one of the highest accident rates in industry. According to the HMWC's

*Final Report:*

The introduction of new labour and of employees unaccustomed to the processes concerned, particularly in conjunction with the need for speed and pressure, overtime and night work with the consequent fatigue, must inevitably lead to greater risk of accident.<sup>81</sup>

Women and girls took up munitions work under very unusual circumstances. Not only were they entering an alien factory environment but there was tremendous pressure on them to produce vast quantities of shell as quickly as possible. In addition, the skeleton staff of skilled men often resulted in a minimum of instruction on the intricacies of the machines as well as on the conditions and complexities of a large engineering workshop. The first post-war Factory Inspector's Report observed 'a marked fall in the number of cases, both fatal and non-fatal' in hoist accidents in 1919 compared to 1918, noting:

Reduction is confined to cases of children, young persons and women. This is due probably to recovery from War conditions when, owing to the absence of the regular attendant, the hoist was used indiscriminately by all classes of workers or was put in the charge of a young or incompetent person.<sup>82</sup>

As this report pointed out, not only were many of the workers inexperienced and unaccustomed to factory conditions, a large number of them were actually children.

During the war, firms could apply for a special emergency exemption order from the Home Office which allowed them to employ girls of sixteen and boys as young as fourteen. Factory inspector Hilda Martindale noted that the employment of young persons 'increased to a

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<sup>81</sup> HMWC, *Final Report*, 65.

<sup>82</sup> *Factory Inspector's Report for 1919*, Cmd. 941 (1920), 21

marked extent in many factories' during the war.<sup>83</sup> Young girls, less conscious of hazards and with smaller limbs and fingers liable to be caught in machinery, were more at risk of injury than adults. Martindale noted that 40% of the factory accidents she investigated before the war affected girls under sixteen, and 25% affected girls aged seventeen and eighteen. She advocated more rigorous instruction for girls on the use of machinery as 'they could not be expected to have this knowledge by light of nature.'<sup>84</sup> Bentinck railed against the employment of young people on war work, calling it a 'monstrous thing':

This is a War of grown-ups. It is not a question in which the children have had any voice at all, and it is a monstrous thing that they should be exploited in the name of patriotism by people who only want to get cheap labour and make money for themselves.<sup>85</sup>

M.P.'s periodically raised questions in the House on the night employment of children on war work, and in November 1917, Sir George Cave, the Home Secretary in Lloyd George's coalition government, eventually admitted that 'about 14,000' boys under sixteen, and 8,000 girls aged sixteen to eighteen were employed on night work in national and controlled factories.<sup>86</sup> However, it is important to note that Cave's figures referred to children who were *legally* employed; in other words, they worked for firms which had received from the Home Office exemption orders authorizing their employment. Cave's figures do not take into account the unknown number of children illegally employed which, according to Martindale, existed 'to an alarming extent.'<sup>87</sup>

Another factor making munitions factories dangerous places was the depletion in the ranks of factory inspectors during the war which reduced considerably the enforcement of safety

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<sup>83</sup> Hilda Martindale, *From One Generation to Another*, (London, 1944), 160.

<sup>84</sup> Martindale, 152-3. The Factory and Workshop Act, 1901, sections 12 and 13, recognized that young workers were more at risk of injury by imposing restrictions on the employment of children and young persons on certain types of machinery.

<sup>85</sup> HC Deb., vol. LXXXIII, c. 1137, 29 June 1916.

<sup>86</sup> HC Deb., vol. XCIX, c. 1017, 20 Nov. 1917. See also, vol. LXXXIII, c. 1522-6, 5 July 1916. M.P.'s questioning the night employment of children included Sir Philip Magnus (Unionist, London University), Henry Cowan (Liberal, East Aberdeenshire), Lewis Haslam (Liberal, Monmouth Boroughs), and John Whitehouse (Liberal, Mid-Lanark).

<sup>87</sup> Martindale, 160. See also, *Factory Inspector's Report for 1919*, Cmd. 941(1920), 94.

regulations protecting workers. In the first few months of the war, some members of the inspectorate joined the forces, while others transferred to war service in other government departments, and in July 1915, Sir John Simon, the Home Secretary in Asquith's coalition, admitted that there were only 157 inspectors compared to 219 the previous year. Moreover, the Home Office repeatedly refused to consider hiring replacements to the male staff as their training would 'throw a heavy additional burden on the experienced inspectors and seriously interfere with their own work.'<sup>88</sup> Once more, Bentinck, in his customary outspoken manner, brought the situation to the notice of the house:

I protest most strongly against this reduction in the factory inspector's staff... The duty of the... staff is to safeguard the workers against the risks of dangerous machinery. I cannot help thinking that the absence of factory inspectors has led to a very large increase in the number of accidents, and that the Home Office does not like to say so.<sup>89</sup>

By 1916, the inspectorate had lost nearly ninety of the male staff, and although the Home Office hired and trained additional women as temporary inspectors, there were only fifteen women appointed to the temporary positions, and the total number of female inspectors during the war never surpassed thirty, a number wholly insufficient to make up for the shortfall in the male inspectorate.<sup>90</sup>

To compound the problem further, the experienced inspectors who remained on the job found their time and energy increasingly diverted into wartime administrative tasks and away from shop floor inspection. As women factory inspectors were amongst the few people who had a good knowledge of the nature of pre-war women's work they became important advisors to

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<sup>88</sup> HC Deb., vol. LXXIII, c. 2151, 27 July 1915. The following year, although the number of inspectors authorized was 222, the number available was 147, including five temporary lady inspectors (HC Deb., vol. LXXXv, c. 307, 2 Aug. 1916).

<sup>89</sup> HC Deb., vol. XCV, c. 1667, 9 July 1917.

<sup>90</sup> Rose Squire, *Thirty Years in Public Service* (London, 1927), 172; Adelaide Anderson, *Women in the Factory: an Administrative Adventure* (London, 1922), 237; *Factory Inspector's Report for 1918*, Cmd. 340 (1919), vii.

government, employer and trade union bodies on the extent to which women might be substituted for men in industry. In addition, they were heavily involved in administering the numerous applications for exemption orders, and also in helping to develop the new welfare measures for women in factories.<sup>91</sup> Moreover, some became active in Outside Welfare committees which monitored the 'moral conduct' and drinking habits of munitions women outside of the factory, in an attempt to 'save' them from the evil effects of alcohol and male companionship. Martindale gave 'a considerable amount of time and thought' to her work on three Outside Welfare committees and the Birmingham Works Morality Committee which included visiting over 200 pubs to ascertain the extent of drinking among munitions women.<sup>92</sup> In addition, Rose Squires, Anderson's deputy in the women's inspectorate, at the insistence of Churchill and with the reluctance of her own department, was seconded to the Welfare Department at the Ministry of Munitions for two years, further depleting the Home Office of one of its most experienced female inspectors.<sup>93</sup>

Female factory inspectors had much less time to inspect factories, ensure compliance with regulations, and prosecute offending employers. The result was a decrease in actual factory inspection, and an increase in latitude given to employers. The socialist M.P. Sir Chiozza Money complained to the House: 'In many industrial establishments advantage is being taken in the grossest manner of the laxity of inspection.'<sup>94</sup> An example of this advantage may be found in a brief report of a fatal accident inquiry buried in the columns of the *Glasgow Herald*. On 25 November 1916, at Gartsherrie Iron Works in Coatbridge, a young, unnamed girl under eighteen years old 'lost her life having been crushed between two wagons while on her way to supper.'

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<sup>91</sup> *Factory Inspector's Report for 1916*, Cd. 8570 (1917), 5.

<sup>92</sup> Martindale, 166-8. See also Mary Drake McFeely, *Lady Inspectors: the Campaign for a Better Workplace, 1893-1921* (Oxford, 1988), 131.

<sup>93</sup> Squires, 178-9.

<sup>94</sup> HC Deb., vol. LXXXV, c. 307, 2 Aug. 1916.

Appearing before Airdrie Sheriff Court, the company's lawyer explained that 'the firm had applied for permission to employ girls under eighteen at night. Permission was refused, but notwithstanding the refusal the girl was employed on the night shift.' In passing judgment, the Sheriff, showing more sympathy for the offending firm than for the innocent victim, stated that 'a certain amount of regard must be had to the difficulties in securing labour,' and fined the firm thirty shillings.<sup>95</sup> Inadequate penalties and lack of official censure formed no deterrent to delinquent firms from committing further infringements of the law. Unscrupulous employers were allowed to contravene the Factory Acts, and all in the name of patriotic duty.

Several factors therefore increased the risk of accidents to munitions women during the war: the vastly increased female workforce; the inexperience and extreme youth of many of the workers; the reinstatement of night work and the twelve-hour shifts; the lucrative government contracts based on output; and the speed and intensity of the work. At this time, when women and girls in industry were most at risk and most in need of legislative protection, the government relaxed the Factory Acts, economized on the writing of accident reports, reduced the number of inspectors, and added considerably to the burden of work of those remaining. It is impossible for us to know the full effects of these changes as we have no national statistics of wartime factory accidents, and censorship prevented disclosure of issues likely to cause public disquiet.

### **Accident Studies**

While refusing to reveal the number of accidents in munitions factories, the government nevertheless commissioned a number of studies into their causation. In an Industrial Fatigue Research Board (IFRB) study on 'the incidence of industrial accidents upon individuals with

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<sup>95</sup> *Glasgow Herald*, 27 Jan. 1917, p. 8g. In addition to the pain of losing their daughter and the insult of the paltry fine imposed on the company, the dead girl's family would have received no compensation for her death as illegally employed children were not covered under the Workmen's Compensation Act (see HC Deb., 5 Feb. 1918).

special reference to multiple accidents,' Major Greenwood focused on the personality of the accident victim rather than the conditions of the factory. He compiled tables which showed that accidents were not distributed equally among workers; while the vast majority experienced few or no accidents at all, a small number experienced a large amount. Greenwood concluded that 'individual susceptibility to accidents' was an 'extremely important factor' in accident causation, and he offered a two-pronged solution to reducing the casualty rate in factories: a more rigorous initial selection of workers, and a 'rapid elimination of those sustaining multiple accidents.'<sup>96</sup>

Greenwood was a medical statistician and not a practising physician. While he identified some women as particularly 'susceptible' to accidents, he did not inquire into the conditions that may have caused their 'susceptibility.' For example, he might have discovered that 'accident prone' women were suffering from exhaustion as a result of too many hours of work, too few hours of sleep, and too much time traveling between home and factory; or perhaps they were preoccupied with feelings of anxiety or grief and were therefore unable to pay sufficient attention to their work. There is another flaw in Greenwood's 'susceptibility' solution: why would women who suffered multiple accidents continue returning to work? For example, his statistical tables showed that one woman, identified as 'check number 2413' working on a heavy lathe operation, suffered seven accidents in one three-month period and eleven accidents in the following three-month period.<sup>97</sup> For a woman to continue to return to work that was so obviously detrimental to her health must surely indicate a desperate need to earn money, and perhaps Greenwood should have considered the effects of the piece-work system of payment which drove women to speed up their work in order to earn a few extra shillings. Accident 'susceptibility', so neatly shown by

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<sup>96</sup> Major Greenwood and Hilda M. Woods, *Report on the Incidence of Industrial Accidents upon Individuals with special reference to Multiple Accidents* (IFRB Report no. 4, 1919), 5.

<sup>97</sup> Greenwood, *Industrial Accidents*, Table XIV, p. 17, Table XVI, p. 18.



Greenwood's statistical tables, is too narrow and meaningless an explanation for the large numbers of painful and often horrific accidents suffered by munitions women.

In another, more plausible, IFRB study, Ethel Osborne and H.M. Vernon found that the temperature of a factory had a 'very marked influence' on the frequency of accidents. By recording the temperature at three shell factories at various stages of the day and by noting the times at which cuts were treated in the ambulance room, the investigators found a high correlation between temperature and the incidence of cuts.<sup>98</sup> During cold weather fingers tend to become numbed thereby reducing manual dexterity and increasing the risk of accidents. In addition, the method of work at shell factories exacerbated the effects of cold weather, as 'the hands are constantly in contact with cold metal tools and other metal objects, and are frequently wetted the whole day through by the stream of soapy water in which many metal articles are turned'<sup>99</sup> The influence of temperature was so great that on the coldest days the women in one factory experienced nearly two and a half times more accidents than on the warmest days.<sup>100</sup> Given that Scotland has a colder climate than the rest of the United Kingdom, we may deduce that cold temperatures had a considerable effect on the incidence of accidents among the workers in Clydeside factories.

H.M. Vernon, who analyzed 50,000 accidents that occurred in four munitions factories over a period of nine to twenty-five months, undertook the most comprehensive investigation into accident causation in munitions factories on behalf of the HMWC. Vernon identified the most common types of injuries as burns to both hands and eyes caused by hot pieces of metal jumping out from turning lathes; wrist sprains suffered by women tightening shells into lathes by the use of clamps that had been designed for men; and cuts which occurred 'with extreme frequency'

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<sup>98</sup> Ethel E. Osborne and H.M. Vernon, *The Influence of Temperature and other conditions on the Frequency of Industrial Accidents*. (IFRB Report no. 19, 1922).

<sup>99</sup> Vernon, *Industrial Fatigue*, 207.

<sup>100</sup> Vernon, *Industrial Fatigue*, 208.

when workers came into contact with the sharp tools on the machinery, and which, if not cleaned and treated promptly, could become septic.<sup>101</sup> Although Vernon found that a number of inter-related factors caused accidents, the two principal causes were fatigue and speed of production. Discovering the ‘most striking evidence of the exhausting effect of the long hours of labour upon women,’ Vernon found that the influence of fatigue in accident causation was much greater among women than among men.<sup>102</sup> He established a correlation between longer shifts and a higher incidence of accidents. One factory experienced a significant reduction in the number of women’s accidents when it changed from a twelve-hour shift to a ten-hour shift, and Vernon concluded that ‘a twelve-hour day of work caused such tremendous fatigue in the women as to increase their accidents two and a half fold.’<sup>103</sup> There was moreover a rapid increase in the accident rate among women during the morning spell of work, reaching a maximum during the last hour of work when accidents were four to five times more numerous than in the first hour of work.<sup>104</sup> Vernon’s findings established conclusively a close relationship between long hours of work, the onset of fatigue, and the high incidence of accidents among women.

The speed of production also greatly increased the risk of accidents, especially on lathe work. By quickening the pace at which they clamped the shells in and out of the lathes, workers on piecework incurred a greater risk of knocking their hands against the sharp cutting tools. Vernon estimated that ‘a speeding up of 10 per cent. may well induce an increase of 50 or 100 per cent. in the number of accidents’<sup>105</sup> Piece-work could also have been a factor in the incidence of septic cuts as some women, in their eagerness to earn extra money, may have wrapped their cut in a dirty cloth instead of taking the time to attend the nurses’ station to have the wound properly

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<sup>101</sup> HMWC, *An Investigation of the Factors Concerned in the Causation of Industrial Accidents*, Cd. 9046 (1918), 4.

<sup>102</sup> HMWC, *Causation of Industrial Accidents*, Cd. 9046, (1918), 33, 23.

<sup>103</sup> HMWC, *Causation of Industrial Accidents*, Cd. 9046, (1918), 26.

<sup>104</sup> HMWC, *Causation of Industrial Accidents*, Cd. 9046, (1918), 23.

<sup>105</sup> HMWC, *Causation of Industrial Accidents*, Cd. 9046, (1918), 11.

cleaned and bandaged. Vernon also found that speeding up resulted in a significant increase in eye injuries as workers tended to bend more closely over their work when working quickly and therefore were more liable to get metal in their eyes.<sup>106</sup> Furthermore, Vernon's study verified the opinion that working on 6-inch shells was particularly arduous and hazardous to women's health as they tended to forgo the use of lifting tackle and attempted to lift the 80 lb. weights themselves. According to the data, women in 6-inch projectile factories 'experienced many more cuts,' and suffered three to five times more wrist sprains than women working with other sizes of shell.<sup>107</sup>

Vernon produced a valuable document that provided much useful information on accident causation in munitions factories; indeed, it was the first investigation into industrial accidents conducted in Britain.<sup>108</sup> Nevertheless, his study left many unanswered questions. As Vernon neglected to state the total number of employees in the four munitions factories in which the 50,000 injuries occurred, we have no way of calculating the accident or mortality rates of each factory. We do know, however, that the ambulance rooms at Cardonald treated 'about 100' and 'sometimes exceeding 100' cases per day.<sup>109</sup> As the labour force at Cardonald ranged between 3,800 and 4,200 workers, a conservative estimate might be that 36,000 accidents happened at Cardonald per year, which would roughly work out at nine accidents per worker per year. This may seem a high number, but when we consider that a large number of accident causation factors were present at the factory: twelve hour shifts, the manufacture of 6-inch shells; piece work system of payments, and freezing cold temperatures in the winter, it is not an unreasonable figure. Despite being a paragon of welfare provision, the workers at Cardonald had a high risk of suffering an occupational injury.

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<sup>106</sup> HMWC, *Causation of Industrial Accidents*, Cd. 9046, (1918), 11, 20.

<sup>107</sup> HMWC, *Causation of Industrial Accidents*, Cd. 9046, (1918), 44, 41.

<sup>108</sup> HMWC, *Causation of Industrial Accidents*, Cd. 9046, (1918), 3.

<sup>109</sup> IWM MUN 12/6, 'Cardonald Souvenir Booklet'; *OHMM*, 5, iii, 162.

In Paisley, munitions employment in the town had a considerable effect on the accident rate of one local hospital. The 1916 annual report of the city's Royal Victoria Eye Infirmary revealed that of the 5,196 patients presenting at the Infirmary for treatment during the year, 2135, or 41 %, of them were munitions workers. According to the report:

A noteworthy feature has been the number of cases of burns of the face and eyes sustained by men and women employed in the manufacturing of shells. If the use of protective spectacles were enforced during the industrial operations in connection with which most of these injuries are caused, the number of cases would be largely diminished. Some eyes which are totally lost would be saved.<sup>110</sup>

In 1916, the first full year of munitions employment for women, almost one half of eye injury patients in one town in the west of Scotland were munitions workers, indicating the hazards associated with the new form of war work.

It is highly likely that accidents, of varying degrees of severity, were daily occurrences in munitions factories. In one of the handful of surviving letters that Jeanie Riley wrote to her husband, she tells him of an accident to a colleague who 'lost her finger in the work tonight at five o'clock and was taken to the Western Infirmary. She saw it lying on the machine and they tried to tell her it was not off.' Jeanie's concluding remark, 'if I am offered a machine I will refuse it for I see enough,' implied that this particular accident was by no means an isolated incident.

Another weakness in Vernon's study is that it failed to indicate the severity of some of the injuries. Vernon concentrated on sprains, cuts, burns and eye accidents, and although he made passing reference to other types of injuries such as bruises, abrasions, torn nails, and metal splinters in fingers,<sup>111</sup> he neglected to mention the severed limbs and the scalplings which were common injuries among women munitions workers. Take the case of Mrs. Kennedy, a thirty-four

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<sup>110</sup> *Paisley and Renfrewshire Gazette*, 'Protective Spectacles,' 17 Feb. 1917.

<sup>111</sup> HMWC, *Causation of Industrial Accidents*, Cd. 9046, (1918), 44.

year old munitions worker from Bridgeton, who was admitted to the Royal Infirmary in Glasgow on 15 October 1917, as the result of a serious accident at work. According to the ward journal:

Early this morning Mrs. Kennedy machine operator was recovering the pan from the gauge of a machine at which she was working at a local factory, her hair becoming entangled in the machinery tearing off the scalp. The scalp was torn completely off the head from the level of the superciliary wedge in front, the zygomatic ones at the side, and the back of the head and neck. The bone was exposed.

Mrs. Kennedy remained a patient in the Infirmary for twenty-five weeks, and was discharged in March 1918, only to return a few months later for further treatment.<sup>112</sup> Thereafter we have no further details of her long and painful convalescence.

Accounts of debilitating and life-threatening accidents such as Mrs. Kennedy's were rarely found either in official publications or in the public press. On the few occasions when the press did mention accidents they attributed them to the carelessness of the women and trivialized their effects. According to one writer:

Accidents in engineering shops, it is said, are usually the fault of the workers. They drop shells on their feet, they put their fingers in machinery which they have no business to touch and lose a finger-tip in doing so, they go too near it and injure an arm, they neglect to wear their caps—or wear them so that most of their hair is visible—and get partially scalped in consequence. And partial scalping, the writer was informed by a welfare supervisor in one of the factories she visited, is less dreaded among the girls than one might suppose, because they have discovered that it ultimately improves the growth of the hair.<sup>113</sup>

The concluding remark is an example of the way in which the press trivialized and downplayed the injuries sustained by munitions women. H.E.R. Highton, who conducted a thorough study of women munitions workers on Clydeside for the British Association, had no inkling of the nature and the extent of the injuries suffered by the women, stating: 'apparently any accidents... have been slight in character and relatively few in number.... Such accidents as have occurred were put

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<sup>112</sup> Greater Glasgow Health Board Archives [GGHBA], HH67/36/8, case number 5916.

<sup>113</sup> *The New Statesman*, 3 Feb. 1917, p. 415.

down to carelessness and undue eagerness rather than to the nature of the work.’<sup>114</sup> In addition, newspapers carrying reports of accidents to munitions workers invariably emphasized the women’s bravery and their patriotic determination to carry on with their work, neglecting to dwell on the severity of the injury. Royalty and other important dignitaries conferring medals on maimed munitions workers became stock newspaper stories during the war, transforming gut-wrenching accidents into uplifting examples of patriotic pride.

During the war itself, of course, a strict policy of censorship was in place which suppressed information likely to cause disquiet or lower public morale. Just as the military authorities suppressed the full extent of the slaughter in the wake of the Battle of the Somme, so the authorities at home were selective about the reports of industrial accidents that they allowed to filter through to the public consciousness. Lizzie Robinson, a young woman injured at work at Cardonald, made the headlines when she became one of the first female recipients of the OBE and was presented with the honour by the King himself at a large public gathering at Ibrox Park in August 1917.<sup>115</sup> By contrast, however, there were no stories in any newspapers about another young woman munitions worker from Port Glasgow, who died as a result of injuries at work. The only record of her death is a letter from her grief-stricken mother buried in the archives of the Imperial War Museum:

Dear Sir or Madam this is the Photo of my Dear Daughter this is the only sort of Photo that I have to send the loss of her has been very great to us and for ever will I never will get over her Death she was so Good and never was abstant [sic] from her work and was at her work when she was killed my Dear Girl it is with Deep regret I write this

Yours with kind regards

Isabella Crouthers Sen.

Mother of the girl<sup>116</sup>

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<sup>114</sup> Highton in Kirkaldy, *Labour, Finance, and the War*, 128.

<sup>115</sup> *Bearmore News*, 6 Nov. 1917, p. 3; 17 Jan. 1918; *The Bulletin*, 28 Aug. 1917, p. 6.

<sup>116</sup> IWM MUN 34.2/8. Mrs. Crouthers wrote this letter in response to an inquiry from Lady Norman of the Imperial War Museum who was compiling a munitions women’s ‘Roll of Honour.’

Unlike the number of men killed in battle, we will never know how many women died as a result of their work in munitions factories.

### Explosions

As well as suffering horrendous accidents, women munitions workers were also under constant threat of incurring serious injury or death as the result of an explosion. This risk was, of course, accentuated in filling factories and in chemical factories where women's daily work consisted of handling highly explosive materials. To minimize the risk of explosions, strict enforcement of precautions were in place at all chemical and filling factories where safety patrol women or matrons conducted rigorous searches of the women workers, confiscating matches or any small metal objects such as hairpins which might spark a fire. Numerous prosecutions of match-smuggling munitions workers took place at sheriff courts throughout the district; indeed, the sheriff in Kilmarnock became so exasperated by the frequency of the offence that he imposed a fine of £3 and threatened to send future offenders to prison 'for at least thirty days.'<sup>117</sup> Despite all the precautions, explosions did happen, although we do not know to what extent as the government exerted a strict degree of censorship over their occurrence. Before the war, the office of the Chief Inspector of Explosives had conducted an official inquiry and published a report on each explosion, but during the war, no printed reports appeared.<sup>118</sup> According to Woollacott, explosions in munitions factories 'occurred far more often and with worse consequences than the British public ever imagined.'<sup>119</sup> Some explosions, of course, were too enormous to conceal from public view such as the massive conflagration at the Brunner Mond chemical factory at Silvertown in London on 19 January 1917, which killed sixty-nine people and injured 400 others,

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<sup>117</sup> *The Ardrossan and Saltcoats Herald*, 'Nobel's Workers Fined,' 23 Feb. 1917; 'Explosives Workers Finally Warned,' 2 Mar. 1917.

<sup>118</sup> *General Index to Parliamentary Papers, 1900-1949* (London, 1960), 256-8.

<sup>119</sup> Woollacott, 84.

and the one at the Chilwell Filling Factory near Nottingham on 1 July 1918, which killed 134 people.<sup>120</sup>

Although there were no explosions of a similar magnitude in Scotland, there were nevertheless a number of explosions of a less serious nature, principally at Georgetown and at Nobel's Explosives Works at Ardeer on the Ayrshire coast.<sup>121</sup> It is hardly surprising that explosions happened at Ardeer, as, according to two contemporary reports, it was the largest explosives factory in the world before the war, producing large quantities of dynamite, gelignite, lyddite, cordite, ballistite, guncotton and other explosives.<sup>122</sup> With the vastly increased demand for explosives Nobel's underwent tremendous expansion during the war, including the construction of a new TNT house in early 1915. Unfortunately, on the evening of Friday 30 July, a few months after its opening, the TNT house was destroyed as the result of an explosion in which, according to official reports, three people died. The comparatively small number of fatalities at the Ardeer explosion should not lead us to believe that it was an affair of little consequence. Fortunately, we are able to gauge the extent and the impact of the explosion as some keen correspondents from *The Glasgow Herald* arrived quickly on the scene and managed to file some vivid descriptions of the disaster which appeared in the Saturday edition of the paper before the Press Bureau moved in to suppress further information.<sup>123</sup>

At a quarter before midnight on Friday 30 July 1915, 'a terrific explosion, or rather a series of explosions' described as 'the worst on record' created a panic over the surrounding district. Falling debris from the first explosion ignited other sections of the 1,000 acres site,

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<sup>120</sup> Woollacott, 84-5; *OHMM*, 8, ii, 153.

<sup>121</sup> According to the official history, five workers died at Georgetown as the result of explosions and forty-one accidents occurred which caused 'serious personal injuries' (*OHMM*, 8, ii, 165). See also *OHSFF*, 196; *Glasgow Herald*, 28 Apr. 1917, p. 4e; 5 Apr. 1915, p. 9a; 29 May 1915, p. 10g.

<sup>122</sup> GUABRC, UGD 89/4/2, T. Taylor, *Ardeer Factory*, typescript, p. 27; GUABRC, UGD 98/4/3, Nobel's Explosives Co., *The Book of High Explosives*, (Tillotson Press, n.d.), 116.

<sup>123</sup> The following account is taken from *The Glasgow Herald*, 31 July 1915, p. 7b. For the Press Bureau statement, see *The Ardrossan and Saltcoats Herald*, 6 Aug. 1915, p. 1.



causing subsequent explosions that occurred 'at intervals of a few minutes' and considerably 'heightened the panic.' According to a passing motorist, 'the flashes lit up the whole countryside as if it were bright sunshine.' The explosions shook the foundations of houses in the surrounding district, sending inhabitants scurrying onto the street, many 'scantly attired' in their night clothes. The effects were felt as far field as Kilmarnock, situated approximately seven miles to the east of Ardeer, and before long the roads between Ardeer and Kilmarnock were 'black with thousands of people making their way to the scene of the disaster.' A huge crowd gathered on Irvine moor to watch the conflagration which looked as if 'the whole centre of the works [was] in a blaze.' At 1:45 a.m., two hours after the initial explosion, one reporter noted that 'the conflagration is still as fierce as ever and at Irvine Harbour, which is over a mile away from the scene, a roar is heard as if from a huge benzine (sic) lamp. The glare cast over Irvine is so bright that it is possible to read the newspapers.' Another correspondent interviewed Agnes Cunningham, a woman who had been working in the 'teasing room' with 'about 100 other girls' when the blast occurred:

She was knocked over by the force of the explosion. The whole lot made a rush for the door.... On the way out there were hundreds streaming out of the works towards Stevenson. After the first explosion there was a great flash and subsequent explosions. The girls made a bolt for cover, and lay down until they thought the danger had passed.

All the girls escaped unharmed but 'were evidently suffering from shock.' Not all were so fortunate, and there were a large number of casualties, although, as the reporter noted, 'being under government control... it is impossible to glean the slightest authentic particulars.' While some of the injured were taken by ambulance to Kilmarnock Infirmary and others were ferried by boat to Irvine, the most seriously injured were transported by train for treatment in Glasgow where they arrived 'swathed in bandages' and 'suffering evidently from injuries to the body.'

Woollacott believes that more workers died in Britain as a result of explosions than the official reports have led us to believe, estimating that the number of women who died 'was well

into the hundreds and perhaps over one thousand.<sup>124</sup> It is highly possible that the mortality and casualty rate at Ardeer was higher than the reported figures of three deaths and thirty-nine injuries, especially given the enormity of the conflagration. Although there was a terse official announcement in *The Times*, and the local weekly newspaper contained a very brief encapsulated notice, there were no further reports of the explosion in *The Glasgow Herald* as on the Saturday evening the Press Bureau issued a statement demanding that ‘nothing further should be published about the Ardeer disaster.’<sup>125</sup> The Ardeer explosion must have had a tremendous impact on the labour turnover of the factory. Women who experienced the force of the blast, even if physically unscathed, would have been emotionally traumatized, and they must have been either very brave or else desperately in need of money to return to work.

Ardeer is unique amongst the munitions factories in our survey as it is the only one in which women were employed before the war on the same type of work. Indeed, since Alfred Nobel founded Ardeer in 1873, women had performed various tasks in the manufacturing of explosives. According to the factory’s history, the rate of absenteeism for female workers almost tripled during the war, rising from the pre-war rate of 1.7 % to the wartime rate of 5 %.<sup>126</sup> Why, given that the women were performing work that they had done before the war, did almost three times as many women leave their work at Ardeer during the war than before the war? The July 1915 explosion was not the root cause of the wartime labour turnover. Although the July blast was described as ‘the worst on record,’ Ardeer had a long history of fatal explosions, the most serious occurring in 1884 when ten girls working in a dynamite cartridge hut had been killed.<sup>127</sup> Nor can we attribute the turnover to a surfeit of munitions jobs in the neighbourhood. Although there was some munitions work for women in Kilmarnock, women in the district who wanted to

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<sup>124</sup> Woollacott, 9, n. 21.

<sup>125</sup> *The Times*, 2 Aug. 1915, 4 Aug. 1915; *Ardrossan and Saltcoats Herald*, 6 Aug. 1915, p. 1.

<sup>126</sup> Taylor, *Ardeer Factory*, 47. Absenteeism among male workers doubled from 1.6 % to 3.3 %.

<sup>127</sup> *Glasgow Herald*, 31 July 1915, p. 7c.

earn high munitions wages had little alternative but to work at Ardeer. The threefold increase of absenteeism suggests that wartime factory conditions were more dangerous and more stressful than pre-war conditions. When we consider the pace and intensity of the work, the reduction in safety standards, the haphazard hiring of new staff, the relentless pushing to produce more and more munitions, it is hardly surprising that many women simply could not handle it. The extraordinary circumstances of war made the work at Ardeer more difficult and more dangerous, impelling women to leave their employment in greater numbers than before the war.

### **TNT Poisoning**

Throughout this chapter we have seen a pattern showing that the urgency of the work coupled with the newness of the job greatly increased the risk of injury to women workers. Nowhere is this pattern more marked than in the incidence of poisoning among workers exposed to trinitrotoluene (TNT) which included the tens of thousands of women who were employed in the Ministry's new shell filling factories. TNT poisoning has been well covered in the historical literature. Woollacott has given a general overview; Culleton has personalized the account through an extensive use of the oral history transcripts at the IWM; and Ineson and Thom have argued convincingly that the overriding concern of factory physicians was maintaining the supply of shells rather than ministering to the health of women workers.<sup>128</sup> In this section we will review the main elements of TNT poisoning in munitions factories before examining its incidence at the Scottish Filling Factory in Georgetown.

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<sup>128</sup> Woollacott, 80-4; Claire Culleton, *Working Class Culture, Women, and Britain, 1914-1921* (New York, 2000), 88-91; Antonia Ineson and Deborah Thom, 'TNT Poisoning and the Employment of Women Workers in the First World War,' in *The Social History of Occupational Health*, ed. Paul Weindling (London, 1985), 89-107.

Before the war, TNT was a little-used chemical and scientists had no understanding of the extent of its toxicity; indeed, in 1901, one scientist had declared it ‘perfectly innocuous.’<sup>129</sup> In 1915, therefore, when TNT replaced lyddite as the most commonly-used explosive in British armament manufacturing, it was handled in a very hasty, slipshod manner partly due to the extreme urgency of the work and partly because the authorities believed it was harmless. There were two principal methods of filling shells both of which brought the worker into close contact with the chemical. In the ‘presshouse,’ workers filled shells by ‘hand stemming’ which involved using a wooden rod and mallet to hammer TNT powder through a funnel in the shell opening. As a result, ‘a thick layer of dust tended to accumulate on the ground, on the trucks on which the shells stood, and on the persons of the workers, whose exposed hair and skin became a tawny orange, while the air was filled with the same fine dust.’ In the ‘melthouse,’ TNT, or amatol,<sup>130</sup> was melted in kettles and poured into the shells with equally messy results as the shells, trucks and floors were splashed with the molten explosive and it took ‘scores of workers’ to remove the caked chemical. Another area of TNT work was the filling of small ‘exploder’ or ‘trotyl’ bags which the women did by hand, weighing precise amounts (19 drs.) of the powder and pouring it into the bags which they tied with thread.<sup>131</sup> It was therefore not just the women filling the shells but also the cleaners, truck and trolley pushers, and the trotyl bag fillers who came into close daily contact with TNT. Indeed, given the methods used and the haste with which the work was performed, it was difficult for workers in filling factories to escape exposure to TNT.<sup>132</sup>

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<sup>129</sup> Benjamin Moore, *The Causation and Prevention of Tri-Nitro-Toluene (T.N.T.) Poisoning*, (MRC SRS no. 11, 1921), 11.

<sup>130</sup> Amatol, a mixture of ammonium nitrate and TNT, was more economical than pure TNT. Georgetown was central to the experimental development of 80/20 amatol (known as the ‘Georgetown Hot Mix’) in which the proportion of TNT was reduced to 20% (*OHMM*, 8, ii, 164; 10, v, 3. *OHSFF*, 30).

<sup>131</sup> *OHMM*, 5, iii, 70; W.J. O’Donovan, *TNT Sickness and Toxic Jaundice*, (MRC SRS no. , 1921, 10-11. See also *OHMM* 5, iii, 77-8; IWM Photograph Collection, VIII, 70662-3, 70669-70.

<sup>132</sup> One welfare supervisor’s account demonstrates the haphazard handling: ‘when the tea was made the workers would wipe their hands on their skirts... bring out their food from inside the TNT boxes, which served as stools [and] the work-bench became the meal table’ (*OHMM*, 5, iii, 76).

In 1915, the Home Office and the Ministry started to receive reports of TNT workers falling ill with a wide range of irritative and toxic conditions including dermatitis, gastritis, anaemia and jaundice. The first published description of TNT poisoning appeared in the *Lancet* in August 1916 in an article by two Scottish women doctors employed in a filling factory in which they described the condition of the women under their care. Among the many side-effects of exposure to TNT was severe abdominal pain:

The pain is spasmodic and griping in nature, and is accompanied by nausea and often by vomiting. The vomit is described as intensely bitter, often yellow, and sometimes green. Acid eructations are frequent. Constipation is the rule at first, but later diarrhoea, with motions 'as green as grass,' and with pain and tenesmus, is more common. Griping intestinal pains are also met with.<sup>133</sup>

In her study of oral history transcripts, Culleton found that 'a number of women recall crouching under the work-bench in agony or lying down in the ladies' room until the shift was over, incapacitated by crippling abdominal pains.'<sup>134</sup> Other symptoms included a swollen and burning throat, coughing, a thick yellow phlegm with a bitter taste, rashes and eruptions on the skin, swelling of the hands and feet, hot and cold flushes, loss of memory, drowsiness, depression, delirium, coma and convulsions.

As it was imperative to find a quick solution to a problem that had the potential to curtail the output of munitions, the government appointed a committee to investigate the causes of the poisoning and to devise effective methods of prevention. The committee enlisted the services of a number of Medical Research Council (MRC) scientists who began a frantic search to discover the poison's route of absorption into the body. They conducted numerous experiments on animals, carried out control trials on workers to determine the efficacy of protective clothing and

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<sup>133</sup> Agnes Livingstone-Learmonth and Barbara Martin Cunningham, 'The Effects of Tri-Nitro-Toluene on Women Workers,' *The Lancet*, 12 Aug. 1916, 261-4.

<sup>134</sup> Culleton, 88.

respirators, and some brave souls even ingested the poison themselves.<sup>135</sup> As a result of the scientific investigations, the committee drew up a list of regulations to protect workers which included personal and workshop cleanliness, frequent washing of uniforms, the provision of respirators and other protective clothing, exhaust ventilation in factories, the alternation of employment on TNT work and on 'clean' work, and the appointment of full-time factory doctors to conduct regular medical examinations on TNT workers. In addition, the introduction during the war of mechanical methods of shell filling contributed significantly to reducing the level of contact between workers and the toxic chemical. As a result of these measures, in the last year of the war, the incidence of poisoning was contained and the government was able to report a decrease in the number of reported cases, but not before countless women had suffered and many had died.

In recounting the circumstances of TNT poisoning, the official history of the Ministry focused on improvements, emphasizing the success of the preventive measures and the resulting decrease in the number of deaths which fell from 52 in 1916, to 44 in 1917, and down to 10 in 1918, a number that the authorities believed was remarkably small considering the massive size of Britain's filling factory labour force. But how accurate were these figures? It is important to note that the figures cited in the Ministry's history were the 'officially recorded' statistics.<sup>136</sup> In other words, they were the cases of TNT poisoning that factory doctors had officially certified and reported to the Home Office. It is certain that a great many more women were affected than those included in the official statistics, although it is impossible to know the number, especially

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<sup>135</sup> For accounts of the numerous experiments, see O'Donovan, *passim*; Moore, *passim*. The studies were issued during the war for official use only, and were not published until 1920-21 (*Sixth Annual Report of the MRC, 1919-1920*, Cmd. 1088 [1921], 78). For scientists as self-appointed human guinea pigs, see 'Effect on authors of swallowing known amounts of pure TNT,' in Moore, 33-4. Opinion remained divided between those who believed that the poison was absorbed through the skin, and those who claimed that it was through the inhalation of fumes and dust.

<sup>136</sup> *OHMM*, 5, iii, 74. The number of recorded cases of sickness was: 181 in 1916, 189 in 1917, and 34 in 1918.

given the government's strict censorship on the subject. Ineson and Thom have pointed out that, from 1916, in order to ensure a steady supply of labour recruits, the Press Bureau strove 'to maintain the state of ignorance' of TNT toxicity by censoring information in newspapers and in medical journals on the effects of working with the deadly chemical.<sup>137</sup> Ineson and Thom have further pointed out that TNT deaths, unlike accidents which were sudden and public, tended to be slow and private, therefore making it less likely that news of their occurrence would seep into the realm of public consciousness.<sup>138</sup> The Ministry was particularly anxious to suppress news of the dangers associated with TNT as the dirty and 'extremely distasteful' nature of the work had already led to 'considerable difficulty' in retaining the workforce.<sup>139</sup> Several factors therefore were at work concealing the extent of the harmful effects of TNT and the actual number of women affected.

In an approach similar to that of the Ministry's official history, Georgetown's official account concentrated on its 'remarkable health record,' and the success of its 'preventive work in connection with TNT poisoning.' In 1916, during the early days of the factory, when 'the pressure for output was very great,' and 'TNT powder was abundantly present – in the air, on floors, benches, and on the hands of the workers,' the management had been 'much exercised' about TNT poisoning.<sup>140</sup> However, by instituting a strict regimen of cleanliness, education and supervision, they had surmounted the problem, and congratulated themselves that the number of casualties was remarkably low considering the fact that 'over 35,000 individual workers' had been employed during the factory's thirty-two months in operation. According to Georgetown's

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<sup>137</sup> Ineson and Thom, 91-2. See also Woollacott, 82.

<sup>138</sup> Ineson and Thom, 101. Rumours nevertheless abounded amongst the women causing a good deal of apprehension and reluctance to work in filling factories. A report in the Fabian Socialist weekly, *The New Statesman* described the fear of some workers: 'a little group of new workers—young, fresh-skinned, healthy-looking girls—in tears because, although they had undertaken to work in the danger houses, they were scared when the moment came to go there.' (*New Statesman*, 3 Feb. 1917, p. 416).

<sup>139</sup> *OHMM*, 10, v, 33.

<sup>140</sup> *OHSFF*, 177-8; PRO MUN 5/87/342/17, J 34, evidence of E. Butler to the WCCWI, Physiological Sub-Committee, 24 Oct. 1918.

official history, as a result of TNT poisoning, there had been four deaths, eighteen ‘serious’ cases, and seventy-four ‘slight’ cases.<sup>141</sup>

In January 1922, well beyond the wartime vigilance of the Press Bureau, two physicians, John and Ellen Anderson, described results of a study they had conducted during the war at Glasgow’s Victoria Infirmary into cases of TNT poisoning among women workers. The article specifically named Georgetown as the factory employing the women, information that the censors would not have allowed printed during the war.<sup>142</sup> The Andersons’ article allows us to note a number of errors and inaccuracies in Georgetown’s official history. First, there is the question of numbers. According to the article:

The cases examined were as follows:--18 suffered from toxic jaundice, 63 gastro-intestinal disturbance, 24 anaemia, 17 debility, 4 unclassified.... There were 7 deaths known to us—3 cases of toxic jaundice, 3 cases of severe anaemia, and 1 of heart failure.<sup>143</sup>

The number of deaths from TNT poisoning at one, comparatively small, hospital alone was greater than Georgetown’s official figures. Georgetown drew its workforce from a wide geographic area, including Glasgow, Paisley and Greenock, and we do not know how many more women, suffering and dying from TNT poisoning, were treated in the many other hospitals in the area.

The Anderson article revealed additional inconsistencies. According to the official history, no woman had died as a result of filling exploder bags.<sup>144</sup> The Andersons, however, noted that three of the women admitted to the Victoria suffering from toxic jaundice had worked in the

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<sup>141</sup> *OHSFF*, 184. While following most of the Ministry’s guidelines to contain the poisoning, Georgetown management quickly abandoned the policy of alternation, finding it ‘oppressively expensive and antagonistic to efficient work and good output’ (*OHSFF*, 178).

<sup>142</sup> John Anderson and Ellen Davidson Anderson, ‘On the Health of Mmunition Workers in a Shell-Filling Factory,’ *The Glasgow Medical Journal*, 97 (1922): 1-15; 98-109.

<sup>143</sup> Anderson, ‘Health of Mmunition Workers,’ 3.

<sup>144</sup> *OHSFF*, 177.



exploder bag department, one of whom had died a painful and horrific death. Marion Russell, a twenty-two year old woman, had spent ‘three and a half months at filling of T.N.T. bags’:

Her illness began five weeks before admission with vomiting and headache.... Ten days later diarrhoea set in, and pains in the abdomen were complained of. About the same time she became jaundiced, and this condition became gradually worse. The vomited material was occasionally streaked with blood. Sleeplessness developed, and this was followed by a hysterical attack with screaming for a period of two or three days before admission.

Marion Russell died two days after she was admitted to the Victoria Infirmary during which time she ‘showed no inclination to speak, but understood what was said to her.’ A post-mortem revealed that, before taking up work at Georgetown, she had been a healthy young woman with a ‘well developed and well nourished’ body.<sup>145</sup>

The Anderson article also pointed out that all deaths from TNT poisoning were not as a result of toxic jaundice, and that an equivalent number died of ‘severe anaemia.’ The focus of research into TNT poisoning has been almost exclusively on toxic jaundice, a condition easily identified by the yellow skin of the patients, and has distracted researchers from other, equally fatal conditions as a result of exposure to the toxic chemical. There is also the question of the age of the Georgetown workforce. The government had prohibited filling factories from employing young women under eighteen years old after MRC researchers had found that ‘young adults’ were more at risk for morbidity and mortality of TNT poisoning.<sup>146</sup> Georgetown’s official history claimed, and its medical superintendent verified, that ‘all the workers’ in the factory were over

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<sup>145</sup> Anderson, ‘Health of Munition Workers,’ 15, 11. Matching the initials of the patients in the Anderson article with the names of the Scottish women in the Women’s ‘Roll of Honour,’ compiled by the IWM, has allowed identification of the fatal cases in the Victoria Infirmary. See IWM MUN 36.2/17.

<sup>146</sup> O’Donovan, 16.

eighteen years old.<sup>147</sup> However, the case summaries of the eighteen toxic jaundice patients revealed that two were seventeen years old, and one was a young girl of sixteen:

M.B., aet. 16. Three months in 'melt.' Illness of two weeks' duration. Jaundice became worse after admission. Admitted on 26<sup>th</sup> February, 1917; discharged on 22<sup>nd</sup> March, 1917; slow convalescence, and amenorrhoea.<sup>148</sup>

If this small sample, that three out of eighteen workers were under the legal age of employment, is representative of the Georgetown workforce as a whole, it suggests that Georgetown was subjecting a very large number of young girls to highly dangerous work. Moreover, the prognosis for girls like 'M.B.' was not good as there was little chance of a full recovery, given the extent of liver damage.<sup>149</sup>

The Andersons' article has indicated that TNT poisoning was more widespread and complicated than the official histories of both Georgetown and the Ministry have allowed. By using the ploy of 'officially recorded' statistics, and throwing a blanket of censorship over all reports, the government adopted a policy of official deception, concealing from the public, and the workers, the extent and severity of TNT's toxic effects. It is almost certain that the official figures represented no more than a small proportion of the number of cases of TNT poisoning. In October 1916, one of the MRC researchers wrote of munitions workers: 'Men and women come to us ignorant of danger, the latter in the healthiest period of their lives; we must spare no pains and no professional skill in preventing their leaving us, injured perhaps even for life.'<sup>150</sup> But as Ineson and Thom have pointed out, despite the frantic efforts at research and containment, the

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<sup>147</sup> *OHSFF*, 151; PRO MUN 5/87/342/17, J.32, evidence of E. Butler to the WCCWI, Physiological Sub-Committee, 24 Oct. 1918. It is, of course, possible that girls would lie about their age to secure a job at Georgetown.

<sup>148</sup> Anderson, 'Health of Munition Workers,' 14.

<sup>149</sup> Ineson and Thom believe that the women's health was likely to be permanently damaged (Ineson and Thom, 94, n. 20); and Culleton cites a source in the Department of Photographs of the IWM who claims that 50% of the women who contracted toxic jaundice died within ten years (Culleton, 86).

<sup>150</sup> O'Donovan, 31.

‘overriding aim’ of the Ministry of Munitions was ‘efficient shell production.’<sup>151</sup> The mad rush to produce munitions, as usual, took precedence over the safety of the workers.

During the war, newspapers were continually portraying women munitions workers as fit, lively and healthy young women, showing them exercising in gyms, participating in sports days, and even competing on five-a-side football teams. The evidence in this section, however, has presented a very different image, and we have unearthed many reasons to explain the mystery of the disappearing women. The long hours, heavy labour, and relentless pace of munitions work as well as the high risks of accidents, explosions and industrial poisoning had a damaging, and sometimes deadly, effect on women’s health. On Clydeside, countless women left their jobs in munitions factories because they could no longer stand the strain of labouring under intolerable working conditions. Many aspects of munitions work were not conducive to good health, leading to a high degree of fatigue, a colossal number of casualties, and great hardship for hundreds, if not thousands, of women. In her memoir, factory inspector Hilda Martindale summed up her wartime work:

And indeed they needed our care, for women in industry during those war years were exposed to greater risks to health and limb than ever before. Instances came to my knowledge of women and girls meeting with serious accidents, due to the fact that they had taken the places of men on machines with very little instruction. In labouring work, they lifted and carried weights far too heavy for them. In danger areas of filling factories they were also exposed to the risks of explosions.... Material used in the manufacture of high explosives, and the dope with which the wings of aeroplanes were varnished, brought their toll of industrial poisoning. It was distressing visiting some of these cases in hospital, and seeing the suffering to which the women and girls were subjected.... Between 1914 and 1918 women were called on to take their share of death and suffering to an extent which the public in no way realized.<sup>152</sup>

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<sup>151</sup> Ineson and Thom, 89-90.

<sup>152</sup> Martindale, 164.

## Chapter Five

### Welfare Measures in Munitions Factories and Winter's 'Paradox of the Great War'

In January 1916, the Ministry of Munitions instituted a Welfare and Health Section to regulate working conditions in all national and government-controlled factories. The formation of the section was closely related to the Ministry's decision in 1915 to extend the dilution campaign and the subsequent realisation that good conditions of employment were necessary to maintain the health and productivity of the new army of workers. In August 1915, Dr. Christopher Addison, the under-secretary at the Ministry, met a small group of medical advisors to formulate the scheme. According to Addison: 'in our endeavour to increase the output of munitions [we met] to see whether something could not be done to sustain and improve the physical efficiency of the workers, to examine the supply of food, facilities for meals, hours, fatigue, ventilation and kindred matters.'<sup>1</sup> Such small beginnings spawned a vast, tangled network of welfare measures, which stretched the length and breadth of Britain.

The greatest promoter of factory welfare in the west of Scotland was Cecil Walton. As we saw in the previous chapter, Walton instituted the full range of welfare measures at Cardonald, far surpassing the usual canteens and nurses' rooms found in most munitions factories with innovations such as a factory newspaper, a choir, and an entertainment troupe, known as 'the Merry Magnets.' He wrote a monograph, *Welfare Study: What It Is*, and published lengthy articles in the *Glasgow Herald* under the heading 'The Human Touch.'<sup>2</sup> He ascribed Cardonald's impressively high production figures to his widespread adoption of welfare measures, writing to

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<sup>1</sup> *OHMM*, 5,iii,35. C. Addison, *Politics from Within, 1911-1918*, quoted in Helen Jones, 'Industrial Health Research under the MRC,' in *Historical Perspectives on the Role of the MRC*, 140-1.

<sup>2</sup> *Glasgow Herald*, 12 Sept. 1917, p. 6f.

the Ministry: 'under welfare conditions the output of my shop has increased and is increasing in what is generally considered a phenomenal way.'<sup>3</sup> In his monograph, Walton wrote that welfare work was 'not sentimental luxury,' but good business sense that had: 'come to stay. Why? Because, apart from all question of general or individual comfort, *it pays*.... It is the surest way to speed up output.' In addition, Walton noted, welfare costs were 'infinitesimal' when compared to the massive increase in production.<sup>4</sup> While some reports portrayed welfare work as altruistic measures designed for the betterment of working women, Walton's treatise made it perfectly clear that the root motive was to get the most out of the human machine and increase output.

Although the canteens, crèches, and factory choirs were generally hailed as radical, wartime innovations, many welfare measures retained vestiges of nineteenth-century philanthropic practices with their tradition of 'improving' working class women's lives. As they had done for decades, well meaning, middle-class women, spurred by thoughts of 'doing good,' formed committees and raised funds in support of a project for the benefit of working class women. Reports and photographs in newspapers frequently showed civic dignitaries, titled ladies, and Church of Scotland ministers opening hostels, clubs, and canteens for munitions women, conveying the impression that 'much was being done for the comfort and convenience of the women workers.'<sup>5</sup>

In this chapter, we will look at the new welfare measures instituted in the west of Scotland during the war to examine their effectiveness in counteracting the debilitating effects of munitions work described in the previous chapter. Woollacott believes that welfare measures in

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<sup>3</sup> PRO MUN 2/28, 20 Jan. 1917, p. 12. At a post-war victory celebration, Walton described the 'phenomenal' output of Beardmore's three NPF's: 'Supposing they took all the shells they had made at Mile-End and Cardonald, supported by Mossend as a forge, and they put them end on they would stretch for 1300 miles,' (*Beardmore News*, 25 Dec. 1918, 4).

<sup>4</sup> Cecil Walton, *Welfare Study: What It Is* (Glasgow, n.d.), 5, 17, 20 (italics in original). For a discussion of welfare as a means of maximizing efficiency and ensuring industrial complacency, see Noelle Whiteside, 'Industrial Welfare and Labour Regulation in Britain at the Time of the First World War,' *International Review of Social History* 25 (1980): 307-31.

<sup>5</sup> See, for example, *The Bulletin*, 12 Oct. 1917, p. 4.

munitions factories were crucial in improving the standard of health among women during the war, arguing that ‘despite the physically demanding nature of the work,’ women benefited from ‘good wages, healthy conditions, and welfare supervision.’<sup>6</sup> We must also consider the attitude of the women workers to the welfare measures. Pat Thane has provided a good overview of working class attitudes to state welfare measures in the pre-war years, arguing that there was a great deal of worker suspicion and resentment at middle class interference in their private lives.

Nevertheless, she argues, working class people welcomed and utilized some reforms, while at the same time striving to resist any threats to their independence.<sup>7</sup> Does this argument apply to wartime welfare measures in Clydeside factories? Did the women appreciate and take advantage of them, and did they find them helpful in alleviating the stresses associated with factory work?

One of the most remarkable welfare innovations was the provision of hostels for women munitions workers. Woollacott believes that munitions women workers were enriched by the cultural exchange of living in a hostel, which fostered a spirit of independence among them.<sup>8</sup> Did Scottish women munitions workers have a similar rich, empowering experience? It is highly doubtful, as there were very few women’s hostels in Scotland and those that did exist were very unpopular among Scottish women munitions workers. There were far fewer Scottish hostels than there were English ones. Indeed, the Ministry’s official history acknowledged that in Scotland ‘no hostel scheme... approaching in magnitude the English schemes was inaugurated.’<sup>9</sup> This statement, however, fails to convey the extent of the discrepancy in hostel accommodation between England and Scotland. According to Woollacott, there were 276 munitions hostels for

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<sup>6</sup> Woollacott, 60.

<sup>7</sup> Pat Thane, ‘The Working Class and State ‘Welfare’ in Britain, 1880-1914,’ *The Historical Journal*, 27 (1984): 877-900.

<sup>8</sup> Woollacott, 58.

<sup>9</sup> *OHMM*, 5, v, 55.

women in Britain with accommodation for 24,000 female workers.<sup>10</sup> Scotland had only thirty-two of the 276 female hostels, and even this small number was underutilized. In September 1918, there was accommodation for 916 women in Scotland's munitions hostels, but only 793 women were in residence, and of these only 58.4% were munitions workers.<sup>11</sup> Therefore, out of 24,000 hostel places in Britain, there were 463 women munitions workers living in Scottish hostels. Indeed, some individual hostels in England had accommodation for more women than the total number of munitions women living in all Scottish hostels.

Several reasons explain the unpopularity and underutilization of hostels by women working in Scottish munitions factories. First, according to contemporary expert opinion, there was little need for hostel accommodation in Clydeside because the majority of the women came from the area and lived at home. Second, the women who migrated to Glasgow in search of munitions work shunned the hostels, preferring to live in lodgings that had been vacated by the male workers who had joined the forces.<sup>12</sup> Third, the previous use, physical condition, and moral reforming character of Scottish hostels explain the widespread preference for lodgings. In Glasgow, women's hostels were not new, custom-built, Ministry-managed institutions; rather, they were old buildings, hastily converted to hostel use, and managed by voluntary or religious bodies such as the YWCA and the Church of Scotland.<sup>13</sup> Some had even been charitable institutions for homeless women before the war. At the end of 1916, the managers of the Temporary Home for Friendless Girls in Glasgow decided 'for the period of the war' to open its doors to 'girls employed at munitions.'<sup>14</sup> Similarly, in the spring of 1917, the Scottish Local

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<sup>10</sup> Woollacott, 51. Figures are for May 1917.

<sup>11</sup> PRO MUN 5/92/346/40; *OHMM*, 5, v, 55.

<sup>12</sup> Kirkaldy, *Labour, Finance, and the War*, 103-4; Kirkaldy, *Industry and Finance* (1920), 128. See also *Glasgow Herald*, 28 Mar. 1916, p. 7f.

<sup>13</sup> *Glasgow Herald*, 3 Feb. 1916, p. 3e; 13 Oct. 1917, p. 6g. Schemes to build houses for male workers in Clydebank and Glengarnock were uncompleted at the Armistice (*OHMM*, 5, v, 54-7, 80-1).

<sup>14</sup> *Common Cause*, 17 Oct. 1916, in Tuckwell Collection, 615/61.

Government Board approached the governing committee of Glasgow's House of Industry for Indigent Women, requesting that its premises be used to accommodate female munitions workers. The institution agreed to the Board's request, managing to procure temporary accommodation for its 'thirteen inmates.'<sup>15</sup> Given the controlling atmosphere of such an institution where the governing committee followed a policy of confinement, allowing the inmates 'out' once a month, it is hardly surprising that they were unpopular places with munitions women.

Some Glasgow hostels were in poor physical condition and failed to meet the minimum standard acceptable to the Ministry. In September 1918, a party of female welfare officers from the Ministry conducted a tour of inspection of Scottish hostels. Of the eleven Glasgow hostels, only one received a 'very satisfactory', and one a 'satisfactory' evaluation; two were removed from the list as they had no munitions women resident; and several had coal or food 'difficulties.' At one Church of Scotland hostel, the welfare officers were frustrated when the matron refused them entry to inspect the premises, and at another one, they found the arrangements for munitions women so poor that they reported it would be 'very difficult to suggest suitable alterations to bring it up to the standard of a munitions hostel.'<sup>16</sup>

Perhaps even more objectionable to the women workers than substandard buildings and inadequate service was the moral reforming character that pervaded philanthropic institutions. Although they were now known as 'hostels for munitions women' rather than 'homes for friendless girls,' the moral reforming ethos prevailed. At the opening of a YWCA hostel in Paisley, one of the civic dignitaries announced the reason for establishing the hostel:

Those who had experience of lodgings knew the drawbacks that were to be experienced – want of social companionship, want of home comforts.... These wants ... would be found in this institution, and they would act as a counter-

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<sup>15</sup> GCA, TD 686/16, Committee for the House of Industry for Indigent Women, Minute Book, (1896-1917), April 1917.

<sup>16</sup> PRO MUN 5/92/346/40.



attraction to the girls instead of wandering the streets or seeking amusements in places that would be best not frequented.<sup>17</sup>

Women and girls, experiencing the independence of leaving home to seek employment, refused to submit to strict curfews, restrictive rules, and 'improving' sermons. Having endured the discipline of the factory floor for twelve hours a day, women munitions workers firmly rejected any further attempts to supervise and control their lives.

The Ministry was well aware of the situation in Scottish women's hostels, one of their confidential weekly labour reports summing up the situation:

Reports show that Scottish munitions workers are less willing than the English to accept hostel restrictions. *In Glasgow the poorest lodgings are preferred to hostels.* The probable explanation is that many Scottish hostels, being run by charitable bodies with definite aims, have acquired a reputation as reformatories. The Church of Scotland Women's Hostels are managed by committees of men only. The said men being ministers of religion.<sup>18</sup>

The Scottish ministers managing the hostels had their own perspective on the unpopularity of their institutions. According to a Ministry report, they found 'most of the munitions workers were of the "rougner type," rather than the "refined type," of working women.'<sup>19</sup>

We have to wonder if the Ministry, when allocating grants to build new hostels, also distinguished between the 'rougner' and the 'refined' types of women munitions workers as Ministry expenditure on hostels in Scotland was exclusively for those hostels intended to house middle class women. As we have already seen, the Ministry bestowed the largest grant from its 1917 hostel budget to the middle class women's 'engineering university' at Tongland. In addition, there was no housing built for the tens of thousands of women workers at Georgetown. At the filling factory, the Ministry built eight small hostels and 108 timber cottages, each containing two or three rooms, with a kitchen, coal cellar, larder, and some even had a garden

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<sup>17</sup> *Paisley and Renfrewshire Gazette*, 30 Mar. 1918.

<sup>18</sup> PRO MUN 2/28, 9 June 1917 (italics added). See also PRO MUN 2/28, 10 Feb. 1917, p. 25.

<sup>19</sup> Quoted in Woollacott, 55.

attached. However, they were intended exclusively for the use of the senior management staff, the male maintenance workers, and the 250-strong military guard whose duty it was to ‘protect government property.’<sup>20</sup> The only women who lived in the Ministry accommodation were women in management positions such as Agnes Borthwick, the works manager, who listed her address as 10 Netherfield Cottages, Georgetown, Paisley; and Ethel Kerr, the assistant works manger, who was pleased that she had been ‘given a furnished cottage with garden and electric light free.’<sup>21</sup> It is almost certain that none of the women who filled the shells, pushed the trolleys, or scrubbed the caked TNT from the workroom floors ever saw inside the timber cottages.

Cecil Walton petitioned strenuously for the construction of a new hostel to accommodate 500 to 700 women and girl workers at Cardonald. Although Ministry approval was eventually granted and a site was ‘finally acquired,’ Walton noted in his post-war report that ‘in spite of all our applications and endeavors no start was made with the actual building.’<sup>22</sup> It is ironic that Clydeside, which had some of the worst housing conditions in Britain, received far fewer grants for hostel accommodation, and we have to wonder about the Ministry’s reasons. Perhaps the Ministry felt that housing in Scotland was so bad that any action ‘could only touch the fringe’ of the problem, or perhaps the delaying bureaucracy of the Scottish Local Government Board had an impact.<sup>23</sup> The aim of the hostel scheme was to send women to areas with an insufficient supply of female labour willing to do industrial work; it was not to provide decent housing for women workers. Given the poor condition and restrictive atmosphere of Scottish hostels, and their subsequent mass rejection by Scottish women, it is highly unlikely that Woollacott’s optimistic assessment of rich cultural exchange and spirit of independence applied to the hostels available to women munitions workers in the west of Scotland.

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<sup>20</sup> *OHSFF*, 34-7, 115-9.

<sup>21</sup> *Who’s Who*, 1919, 254; IWM MUN 13/2, letter from Ethel Kerr to Conway, 31 Dec. 1918.

<sup>22</sup> IWM MUN 12/4, p. 5. See also OHMM, 5, v, 29; PRO MUN 5/92/346/40, p. 3.

<sup>23</sup> *OHMM*, 5, v, 54-57.

A similar pattern existed for the provision of crèches for munitions workers' children in Scotland where there was very little interest among the women, and very few were established. The three factories with the largest female workforces in the west of Scotland had different experiences with factory crèches. At Georgetown, the workers expressed no interest in one; at Cardonald, some workers were interested, but no crèche was established; and at Singer's, organizers succeeded in setting one up but found it was severely underutilized. In the first place, it was very difficult to establish a munitions factory crèche in Scotland, as the organizers of a campaign for a crèche at Cardonald discovered. Although the Ministry, in an effort to encourage married women into the workforce, were prepared to provide 75% of the cost of establishing a nursery, it was an arduous process to obtain the grant. According to a contemporary report on Cardonald: 'no project in connection with the factory ever received more enthusiastic support than the proposal for a Crèche for the children of soldiers' wives and widows working at Cardonald; at the same time no scheme ended up so disappointingly.'<sup>24</sup>

The process of obtaining the Ministry grant was even more cumbersome in Scotland than it was in England as there was the extra bureaucratic layer of the Scottish Local Government Board to overcome. First, the factory had to demonstrate to the Health and Welfare Section of the Ministry that there was a sufficient level of interest among the women workers and a sufficient number of children who would use the crèche. Following that, the proposal was submitted to the Local Government Board of Scotland who investigated 'all details of expenditure, staff, medical superintendence, and management' before granting their approval. Once the organizers had gained approval from the Scottish authorities, they had to refer the proposal back to the Welfare and Health section of the Ministry, which finally passed the matter to the Treasury to obtain sanction for the expenditure. Given the layers of bureaucracy and resulting delays, it is hardly

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<sup>24</sup> IWM MUN 12/6, p. 16.

surprising that the Cardonald crèche organizers noted: ‘Somewhere in London may be found sheaves of letters, telegrams, minutes, reports, specifications, plans, and telephone call records strangled in red tape.’<sup>25</sup> The Cardonald organizers finally managed to push their proposal through all the requisite government channels, only to meet new difficulties with the building contractors and a lack of material, with the result that by the time of the Armistice, ‘the Crèche building presented no better appearance than a ruined farmstead.’<sup>26</sup>

The organizers at Singer’s in Clydebank had more success in establishing a crèche, but found that hardly any of the women workers wanted to use it. In September 1917, they opened a crèche in a site adjacent to Singer’s factory, which had the second biggest female workforce in the west of Scotland. The idea of the crèche originated from a group of middle class women interested in the welfare of working class children, and there was no indication that Singer’s management contributed financially or administratively to the project. On its opening day, Miss Watt of the Clydebank Nursing Association, which spearheaded the crèche campaign, told the assembled civic dignitaries that she ‘deplored the necessity for mothers having to go out to work, but in the circumstances of the day... [she] held that there should be some such place... properly equipped and properly administered.’<sup>27</sup> The Singer’s crèche, modeled on the ‘latest hygienic and scientific lines,’ contained the most up-to-date nursery equipment including a ‘sterilising cabinet’ which formed an essential part of the nursery’s daily routine:

The Crèche is opened at 6.30 a.m. to receive the children who are bathed as they arrive, their own clothes being disinfected and fresh ones, provided by the Crèche, given them for the day. This materially assists in preventing infection from spreading.

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<sup>25</sup> IWM MUN 12/6, p. 16. See also MUN 5/278, letter from Edgar Collis to Walton, 7 Sept. 1917; *23<sup>rd</sup> Annual Report of the LGB(Sc) for 1917*, Cd. 9020 (1918), p. xii.

<sup>26</sup> IWM MUN 12/6, p. 16. The *OHMM* omits the story of the crèche from its account of Cardonald’s exemplary system of welfare provision. Compare MUN 5/92/346/26 and *OHMM*, 5, iii, 163.

<sup>27</sup> *Clydebank Press*, 14 Sept. 1917, p. 1.

A staff member placed the children's own clothes in individual bags, hanging them in the sterilizing cabinet till the mothers collected their children after their day's work. Not surprisingly, Clydebank's women workers shunned the Singer's crèche, as on an 'average' day, only twenty-two women took advantage of the facility. When we consider that there were approximately 7,500 to 8,000 women workers at Singer's, it means that fewer than 0.03 % of them subjected their children to the sterile environment of its factory crèche.<sup>28</sup> The Singer's factory crèche provides a good example of the mutual incomprehension between middle class 'improvers' and the working class objects of their good deeds.

At Georgetown, which had the largest female factory workforce in the west of Scotland, the women workers expressed no interest in the establishment of a factory crèche. In November 1916, when the Welfare Sub-Committee of the Scottish Advisory Committee on Women's Employment tried to ascertain the level of interest in a crèche at Georgetown, only three women responded to their inquiries. The Committee dropped their plans for a crèche after a health visitor, whom they had dispatched to the homes of fifty Georgetown workers to inquire into their child-minding arrangements, reported that the children were 'properly cared for,' usually by relatives of the women workers.<sup>29</sup> Only a tiny fraction of the female workforce indicated an interest in the hostels and nurseries associated with munitions factories in the west of Scotland where women firmly rejected any attempts by middle class reformers to change, control or cleanse their lives.

Clubs were another area of welfare work that failed to interest women workers. In an effort to steer working women and girls out of the harmful reach of Glasgow pubs and male company, middle-class women and ministers of religion originated and orchestrated clubs for women workers. The description of some clubs' activities hardly offered an enticing prospect. For example, the Clydebank Girls' Club which admitted women working at Singer's,

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<sup>28</sup> IWM MUN 28/5; Tuckwell Collection, 665II/135.

<sup>29</sup> SRO HH 31/27/2, part 2.

Beardmore's Dalmuir, and John Brown's shipyard, had a very improving tone. Created for 'educative and recreative purposes,' the club ran classes in 'dressmaking, millinery, pen-painting, class singing and elocution,' and once a week they offered lectures on 'social and other subjects of vital interest to women.'<sup>30</sup> We have no attendance figures for these clubs but it is highly unlikely they enticed many women to partake in their activities, especially after a tiring, twelve-hour day on the factory floor.

Many clubs attached to munitions factories were not intended for the 'ordinary' women workers but for the exclusive use of the middle class 'ladies' on the staff. According to Deborah Thom, none of the former women workers at Woolwich Arsenal whom she interviewed had used the Arsenal's recreational facilities, and some had not even heard of them.<sup>31</sup> We find a similar situation at Georgetown where most of the clubs had restricted membership. For example, the Georgetown Book Club was 'confined' to fifty male and female members of the factory staff. The Georgetown Ladies Amateur Swimming Club extended its membership to the women of the safety patrol service, but not to the ordinary women workers. And, the Georgetown Dramatic Society's performance of Sir James Barrie's 'The Professor's Love Story' at the Athenaeum in Glasgow was aimed at distinctly middle class tastes. It is also unlikely that any of the women workers would have attended the performance as ticket prices ranged from 1s. 3d. to 3s. 6d.<sup>32</sup> There is no evidence that any clubs at Georgetown were founded for the use of the women workers.

Historians agree that the wartime welfare measure that brought about the greatest improvement in the health of women workers was the establishment of factory canteens. Kozak and Woollacott both believe that the provision of nutritious food in factory canteens allowed

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<sup>30</sup> IWM MUN 35.2, p. 3-4.

<sup>31</sup> Thom, 'Women at the Woolwich Arsenal,' 67.

<sup>32</sup> *OHSFF*, 196-7; *Paisley and Renfrewshire Gazette*, 12 Oct. 1918; IWM MUN VII/21-34, *Cardonald News*, 8 Feb. 1918. See also photographs in *The Bulletin*, 13 Feb. 1918.

munitions women to withstand the strain of onerous work and long hours. They also point out that the pre-war diet of many working class women was less than adequate as, recognizing the necessity of keeping the male wage-earner at peak efficiency, women had long been accustomed to feeding their husbands with the best food, and making do with what was left. During the war, the argument goes, the diet of working class women improved for two reasons: earning high wages allowed them to buy better quality food, and eating nutritious food in factory canteens.<sup>33</sup> Margaret Barnett, who has conducted an intensive study into British food policy and consumption during the war, has questioned the improvement in workers' nutritional intake, arguing that the women persisted with their bad eating habits.<sup>34</sup>

Unlike crèches and hostels, factory canteens were one welfare measure that Scottish munitions factories widely adopted. According to the Ministry of Munitions Food Officer for Scotland, in the country's national and 'controlled' factories, there were 140 canteens and mess-rooms with a total seating capacity for 46,700 workers. An enthusiastic supporter of canteens, the Food Officer described them thus:

The clarion note of the 'hooter' sounded, the canteen doors were open wide and in streamed the countless faces with a joyous smile, for here was comfort, warmth, good food, new life, new energy, new vigour, and a new hope, and, above all, the human touch that realized we were creatures of flesh and blood and not inanimate machines.<sup>35</sup>

But what was the reality behind the hyperbole? Was the food as good and nutritious, and were the workers as appreciative as claimed? While the majority of workers did take their meals in the factory canteens, a lot depended on the quality of the canteen. According to a report from 'Aisne' NPF, for example, worker dissatisfaction caused many to eat elsewhere: 'perfectly legitimate

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<sup>33</sup> Woollacott, 59-61; Kozak, 252-9; see also Winter, 239.

<sup>34</sup> L. Margaret Barnett, 'Upgrading the Diet of Working Women: Canteens and Hostels in Munitions Factories in Britain during World War One,' (paper delivered at the North American Conference on British Studies, Oct. 1990), quoted in Woollacott, 61.

<sup>35</sup> PRO MUN 5/364/11213.1, 'Scotland's War Activities,' Appendix 14, 'Canteens.'

complaints often did not receive the attention they deserved,' with the result that 'a great many left the Canteen, preferring to dine at a small restaurant in the vicinity of the Factory.'<sup>36</sup> In his study of Clydeside munitions women, Highton also noted that the women did 'not take full advantage of the canteens,' estimating that between 7% and 10% took dinner during the day, whereas 25% to 75% took the full meal when on nightshift. In addition, he noted, a 'considerable number' took one course only, while some carried 'pieces' from home and bought soup or tea in the canteen.<sup>37</sup>

One of the most frequent complaints about canteen food was the monotony of the menu. For example, at Barr and Stroud, a factory with a relatively small female workforce of 300 and a reputation for good working conditions, the limited menu offered at the canteen barely changed throughout the war. The most notable change was in the cost of food items some of which increased by 100 % in three years.<sup>38</sup> The food at Barr and Stroud may have been nourishing, but even hungry workers would surely grow weary of the same diet every day. It was not just the lack of choice on the menu, but also the method of serving which could make the food unappetizing to workers. At Cardonald, for instance, where the canteen served 1,750 to 2,000 dinners daily, the canteen staff dished out the food before the workers stopped work so that it was 'possible for everyone to be served and sitting down by ten minutes after the Hooter goes.'<sup>39</sup> We can only speculate how long the food had been lying on the plates before the workers sat down to eat it.

There were also complaints about the quality of the food served, such as boiled cabbage, which was not only unappetizing to workers, but innutritious also. A Medical Research Committee report into the dietaries of women munitions workers recorded complaints about the

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<sup>36</sup> IWM MUN 21/20

<sup>37</sup> Highton, in Kirkaldy, *Labour, Finance and the War*, 126.

<sup>38</sup> Compare the Menu Card in IWM MUN 25/4 with the almost identical one (except for food prices) in GUABRC, UGD 295/26/1/27. The price of a boiled egg, for example, increased from 2d. to 4d.

<sup>39</sup> PRO MUN 5/278, letter from R. Martin to Lobnitz, 6 Nov. 1917. See also *The Bulletin*, 24 Mar. 1917, p. 12 for photograph of crowded canteen, very probably Cardonald's.



expense, monotony and quality of canteen food. Workers, whose favourite food included fish and chips and meat turnovers, found it hard to accept the 'steam-cooked' food in the canteens which was 'apt to be sodden and tasteless.'<sup>40</sup> In addition, in a blatant act of gender discrimination, the government authorized additional meat rations for men but not for women workers. In early 1918, the shortage of meat created official concern that a decrease in protein in the diet of munitions and shipyard workers would limit their output. They issued an order to provide supplementary meat rations for those engaged in heavy work, but stipulated that women workers should not apply.<sup>41</sup> Officials at Beardmore's Mile End factory were concerned that, without the extra ration, their women workers, 'mostly engaged on heavy work' would be unable to continue 'the onerous work,' and that 'the production of shells would be seriously threatened.'<sup>42</sup>

Another government measure concerning food shortages was the presence of food queues, and we have to wonder how working women found the time or energy to stand in line for rations after a long, hard day standing at the lathe. According to one observer, it was common for women 'to leave work in the early morning after the 11 ¼ hours of night shift, with perhaps two hours traveling in addition, and line up in the food queues... In many cases this resulted in the women not getting home until midday, so that their rest was hopelessly interfered with.'<sup>43</sup> Food queues added considerably to the daily grind and lack of sleep of women workers.

In addition, the 'improving' tone of middle class reformers, which we have seen in other welfare measures such as hostels and crèches, was also evident in canteens. Horrified at working class women's penchant for tea and sticky buns, middle class organizers saw canteens as a way of weaning working class women from their poor, pre-war eating habits and educating them in the

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<sup>40</sup> Viscount Dunluce and Major Greenwood, *An Inquiry into the Composition of Dietaries* (MRC SRS no. 13, 1918), 43-4.

<sup>41</sup> *Forward*, 13 Apr. 1918, p. 4; *Glasgow Herald*, 2 Feb. 1918, p. 6f; 20 Mar. 1918, p. 8c.

<sup>42</sup> *Beardmore News*, 30 Apr. 1918, p. 4.

<sup>43</sup> HMWC, *Final Report*, 136.

benefits of more nutritious food.<sup>44</sup> It is possible, however, that, like crèches and hostels, this idea was more appealing to the middle class promoters than to the working class partakers.

The overzealous efforts of some middle class women to change the eating patterns of working class women raise further doubts about the image of well-fed, healthy munitions women. Elizabeth Butler, Georgetown's medical superintendent, insisted that eating between meals was bad for one's digestion, and tried to ensure that the workers in the factory adhered to her view. At Georgetown, there were no tea breaks, despite copious evidence and recommendations that women performed their work more efficiently if they had a short rest in the middle of the morning and afternoon work periods. Butler told the War Cabinet Committee on Women in Industry:

We do not consider that it is good for them to have any tea interval. They go right home to their dinner. Perhaps I am rather faddist about it, but I feel strongly that women do themselves far more harm by odd cups of tea and cocoa and milk between meals than by having an unduly long fast between meals. I prefer them to have 4 ½ or 5 hours interval with nothing going into their stomach at all.

When questioned on this point by committee member Janet Campbell, Butler replied:

I would not object to the girls having a cup of tea, I think it would be rather nice if you could train these working girls to have a cup of tea without eating biscuits with it, but I distinctly object to them eating buns and biscuits and going home for dinner.

When Campbell pointed out that the women had a twelve-mile train journey between the factory and the city, and many subsequently had a long walk, or a tram ride before they arrived home, Butler remained adamant about the importance of not 'spoil[ing] their meal.'<sup>45</sup> It is doubtful if the women at Georgetown received enough nourishment from only a mid-day, or mid-night, dinner

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<sup>44</sup> 'Women connected with munitions canteens think it unlikely that those who have formed a habit of eating good nourishing meals will ever go back to the old tea and cake habit that played havoc with their health in the pre war days.' (*Glasgow Herald*, 2 Feb. 1918, p. 6f).

<sup>45</sup> PRO MUN 5/87/342/17, J.13 - J.18, evidence of Butler to WCCWI, Physiological Sub-Committee, 24 Oct. 1918. Expert opinion held strongly that women should work no longer than four hours without a break. See HMWC, *Final Report*, 26; Andrews, *Economic Effects of the War*, 138.

to provide them with sufficient energy to complete their shift, especially given the extra spurt at the end of each shift to earn the collective bonus. The good wages and canteen facilities at Georgetown did not necessarily ensure a well-nourished and healthy workforce, and we should not assume that employment in a munitions factory led incontrovertibly to a well-nourished workforce.

We have to question the effectiveness of the welfare measures instituted in Clydeside munitions factories in counteracting the considerable stresses and strains of munitions work. We have noted a great deal of resistance to many welfare initiatives from the women workers themselves, with only a very small percentage taking advantage of the hostels, crèches and recreational activities. Indeed, many of the clubs associated with munitions factories were intended for the exclusive use of women in supervisory and management positions, and were inaccessible to the women workers. In addition, the high moral tone suffusing some welfare measures made them unpalatable to working class women. The welfare movement did bring some real improvements in factory conditions, most notably in the provision of toilets, washrooms, rest rooms, and first aid facilities. We should, however, note the grudging manner with which they were offered, with some employers insisting that only women on piecework should be able to use rest rooms.<sup>46</sup> According to one contemporary report, some factories devised a monitoring system to prevent women from 'idling' in the toilets: 'each girl hand[ed] her check to the clerk on entering, the check being handed back to her on leaving and the time spent being entered in a book.'<sup>47</sup> In a similar vein, Highton noted a 'special consideration' that was afforded to women in Georgetown working on toxic substances: when feeling ill, they were allowed to go to the

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<sup>46</sup> *Report of the War Cabinet Committee on Women in Industry, Appendices, Summaries of Evidence, etc.*, Cmd. 167 (1919), p. 213.

<sup>47</sup> J.E. Hutton, *Welfare and Housing: a Practical Record of War-Time Management* (London, 1918), 151

ambulance room for the maximum of one hour without loss of pay.<sup>48</sup> While we can credit the welfare movement with some improvements, when we look at the substantive issues of factory employment such as hours of work, speed of work, and nature of work, there was very little change. A great deal of welfare work, as practised in the west of Scotland, had little impact on the lives of women workers, who firmly rejected any middle class attempt to control or 'improve' their lives.

We must also question the ability of the HMWC to effect an improvement in factory conditions. The HMWC was an important body which pioneered groundbreaking inquiries in the new field of industrial health and efficiency, producing a number of valuable reports. But did it get its message across? How many employers paid attention to its recommendations on the reduction of hours, the increase in rest periods, or the abolition of Sunday labour? Arthur MacIvor, in a study of the HMWC's successor, the Industrial Health Research Board (IHRB), in the inter-war years, has argued that employers resisted its messages, and the Board had little impact on industrial conditions. According to MacIvor: 'Many employers were committed to the fallacy that workers should be seen to be grafting and sweating for their wages, and the idea floated by the HMWC and extended by the IHRB that work should be performed easily, with the minimum of physical and mental strain, was anathema to them.'<sup>49</sup> We have presented evidence that suggests that Glasgow employers during the war were equally unreceptive to the many memoranda and statistical studies of the HMWC. For example, we have already seen that William Weir's factory persisted in employing women on the continuous system of night shift despite the HMWC's strong opinions against the practice. We have also noted Cecil Walton's refusal to comply with Ministry directives concerning the employment of women on Sunday

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<sup>48</sup> Highton, in Kirkaldy, *Labour, Finance and the War*, 128-9.

<sup>49</sup> A.J. McIvor, 'Manual Work, Technology, and Industrial Health, 1918-39,' *Medical History*, 31 (1987): 187.

labour. The example of Weir and Walton demonstrates that even the managers and administrators who were most conversant with welfare regulations balked at putting them into practice. There was also a tendency to concentrate on the 'frills' of welfare and ignore the substance. In an effort to bind Cardonald employees into a happy, cohesive, and most importantly, productive workforce, Walton expended much time and energy instituting a wide range of welfare measures such as entertainment troupes and factory sports days, but there is no evidence that he tried to reduce the length of the twelve-hour shifts. Welfare measures, while being hailed as the saviours of munitions women, rarely in practice performed that function, and welfare did not automatically translate into well-being.

It is the contention of this chapter that conditions of work in west of Scotland munitions factories were not conducive to an improvement in health amongst the women workers. Many women worked under intolerable and hazardous conditions, which factory welfare measures failed to overcome. In addition, the high turnover rate in the factories suggests that women could not stand the work for very long. We therefore disagree with Kozak and Woollacott, both of whom have concluded that, while working conditions were undoubtedly arduous, the women, on balance, did enjoy a better standard of health during the war. How can we explain the difference between the conclusions of Kozak and Woollacott and the arguments of this chapter? The most obvious answer is that conditions on Clydeside were particularly bad, making it one of the worst areas in Britain for munitions women. By concentrating on Clydeside alone this thesis has uncovered evidence to suggest that women munitions workers endured great hardships and deprivations more than they enjoyed better health and a higher standard of living. One of the advantages of a regional study is that it sharpens the view. A concentration on a small group of factories within a defined geographical area allows a fuller understanding of factory conditions than Woollacott and Kozak's random selection of evidence from all British munitions factories.

Although fully aware of the difficulties and hardships associated with munitions work, Kozak and Woollacott nevertheless conclude that, on balance, the women experienced an improvement rather than deterioration in health. We must therefore closely examine the evidence Kozak and Woollacott used to reach their conclusions. To argue their case for improved health, both historians cite the studies of Dr. Janet Campbell, a recognized authority on the health of women munitions workers during the war. By conducting two large-scale investigations into the health of munitions women for the HMWC, Campbell acquired probably a more sound knowledge of the impact of factory conditions on women workers' health than any other expert in the field. Campbell's reports of her investigations appear to show that most of the women were in good to fair health and only a small proportion showed signs of marked fatigue. The HMWC's *Final Report* summarized her findings by stating that the health of women was 'surprisingly well maintained,' and that 'severe fatigue was less than might be expected due to improved health and welfare.'<sup>50</sup> However, Campbell's evidence was very wide ranging and could be used to argue a different point of view. This is not to suggest that Campbell gave contradictory evidence, but that the circumstances were so complex it was impossible to distil into a few neat conclusions. When we look at Campbell's report in close detail, we see that it provides insufficient evidence to form a trustworthy assessment of munitions women workers' health during the war.

Campbell herself pointed out the shortcomings of her report. First, she acknowledged that the report was an inadequate medical assessment of the women as the physicians had conducted only a superficial physical examination, relying instead on the women's answers to questions. According to Campbell, the medical examination was 'somewhat cursory in nature,' and 'could not be made as complete and exhaustive as might have been wished, partly because suitable accommodation was not always available, and partly because the time was limited; (women were

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<sup>50</sup> HMWC, *Final Report*, 23. Kozak, 250-2; Woollacott, 59-65.

summoned from their work).’ Under these circumstances the doctors found it difficult to examine ‘the heart, lungs and abdomen,’ and had to rely ‘to a large extent on statements and descriptions of symptoms volunteered by the women.’ The inquiry therefore was of limited value as a large part of it was based on women volunteering information about their own health. As Campbell conceded, fear of dismissal induced some women to pretend to be healthier than they were: ‘a tired woman who fears in any way to prejudice her position at the factory may make a point of appearing bright and cheerful to the medical officer and give an excellent account of her health.’ Campbell concluded, ‘it is almost impossible in a short interview to elicit the whole truth.’ In addition, other women, who were obviously sickly, refused to be examined, further militating against a trustworthy general assessment of munitions workers’ health.<sup>51</sup>

Second, Campbell noted that ‘the examination of women actually employed at any given moment in the factories will not reveal a complete picture of the effect the work is having upon health and physique,’ as it took no account of ‘the women who have dropped out of employment because they were unable to support the strain of long hours, night shifts or heavy work.’<sup>52</sup> This latter point is especially important, and brings us back to the starting point of this discussion, the mystery of the ‘disappearing’ women. A high attrition rate, of course, has important consequences on studies which measure health as it is the least healthy who are the most likely to ‘disappear.’ In one factory, Campbell discovered in October 1917 that only twenty-seven remained out of a group of 100 women she had examined in January 1916.<sup>53</sup> Campbell concluded: ‘It is clear that the amount of fatigue revealed by the Inquiry is less, and possibly much less, in amount and degree than the actual fatigue experienced by the workers as a whole.’<sup>54</sup>

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<sup>51</sup> HMWC, *Final Report*, 138. 147.

<sup>52</sup> HMWC, *Final Report*, 143.

<sup>53</sup> HMWC, *Final Report*, 140. Attempts to follow up ex-employees to determine their reason for leaving led to ‘limited’ results (HMWC, *Final Report*, 143-4).

<sup>54</sup> HMWC, *Final Report*, 148.

We should therefore treat with caution investigations which claimed that women enjoyed a better standard of health as in all likelihood they were based on inadequate medical assessments and unreliable information, as well as omitting from their calculations the chronically ill. It was the survivors, not the sickest, who comprised the largest cohort of subjects in health investigations.

Campbell was not alone in observing a high attrition rate amongst women workers. A number of investigators into women munitions workers complained that the drop out rate of the women hindered the satisfactory completion of their inquiry. Government bodies such as the HMWC, the IFRB, and the MRC conducted various inquiries into munitions women, trying to establish their 'wastage' rate, their causes of 'lost' time, their state of health, or their output in relation to hours of work. Time and again we find, in the numerous reports, statistical inquiries, and medical examinations of munitions women, complaints from the investigators that a large dropout rate among the women weakened or invalidated the results of their inquiries. In one typical study, investigators returned to a factory after six months to re-examine the women, only to find that 'nearly half had left the employment of the firm.'<sup>55</sup> In another study, faced with a similar situation, investigators concluded that the rate of sickness among munitions workers was 'considerably understated.'<sup>56</sup> Even groups comprised of hardy women suffered a high turnover, as an investigator into the output of lathe operators discovered:

The strongest women available were picked out for the work, but many of them could not stand it for more than a few weeks. Of the 95 operatives of whose history I possess an adequate record, 22 gave up after four weeks or less, and 11 more after 10 weeks or less.<sup>57</sup>

Yet another inquiry, adopting a Darwinian tone, noted that:

There can be no doubt that in many instances the strain was too great to be borne, and that the operatives had to drop out altogether. That is to say, *the data quoted relate to the fittest who were strong enough to survive in the struggle, and not to*

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<sup>55</sup> HMWC, *Interim Report*, 6.

<sup>56</sup> HMWC, *Interim Report*, 47.

<sup>57</sup> HMWC, *Interim Report*, 75.



*the general mass of workers of all classes who tried their hand at munition work.* It is almost impossible to discover the extent of this weeding out, but it is inevitably considerable.<sup>58</sup>

It would appear that only the fittest of women had the capacity to survive the rigours of munitions work. It was therefore impossible to reach a definite conclusion about the extent and degree of fatigue, illness, or injury among women munitions workers when those most fatigued, ill, or injured continually disappeared from the study.

In concluding that ‘on balance’ the health of the women improved during the war, Woollacott and Kozak have omitted to take into account the high risk of contracting tuberculosis that the women faced as a result of their work in munitions factories. Winter acknowledges tuberculosis as the ‘anomaly’ in his thesis of improved health, attributing the increased death rate from the disease during the war to munitions factory work and overcrowded housing conditions.<sup>59</sup> Despite Winter’s specific mention of munitions work, Kozak and Woollacott have not addressed the issue in their assessment of munitions workers’ health. When Vernon wrote that there was ‘no doubt that the war industries had an adverse effect on mortality, especially that of young women,’ he was referring specifically to the alarming wartime increase in female deaths from tuberculosis.<sup>60</sup> Since the middle of the nineteenth century, there had been a steady decrease in the incidence and death rate from tuberculosis, but by 1916 medical authorities were noting a reversal in the trend that was especially marked among the young female population, which some attributed to the increased industrial employment of women. According to one report:

Young women of the most susceptible ages have thus been subjected to risks of infection as well as of pulmonary disease predisposing to tubercle which they

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<sup>58</sup> HMWC, *Interim Report*, 24 (italics added). See also, HMWC, *Final Report*, 163-4.

<sup>59</sup> Winter, 139, 211. Bryder has challenged Winter’s explanation, arguing that malnutrition was also an important factor in the increased incidence of tuberculosis during the war (Bryder, 145-8).

<sup>60</sup> Vernon, *Health and Efficiency*, 69-70.

would have escaped in following their normal occupations.... A number of women have probably died who would have survived under peace conditions.<sup>61</sup>

The MRC commissioned Major Greenwood to investigate the correlation between the increased industrial employment of women and the increased incidence of fatal tuberculosis amongst them. Greenwood discovered that the rise in female mortality from tuberculosis was most marked in districts and towns in which munitions were made, and that the increase was in proportion to the extent of munitions manufacturing.

By focusing on several factories in Birmingham, Greenwood found that there was no 'trade habit' specific to munitions making which increased the risk of contracting tuberculosis. He did note, however, the lack of adequate ventilation and the close, crowded working conditions in the factories, as well as the habit of 'spitting in the suds... i.e. spitting into the receptacles which hold the lubricant mixture found in all shops where 'wet' metal work is done...this mixture is frequently sprayed on to people's clothes, and the hands of workers are constantly wet with it.'<sup>62</sup> As tuberculosis is an airborne disease, these conditions would contribute significantly to the spread of the disease among the women. More disturbing, however, than the working conditions was the exponential growth in the incidence of tuberculosis in the factories. Greenwood found that the number of cases in the first eight and a half months of 1918 alone exceeded by over 50% the total number of cases reported in all of 1917.<sup>63</sup> The welfare arrangements in munitions factories formed no protection against women contracting tuberculosis, as Janet Campbell noted: 'improved conditions and amenities... have not been sufficient to prevent women acquiring and

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<sup>61</sup> 79<sup>th</sup> *Annual Report of the Registrar General for England and Wales for 1916*, p. 54, quoted in M. Greenwood and A.E. Tebb, *An Inquiry into the Prevalence and Aetiology of Tuberculosis among Industrial Workers, with special Reference to Female Munition Workers*, (MRC, SRS no. 22, 1919), 3-4.

<sup>62</sup> Greenwood and Tebb, 51. Chalmers also noted that the flu spread most quickly in munitions factories and residential institutions (*Report of Glasgow MOH for 1914-19*, p.55).

<sup>63</sup> Greenwood and Tebb, 58.

developing the disease.’<sup>64</sup> We have no knowledge of the incidence of tuberculosis among munitions women in Clydeside factories, but it is reasonable to speculate that it was significant, especially given the high incidence of the disease in Glasgow, and the wartime deterioration of housing conditions. During the war, munitions factories became breeding grounds for the spread of tuberculosis, which any discussion on the health of women munitions workers should acknowledge.

In fact, rather than welfare measures improving working conditions, it may be argued that they were unable to stem the deterioration of the factory environment as some evidence suggests that things got worse as the war wore on. As the military casualty rate grew and the government widened the net of conscription, women and girls were increasingly called upon to perform heavier work. In confidential evidence to the War Cabinet Committee on Women in Industry, Adelaide Anderson, the head of the female factory inspectorate, described a ‘very striking change’:

In the last stage [of the war] we had to press [women] into processes which were in our view *too heavy - that we had always thought too heavy for women* - heavy processes like the forging of bullet proof steel billets, the noses of shells and in retort house work... *the pressing of women into the utmost limits of what we thought it was possible for them to do.*<sup>65</sup>

Janet Campbell also noted a deterioration in conditions and in the health and spirit of the women:

For a time it was possible... for women to stand the physical strain reasonably well, but after more than three years of war, domestic duties have become more arduous, staleness and fatigue are being experienced by many women... It should be remembered that the best of the available women have probably

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<sup>64</sup> *Report of the War Cabinet Committee on Women in Industry*, Cmd. 135 (1919), 227-8. In addition, the war made the control and treatment of tuberculosis amongst the civilian population much more difficult as the military authorities had requisitioned the use of tuberculosis sanatoria for discharged soldiers (*Report of the Administration of National Health Insurance in Scotland, 1917-19*, Cmd. 827 (1920), 43-6; HC Deb., vol. 109, col. 908-9, 5 Aug. 1918).

<sup>65</sup> PRO MUN 5/88/342/17, evidence of Anderson to WCCWI, 21Nov. 1918 (italics added).

already been attracted to the munition factories, and if they become physically unfit they can only be replaced by the less efficient.<sup>66</sup>

By 1918, many women were bone weary and no longer able to maintain the 'zeal' and enthusiasm they had displayed in the early months and years of the war, and we have to wonder, if the Armistice had not been declared in 1918, how much longer they could have carried on.

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In this section we will step outside the walls of munitions factories and examine briefly the social conditions of wartime Glasgow in order to evaluate Winter's thesis that the war created conditions that helped to eliminate some of the worst features of urban poverty, thereby leading to major gains in the survival chances of the urban population. We will look at Winter's assertion that the war raised family incomes and thereby nutritional levels, especially among the poorest sections of the community. We will also look at Winter's contention that the wartime decline in infant mortality was greatest in the most overcrowded, urban areas which had inadequate housing conditions before the war. We will examine the extent to which Winter's thesis relates to circumstances in wartime Glasgow. Part of Linda Bryder's criticism of Winter's argument lies in his use of national statistics which, she claims, has disguised the bad conditions in Britain's poorer regions. According to Bryder: 'more local studies are needed, for it is only by detailed studies at the local level that one can hope to form any impression of the real effects of the First World War on the health of the people.'<sup>67</sup>

Clydeside provides an excellent example of a regional case study to test Winter's hypothesis as it contains many of the elements crucial to his arguments: a large working class

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<sup>66</sup> HMWC, *Final Report*, 146. In her study of labour turnover, Gladys Broughton also noted that the 'wastage' rate in 1917-18 was 'considerably higher' than that in 1916 (Gladys Broughton, *A Statistical Study of Labour Turnover in Munition and other Factories* (IFRB Report no. 13, 1921), 15.

<sup>67</sup> Bryder, 'Healthy or Hungry?' 155.

population, huge swathes of urban poverty, appallingly bad housing conditions, and booming employment during the war. We will concentrate on the areas of food supply, housing conditions, and infant mortality rates. How much more money in real terms did working class families actually have? What was the quality and quantity of their diet? Did high wartime wages result in improved levels of nutrition to such an extent that they were able to counteract the disadvantages of poverty and poor housing? While working class health is an extremely difficult subject to evaluate, and the evidence is too fragmentary and insubstantial to allow us to draw firm conclusions, it is nevertheless the contention of this section that Winter's arguments do not hold up when applied to conditions in Scotland, and that large numbers of working class families in Clydeside did not enjoy a healthier standard of living as a result of war conditions.

## **Food**

Food is the key element in Winter's argument that there was an improvement in health amongst the British civilian population during the war. According to Winter, the wartime working class managed to maintain and, in some cases, even to improve their standard of living. Despite some strident complaints about food queues and shortages, they enjoyed a higher level of nutrition during the war than they had in the pre-war years, mainly because high wartime earnings and the policy of rationing allowed them to improve the quality, and increase the quantity, of their food consumption. This improvement, moreover, was most marked among the poorer sections of the working class, the unskilled workers, whose wages rose at a proportionately greater rate than those of skilled workers.<sup>68</sup> P.E. Dewey echoes Winter's argument of an improved standard of living, also positing that the poorest sections of the nation managed to maintain their standard of nutrition despite the rigours of wartime food shortages. Dewey cites a 1918 government-

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<sup>68</sup> Winter, 213-40.

sponsored inquiry into working class standards of living, which reported that the calorie content of the diets of skilled men's families fell by about 6% during the war while it increased in the families of unskilled men by about 3%. He also claims that there was no serious reduction in the consumption of bread and potatoes, the most important staples of the working class diet. By means of careful government administration and a judicious policy of food rationing, Britain managed to maintain an adequate and equitable supply of food for its civilian population.<sup>69</sup>

Not all historians share the optimistic view of Winter and Dewey. In her study of British food policy during the war, Margaret Barnett makes reference to the adequacy of working class food consumption, suggesting that price increases and food shortages affected adversely the working class to a greater extent than they did the middle or upper classes.<sup>70</sup> There was a disproportionately sharp increase in the price of working class food. For example, the cost of low-grade meat rose more steeply than that of upper grade meat, which was mainly the result of army requisitions of low-grade beef forcing up the price. By June 1916, the cost of cheap beef had risen by 81-120% while the average price of food had risen by only 59%. In addition, shops in working class districts had greater difficulty in maintaining a supply of groceries than their counterparts in middle class districts. Some wholesalers reserved their supplies for their regular customers which favoured shop keepers in richer areas and penalized those in poorer areas who had dealt with a number of wholesalers in their search for bargains. Working class districts therefore suffered shortages while middle class districts were more likely to enjoy ample supplies.<sup>71</sup> The substance of Barnett's work, however, is the politics of British food administration and not the nutritional intake and health of the working class, and we must therefore return to Dewey and Winter.

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<sup>69</sup> P.E. Dewey, 'Nutrition and Living Standards in Wartime Britain,' in *The Upheaval of War*, ed. Richard Wall and J.M. Winter, 197-219 (London, 1988).

<sup>70</sup> Margaret L. Barnett, *British Food Policy during World War One* (London, 1985).

<sup>71</sup> Barnett, 36-7, 77-8, 136.

Winter has mounted excellent arguments, supported by impressive evidence, but to what extent do they apply to Clydeside? Does his argument, that the poorest sections of society did not bear the brunt of wartime food shortages, have validity in wartime Glasgow, one of Britain's worst areas of urban deprivation? Fortunately, to help answer these difficult questions, we have the results of an investigation into working class diets in Glasgow conducted during the war by Margaret Ferguson, under the direction of Noel Paton, Professor of Physiology at Glasgow University.<sup>72</sup> Ferguson's study is particularly relevant to Winter's argument on four counts. First, it investigated the poorest sections of the working class, whom Winter claims benefited most from wartime conditions. Second, as part of a larger investigation into the aetiology of rickets, it related nutritional intake to the health and development of children. Third, it employed the same methodology and standards of measurement as a similar study, also under the direction of Paton, conducted in Glasgow in 1911-12, and therefore allows valuable comparisons between wartime and pre-war standards of nutrition.<sup>73</sup> Fourth, Ferguson's study was conducted at four intervals: in 1915-1916, February 1917, November 1917, and December 1918, therefore providing insight into the progressive effects of the war on working class diets.

Ferguson's study did not present a picture of a uniformly healthy, well-nourished working class. While some families did experience an improvement in health and nutrition, others suffered a significant deterioration as a result of wartime conditions. Although the *average* wage rose considerably during the course of the war, there was a very wide discrepancy in the amounts earned. Ferguson discovered, as Rowntree had in York at the end of the nineteenth century, that a

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<sup>72</sup> Margaret Ferguson, 'The Family Budgets and Dietaries of Forty Labouring Class Families in Glasgow in War Time,' *Proceedings of the Royal Society of Edinburgh*, 37 (1917): 117-136. See also *Glasgow Herald*, 19 Dec. 1916, p. 6b.

<sup>73</sup> Dorothy Lindsay, *Report upon a Study of the Diet of the Labouring Classes in the City of Glasgow, 1911-12* (Glasgow, 1913).

family's ability to survive depended in part on the number and ages of the children.<sup>74</sup> Families with parents and teenage children in employment enjoyed a considerably greater income than families with a large number of young children. Parental illness was also an important determinant of family income as chronically ill parents were unable to take advantage of the great need for unskilled labour in Glasgow and of the unprecedented high earnings available to them.

In her first study, carried out between 1915-1916, Ferguson visited over 600 families and conducted an intensive investigation of the diets of forty of them. She found that 'on an average the food supply was not less adequate than in pre-war times,' although she did note a 'distinct diminution in meat consumed,' and a decrease in protein, which was most marked in soldiers' families. Although the average diet was 'not less adequate,' there was a very wide discrepancy between families with some enjoying diets of high-energy value, and others 'almost at starvation level.' In one family, consisting of a discharged soldier father, a mother, and four children, the diet 'consisted chiefly of bread, sugar, tea, and the cheapest of margarine. The last two days [of the week] there was not even margarine.' In fourteen of the forty families, the children were healthy and well nourished, but in the remaining twenty-six families, at least one child had rickets and in most cases, more than one child suffered from the disease.<sup>75</sup> Rickets, of course, is a dietary deficiency disease and a good indicator of a child's level of nourishment.

In February 1917, Ferguson re-examined ten of the forty families to see the effects of Food Controller Lord Devonport's scheme of voluntary rations. Four of the ten families had a substantially greater income, and enjoyed a 'more generous diet.' Six of the families, however, had 'practically the same income as in 1915,' averaging £1. 7s. 2d. in 1915-16, and £1 8s. 4d. in 1917, and had 'less generous diets than when first studied.' The rise in the price of food was taking its toll as the calorific value per penny of food purchased in 1915-6 was 365 calories per

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<sup>74</sup> S. Rowntree, *Poverty: a Study of Town Life* (London, 1902).

<sup>75</sup> Ferguson, 'Family Budgets,' 131, 121, 122, 125, 117.



1d., and in 1917 it had dropped to 273 calories per 1d. There was an increase in bread consumption and a sharp decrease in meat consumption, the cost of which had 'made its use to any extent impossible for the labouring classes.' The diets of the six families, whose incomes had not increased, were lower in protein and energy value and, according to one expert, were 'below what is regarded as the safety level.'<sup>76</sup>

In November 1917, after voluntary rationing had been in effect for nine months and the price of bread had been reduced, Ferguson once more examined the diets of eight of the families. She found that the gap was widening with four of the families doing very well, but the other four doing very badly. One family provided a good example of Winter's hypothesis that war conditions created a healthier working class. In 1915-6, the father earned 30s. as a tram conductor and the children were 'very poorly nourished.' In 1917, the father was in the army, the mother was receiving a separation allowance from the government, an additional allowance from Glasgow Corporation, and the oldest girl worked at the Post Office. The income had tripled to 90s. and the family enjoyed a far greater standard of living. According to Ferguson: 'The improvement in the appearance of this family is remarkable. All are much stronger, and the four youngest, who were rickety, have learnt to walk. The mother took the whole family to the coast in the summer.' However, the four families who did not fare well exhibited a common pattern of deterioration and malnutrition: the wage earner suffered chronic ill-health, the income was irregular, the debts were large, the food insufficient, and the children 'very rachitic.'<sup>77</sup>

In December 1918, Ferguson once more returned to the homes of five of the families to assess the effect on their diets of the government's compulsory rationing of meat, sugar and fats. The five families comprised three men, five women, and twenty-six children. Ferguson listed the

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<sup>76</sup> Ferguson, 'Family Budgets,' 132-6, *Glasgow Herald*, 2 May 1917, p. 9e.

<sup>77</sup> Margaret Ferguson, 'A Further Study of the Diets of the Labouring Class Families in Glasgow in War Time,' *Proceedings of the Royal Society of Edinburgh*, 38 (1918): 40-47.

occupations of the three men as labourer, shoemaker, and seaman, but did not mention if the two 'missing' men were in the military forces, or deceased. She found that four of the five families consumed less fat than before, and that the fifth family, which increased its consumption of fat, had experienced 'a considerable advance of income during the war,' allowing them to afford the full meat ration as well as 'unrationed' sausages and bacon. Ferguson noticed 'very economical purchasing' in the other four families whose diets included 'almost no milk, no eggs, little meat, little fish, and little fat. The energy came chiefly from bread and potatoes.' In considering the adequacy of the diets, she found that in three of the families the children were 'undersized,' falling markedly below the British Association Anthropometric Committee's averages for height and weight. The children in one family were 13% below, in another 21.5% below, and in the third family, 25.5% below the Committee's averages.

One family illustrated the tremendous impact of a wage-earning child. The diet of the family, comprising the mother and six children under age fifteen, varied considerably during the war, which was 'entirely due to changes in income.' When the eldest girl left school and found a job, the energy value of the family's diet improved; however, when the girl had to leave her work 'to help her mother at home, the Government Separation Allowance was then their only source of income, and this fact at once made its influence felt on the food.' Ferguson concluded that the government's rationing scheme had had little effect on the diets of these working class families, stating that: 'The problem narrows down to one of poverty. Only one family could afford even the freedom of choice allowed by the rationing scheme.'<sup>78</sup> Poverty, not rationing, prevented some families from obtaining a food supply that was sufficient to maintain their health and ensure normal growth.

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<sup>78</sup> Margaret Ferguson, 'The Diets of Labouring Class Families During the Course of the War,' *Journal of Hygiene*, 18 (1920): 409, 411, 415, 414, 415.

Ferguson's study has presented a disconcerting picture which firmly refutes Winter's argument that the war raised nutritional levels amongst the poorer sections of the population. While Winter admits that not all working class families enjoyed better food and health, Ferguson's study nevertheless presents a much bleaker picture than the one he has drawn. Furthermore, Ferguson's study contradicts Dewey's assertion that 'on balance, it would seem that working class diets in wartime were almost the same in energy value by 1918 as they had been in 1914.'<sup>79</sup> A post-war expert in nutritional studies, Annabel Tully, surveyed the data from Ferguson's four wartime studies and summarized them in tabular form, showing a significant decrease in protein and fat content as families relied increasingly on bread and potatoes for their sustenance:

	<i>Calories</i>	<i>Protein</i>	<i>Fats</i>
1915-16	2,897	93.1	84.2
Feb. 1917	2,661	87.4	69.4
Nov. 1917	2,808	87.5	76.7
Dec. 1918	2,680	89.6	64.6

In addition, Tully compared the results from Ferguson's study with the pre-war study of Glasgow working class diets, which revealed an even greater pattern of deterioration in nutritional intake:

	<i>Calories</i>	<i>Protein</i>	<i>Fats</i>
1911-12	3,163	110	83

Tully concluded: 'It is thus manifest that those people who have all along been able to procure a bare subsistence supply of food have, since 1915, been subjected to a continued and increasing condition of underfeeding.'<sup>80</sup>

Ferguson's study proved that some working class families did not procure a sufficient supply of food during the war to maintain their health, yet it has received scant attention in the historical literature. Winter refers to it only in a footnote, and while Dewey discusses it briefly, he

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<sup>79</sup> Dewey, 209.

<sup>80</sup> Annabel M.T. Tully and Elizabeth M. Urie, 'A Study of the Diets and Economic Conditions of Labouring-Class Families in Glasgow in June, 1922,' *Glasgow Medical Journal* 98 (1922): 360.

dismisses it as being small, and ‘not necessarily representative of larger working class groups.’<sup>81</sup> It is impossible to know to what extent the families in Ferguson’s study were representative of the larger Clydeside working class community. When Ferguson started the study in 1915, she visited 600 families, with the object of comparing the diets of rachitic families with non-rachitic families in order to identify the specific dietary deficiency that caused the disease. However, she had difficulty finding a sufficient number of families with non-rachitic children to form part of her study, noting: ‘It was only with the greatest difficulty and throughout a period of several months that Sister Eleanor could find among the patients at the Dispensary of the Royal Hospital for Sick Children a sufficient number of non-rachitic families for the needs of the present research, whereas any number of rachitic children were available.’<sup>82</sup> We do not know if wartime conditions in Glasgow, notorious as a centre for rickets, increased or decreased the incidence of the disease among the city’s working class children. We do know, however, that in the immediate post-war years, rickets continued to be a subject of intense investigation and concern in Glasgow, which suggests that wartime conditions had done nothing to eradicate the disease in the city, and may indeed have caused its increase.<sup>83</sup>

### **Stale Bread, No Potatoes, and TB Meat**

We have seen that a number of working class families in Glasgow were not able to procure a sufficient level of nourishment during the war years. We will now examine the quality

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<sup>81</sup> Dewey, 205, 218, note 37; Winter, 328, note 11. Both historians have looked only at the first part of Ferguson’s study, in *Proceedings of the Royal Society of Edinburgh*, 37 (1917): 117-36.

<sup>82</sup> Margaret Ferguson, *A Study of Social and Economic Factors in the Causation of Rickets*, (MRC SRS no. ; London, 1918), 85.

<sup>83</sup> *Fifth Annual Report of the MRC, 1918-19*, Cmd. 412 (1919), 55-7; *Sixth Annual Report of the MRC, 1919-1920*, Cmd. 1088 (1920), 59-63. N. Paton, ‘Observations on the Cause of Rickets,’ *British Medical Journal*, 7 Dec. 1918. For Glasgow’s notoriety, see Chalmers, *Health of Glasgow*, 226. One health visitor noted: ‘when working in Glasgow I could go into house after house and find two, sometimes three children, not walking or having gone off their feet on account of rickets (N. Paton and L. Findlay, *Poverty, Nutrition and Growth* (MRC SRS no. 101, 1926), 329.

and the quantity of food that was available in Glasgow for the working class. Between late-1916 until mid-1917, when Britain was experiencing an acute shortage of cereal, and the Food Controller was urging its citizens to 'eat less bread,' Scotland suffered a severe potato famine which jeopardized the health of its working class population. Scotland's potato famine calls into question Dewey's contention that Britain managed to maintain the consumption of bread and potatoes during the war.<sup>84</sup>

Bread, 'the staff of life' for the British working class, increased in price but deteriorated in texture, taste and quality during the war. This most important item in the working class diet doubled in price from 5 ½ d. for a 4lb. loaf in July 1914 to 11d. in March 1917.<sup>85</sup> In early 1917, as a result of German submarine attacks and a poor wheat crop, stocks of cereal in Britain were very low, causing Lord Devonport, the Food Controller, to call on the population to adopt a system of voluntary rationing by restricting their weekly consumption of 'the necessities of life' to 4lbs. of bread and 2 ½ lbs. of meat. The Royal Society severely criticized Devonport's action, pointing out that the working class could not afford to buy 2 ½ lbs. of meat, and needed far more than 4 lbs. of bread for sustenance. Its Food (War) Committee stated: 'It is impossible to ration bread without the gravest danger to the health and efficiency of the poorer element of the population,' adding that bread supplied less than one-third of the energy of middle class food consumption, but formed more than one half of the energy of the working class diet. They also pointed out that as the price of bread and other foods rise, 'the poor man actually buys more bread than before, because it remains still the cheapest food available to him.'<sup>86</sup> This statement certainly applied to the families in Ferguson's study whose bread intake increased from 7.13lbs. per man per week in 1915 to 9.89lbs. in 1917, well beyond the limits recommended by the Food

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<sup>84</sup> Dewey, 207.

<sup>85</sup> CAB 24/7, GT 155.

<sup>86</sup> CAB 24/7, GT 196, Mar. 1917.

Controller.<sup>87</sup> To further encourage a decrease in the consumption of bread, the government passed a Bread Order at the end of February, requiring that all bread sold must be at least twelve hours old. In Glasgow, the daily bread supplies were 'about sixteen hours old' when they reached the shops, and on Mondays they were 'nearer forty hours old.'<sup>88</sup> The Glasgow working class, therefore, were forced to eat the largest and most important item of their meagre diet in a stale condition.

At the same time as it imposed the Bread Order, the government also made it compulsory for bakers to adulterate flour with a variety of other cereals such as rice, maize, beans and semolina. This led to complaints about a 'medley of ingredients,' and suspicions over the quality of the 'workers' bread.' There were claims that the flour had been milled too much with the result that too many nutrients had been extracted. In August 1917, the labour councillor, Manny Shinwell, complained to Glasgow Corporation about 'bread adulteration,' and submitted samples of bread to the Medical Officer of Health, claiming they were 'injurious to health,' and demanding that he send them for chemical analysis.<sup>89</sup> It is possible, as some historians have suggested, that 'war bread' was actually more nutritious than the starched white bread of the pre-war years. It is also possible that unscrupulous bakers, in their search for profits, did add unwholesome admixtures, thereby reducing the nutrient value of the bread.

Of far greater concern than the price and indeterminate quality of stale bread, however, was the potato famine in Scotland which lasted from late 1916 until the middle of 1917. While all of Britain faced a shortage of potatoes in early 1917, the situation in Scotland was far more severe than in the other parts of the U.K. Next to bread, potatoes were the most important item of working class diets, but an excessively steep rise in prices, from 5d. per stone in the autumn of

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<sup>87</sup> According to Ferguson, only two out of ten families had heard of the system of voluntary rations and both had ignored it (Ferguson, 'Family Budgets, 132).

<sup>88</sup> *Glasgow Herald*, 27 Feb. 1917, p. 6f; 28 Feb. 1917, p. 6h; 13 Mar. 1917, p. 5b.

<sup>89</sup> *Glasgow Herald*, 24 Aug. 1917, p. 6e; 13 Mar. 1917, p. 5b; 4 Jan. 1918, p. 6d.

1915 to 2s. 6d. per stone in June 1916, eliminated them from working class diets.<sup>90</sup> Apart from the price rises, potatoes were simply not available in Scotland. In January 1917, *The Glasgow Herald* was reporting on ‘Scotland’s depleted stocks’; by February the crisis had deepened, with ‘only one day’s supply’ left in Glasgow; and in March the newspaper announced that the outlook was ‘hopeless.’<sup>91</sup> The paper further pointed out that Glasgow, as an important centre of munitions production, was in great need of potatoes to feed its working population.<sup>92</sup>

The cause of Scotland’s potato famine was more complicated than crop failures and the army commandeering supplies for the troops, factors that affected all of Britain. Under circumstances that are unclear, the provisions of the Seed Potatoes Order of 1917 depleted Scotland almost entirely of her stock of eating potatoes as vast quantities of Scottish potatoes were turned over to ‘seed.’<sup>93</sup> The Scottish potato famine was so acute that it became a matter for discussion at the War Cabinet, a confidential document informing them that the action of the Food Controller ‘has practically turned all Scottish potatoes into seed potatoes, to the great benefit of England, but the further prejudice of Scotland.’<sup>94</sup> A meeting on 12 March which included the Scottish Secretary, the Minister of Agriculture, and the Food Controller decided that almost one third of the Home Army’s requisition should be diverted to Scotland.<sup>95</sup> When Lord Derby, the Secretary of State for War in the Lloyd George coalition, heard of this plan, he fulminated against the thought of the Army relinquishing any of its supplies ‘for the benefit of

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<sup>90</sup> Ferguson, ‘Family Budgets,’ 127, 125. In January 1917, the price remained at 2s. 6d. per stone (*Glasgow Herald*, 20 Jan. 1917, p. 6g). A stone is fourteen pounds in weight.

<sup>91</sup> *Glasgow Herald*, 20 Jan. 1917, 20 Feb. 1917, p. 7g; 21 Feb. 1917, p. 7g; 22 Feb. 1917, p. 7g; 27 Feb. 1917, p. 9g; 7 Mar. 1917, p. 8e.

<sup>92</sup> *Glasgow Herald*, 20 Feb. 1917, p. 7g.

<sup>93</sup> *Glasgow Herald*, 27 Feb. 1917, p. 9; 20 Jan. 1917. See also CAB 24/12, GT. 637, ‘Seeds Section.’ The Food Production Department of the Board of Agriculture purchased 6,150 tons of potatoes from Scotland, 8,500 tons from Ireland, and 500 tons from England.

<sup>94</sup> CAB 24/8, GT 220, Mar. 1917.

<sup>95</sup> CAB 24/7, GT 154, Mar. 1917, [p. 247].

Scotland.<sup>96</sup> A decision was finally made on 21 March to send potatoes to Scotland from England, and the Scottish Secretary announced to the country that supplies would soon be arriving.<sup>97</sup> By the end of March, however, the expected relief supplies had failed to materialize, and when they did start to trickle in, the consignments were very much short of the expected amounts. By the end of April, only 1,471 out of a promised 4,000 tons had arrived, and there were reports that even these meagre supplies were of a very poor quality.<sup>98</sup>

The women of Govan and Partick, politicized by the rent strikes in 1915, mounted several protests against Glasgow's potato famine. At the beginning of March 1917, under the leadership of Mary Barbour, one of the leaders of the rent strikes, 200 women marched from Govan to a nearby farm, and then on to a potato merchant, demanding supplies.<sup>99</sup> A few weeks later, several hundred women, accompanied by their children and with babies in arms, formed an orderly 'potato procession,' marching through Glasgow's streets to the City Chambers, determined to voice their concerns to the town council. The majority of councillors voted against admitting a deputation, and the Lord Provost further incensed the women by telling them 'to go home and look after their children.'<sup>100</sup>

Mounting frustration drove the women to try a different tack, and at the beginning of May, Jessie Ferguson, another ringleader of the rent strikes, led a crowd of between 400-500 women on an attack on a lorry carrying potatoes along the Crow Road in Partick. As a result of the attack, five women, including Ferguson, appeared in Police Court, showing signs of deep indignation rather than contrition. According to their solicitor:

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<sup>96</sup> CAB 24/7, GT 195, Mar. 1917.

<sup>97</sup> CAB 24/8, GT 283, Mar. 1917; *Glasgow Herald*, 21 Mar. 1917, p. 7b.

<sup>98</sup> *Glasgow Herald*, 30 Mar. 1917, p. 8c; 31 Mar. 1917, p. 3d; 28 Apr. 1917, p. 6c.

<sup>99</sup> *Glasgow Herald*, 3 Mar. 1917, p. 6e.

<sup>100</sup> *Glasgow Herald*, 16 Mar. 1917, p. 8d; *The Bulletin*, 16 Mar. 1917, p. 1. Two weeks later, the Council refused to hear a similar demonstration (*Glasgow Herald*, 30 Mar. 1917, p. 8c).



They were of opinion that there was something far wrong with the food distribution of the country. They along with others had approached Glasgow Corporation, and even the Government, pointing out the unfairness of the distribution, but they got no satisfaction. They then felt themselves obliged to make a public protest.

Taking account of the 'peculiar circumstances,' the Court dismissed the charge.<sup>101</sup>

Potatoes are an excellent winter food, containing a high degree of heat-giving starch which is most valuable in cold weather. As the winter of 1917 was unseasonably cold, with biting winds and frost in March, and even a snowstorm in April, the lack of potatoes must have had a very detrimental effect on the standard of nourishment among large sections of Glasgow's working class.<sup>102</sup> According to Margaret Ferguson, the scarcity of potatoes accounted for a difference of 239 calories per man per day between the studies of February and November 1917. When supplies were restored in the autumn of 1917, she calculated that consumption increased by nearly five times.<sup>103</sup>

Scotland's potato famine could not have failed to have a significant impact on working class health. In June 1917, Glasgow's Medical Officer of Health reported a large increase in cases of scurvy, a vitamin C deficiency disease, in the city. While under normal conditions, three or four cases were admitted to hospital each year, between mid-February and mid-June 1917 alone, fifty cases had been admitted, one of which had resulted in death. Although most of the admissions were residents of model lodging-houses, the report noted that cases were also occurring 'among the general community.' The recent shortage of potatoes was blamed for the outbreak.<sup>104</sup> While Dewey's statement that there was no serious reduction in the consumption of

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<sup>101</sup> *Glasgow Herald*, 30 May 1917, p. 8e; 26 May 1917, p. 6e. The women claimed that the raid was not organized, but the presence of a bell, knives, scissors, and net bags suggests some planning. This is only one example of the ways in which the issue of food politicized women in Glasgow, where there is little evidence to support Dewey's claim of public acquiescence in the policies of food control.

<sup>102</sup> *Glasgow Herald*, 7 Mar. 1917, p. 8e; 16 Apr. 1917, p. 8f.

<sup>103</sup> Ferguson, 'A Further Study,' 46.

<sup>104</sup> *British Medical Journal*, 7 July 1917, p. 28; *Glasgow Herald*, 28 Jun. 1917, p. 6f.

potatoes may have been true for England, it most certainly did not apply to conditions in Scotland.<sup>105</sup> Moreover, it is difficult to sustain Winter's 'better fed' argument when, for almost one year of the war, the second most important source of energy to working class families was absent from their diet.

One item of food for sale in working class districts of Glasgow during the war, which may have been detrimental to health, was sterilized, tuberculosis-infected meat. Before the war, the carcasses of tuberculosis-infected cattle had been condemned as unfit for human consumption and destroyed. During the war, however, in the midst of the national food economy drive, some enterprising veterinary surgeons, including Mr. Trotter of Glasgow Corporation, considered this a needless waste of food and began experiments to make it safe. By cutting from the infected carcasses portions of meat, which were not affected by the disease, and submitting them to high temperatures in a steam sterilizer, Trotter declared that the meat was safe for human consumption.<sup>106</sup> The sale of sterilized meat generated a considerable amount of controversy. While the Scottish Local Government Board was convinced of 'the safety and suitability of this sterilized tubercular meat as an article of diet for *poor* people,' and sanctioned its sale in several Scottish cities, others were highly critical.<sup>107</sup> Socialist leaders Dollan and Wheatley attacked the practice of selling 'diseased meat for the poor'; the Consumers' Council unanimously condemned it; and some doctors expressed concern that it would increase the number of cases of bovine tuberculosis amongst the Scottish poor.<sup>108</sup> It is not known whether members of Glasgow's working class suffered harmful side effects as a result of the consumption of TB meat, although it

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<sup>105</sup> Dewey briefly mentions, in parenthesis, that the Scottish potato crop failed in 1916, but he does not discuss the complications or seriousness of the situation (Dewey, 205).

<sup>106</sup> *Glasgow Herald*, 20 Mar. 1916, p. 9d. The system of sterilization, known as the Friebank method, originated in Germany at the end of the nineteenth century (*British Medical Journal*, 2 June 1917, 746-7).

<sup>107</sup> *Forward*, 12 Apr. 1919, p. 5 (italics in original); *British Medical Journal*, 2 June 1917, 746-7.

<sup>108</sup> *Labour Leader*, 18 May 1916; *Forward*, 2 June 1917, p. 2; *Forward*, 12 Apr. 1919, p. 5; *British Medical Journal*, 2 June 1917, 746-7.

does provide another example of the deteriorating quality of food available to them. Meat was a luxury that few working class families could enjoy during the war, and the only meat that they could afford may well have been harmful to their health.

To strengthen his argument for a well-paid, well-fed working class, Winter consistently uses a 'best case scenario' approach. For example, to illustrate his point that working class women had vastly increased incomes, which enabled them to buy food far beyond their pre-war budgets, he refers to Robert Roberts's account of working class life in Salford. Roberts describes one woman, the 'wife of a former foundry worker, both making big money now on munitions' who wanted to buy 'tins o' lobster,' when before the war she was 'grateful for a bit o' bread and scrape.'<sup>109</sup> During the war, similar accounts circulated in Glasgow of munitions workers' families earning so much money they were buying fur coats and pianos.<sup>110</sup> We have to wonder, however, to what extent the purchasers of pianos and lobster meat were representative of working class women. It is highly likely that they formed only a tiny fragment, and that Jeanie Riley was far more representative of working class women's management of their wartime incomes. There is no evidence that Jeanie, who worked as a munitions worker and had a separation allowance, indulged in luxury items. Rather, she used any little bit of extra money to send postal orders and packages of food, cigarettes, and small articles of clothing to her husband in France. In one letter, she wrote:

Dear Jamie, I am sorry I could not send any more.... messages (groceries) are getting so dear here that it takes us all our time to buy them they are getting dearer every week. I don't know how the poor people will like it if it gets much dearer.<sup>111</sup>

In another letter, Jeanie apologized for 'only sending the 2s. postal order as I had 14s. for rent and things are getting so dear here.' Jeanie must have been typical of a large number of Glasgow's

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<sup>109</sup> Robert Roberts, *The Classic Slum*, quoted in Winter, 240.

<sup>110</sup> *Glasgow Herald*, 22 Jan. 1916, p. 9d; 7 Feb. 1916, p. 4e; 17 Apr. 1916, p. 4f.

<sup>111</sup> Courtesy of People's Palace Museum, Glasgow (parenthesis added).

wage earning women for whom it was a case of making ends meet rather than having money to indulge in extravagances, and she forms a necessary corrective to Winter's tale of lobster tins.

Moreover, rather than enjoying vastly increased incomes as a result of war conditions, many working class families continued to labour under the strain of large debts. Families with irregular incomes had to borrow money to put bread on the table during lean times. While some were able to borrow from family and neighbours, others had to resort to illegal moneylenders who, in Glasgow, charged interest at the rate of 3d. per shilling per week, which works out at the astonishing rate of 1300 % per annum.<sup>112</sup> With a large percentage of their income going to pay off debts, some families were left with little to pay for food and fuel. According to one contemporary account of working class budgets: 'pressing debts had to be met, coal and gas and other necessities had to be obtained, and then by hook or by crook a certain amount had to be got for food.'<sup>113</sup> Not all working class families were able to take advantage of full employment during the war to enjoy a higher standard of living and a better standard of nutrition.

Some historians have suggested that that the establishment of communal kitchens during the war helped working class families to obtain nutritious food at a reasonable price. According to Woollacott, the kitchens allowed the working woman 'to obtain basic meals for herself and her family easily and affordably.'<sup>114</sup> There is no evidence that this was the case in Glasgow where the Corporation never embraced the idea of communal kitchens, leaving it to voluntary organizations such as the Women's Legion to put schemes into action. In May 1917, the Legion opened its kitchen, dispensing 100 dinners a day. By September 1918, it was still in existence, but the number of dinners had not expanded beyond the original 100, a figure that would have done little to relieve the burden on the city's working class women to provide a decent meal for their

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<sup>112</sup> *Glasgow Herald*, 20 Jan. 1917, p. 3h.

<sup>113</sup> Paton and Findlay, *Poverty, Nutrition and Growth*, 160.

<sup>114</sup> Woollacott, 63.

families.<sup>115</sup> As with the efforts of most middle class women's benevolent associations, the number of beneficiaries was very small, and made barely a dent on the city as a whole.

To substantiate his argument of a healthy, well-fed civilian population, Winter claims that there was a large expenditure on school meals in Scotland during the war, rising from £7 million per annum in 1912-13, to £29 million in 1917-18, and to an astonishing £52.2 million the following year. Unfortunately, it is not possible to investigate further this extraordinary claim as Winter has provided the wrong Scottish Record Office reference.<sup>116</sup> Winter's figures are even more perplexing given that a leading Scottish historian has shown that there was a deep-rooted opposition in Scotland to the state feeding of school children before the war.<sup>117</sup> Rather than Scotland boasting a vigorous band of healthy school children, there is evidence to suggest the reverse was true. We have already mentioned the high incidence of rickets among Glasgow's working class children. In addition, the Medical Officer of the Glasgow School Board issued a report showing that there were 7,495 necessitous children in a poor physical condition in Glasgow schools in 1917-1918.<sup>118</sup> We find further evidence that many Scottish children were failing in health in the institution of malnutrition hospitals for children in Scotland during the war. In his survey of the provisions in Scotland for the physical welfare of mothers and children, Dr. Leslie Mackenzie, the Medical Officer of the Scottish Local Government Board, noted that 'thousands of children suffer from malnutrition,' and he supported the new movement for the provision of malnutrition hospitals and wards to nourish children who were not able to thrive in the environment of their own homes.<sup>119</sup> Winter's arguments are consistently weaker when

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<sup>115</sup> *The Bulletin*, 9 May 1917, p. 4; 7 Sept. 1918, p. 5.

<sup>116</sup> Winter, 241, 329, n. 32, (SRO HH 4/2 is a reference to police files).

<sup>117</sup> Ian Levitt, *Poverty and Welfare in Scotland, 1890-1948* (Edinburgh, 1988), 56-9.

<sup>118</sup> *Forward*, 3 May 1919, p. 1; HC Deb. v. 103, c. 834-6, 20 Feb. 1918.

<sup>119</sup> W.L. Mackenzie, *Scottish Mothers and Children*, (Dunfermline, 1917), 613-6, at p. 615. See also, 24<sup>th</sup> *Annual Report of the LGB(Sc) for 1918*, Cmd. 230 (1919), p. xxiii.

applied to conditions in Scotland, which is further complicated by his inaccurate use of Scottish evidence.

The ability of the working class population to maintain an adequate standard of nutrition during the war depended on two conditions: their capacity to earn decent wages, and the availability of nourishing food. Many working class families in Glasgow had difficulty achieving both of these conditions. Families whose financial position improved as a result of the war were able to maintain an adequate standard of nutrition, providing, of course, that a sufficient quantity and quality of food was available. But families who were unable to take advantage of the plentiful opportunities for employment in Clydeside suffered a decline in real income, and were unable to maintain a sufficient level of nutrition.

### **Mortality Rates and Housing Conditions**

An examination of further points in Winter's 'Paradox of the Great War' reveals that his arguments are consistently weaker when applied to circumstances in Scotland in general, and to Glasgow in particular. His well-argued section on the decline in infant and maternal mortality rates has far greater relevance to England than to Scotland. Indeed, Winter's entire discussion of the decline in female mortality during the war is based on evidence from England and Wales alone. According to Winter, a lack of similar Scottish data prevented him from including Scotland in his analysis.<sup>120</sup> However, if such data had been available, it would have presented a less optimistic view as Scotland's maternal mortality rate actually increased in the first decades of the twentieth century, and was considerably higher than that of England and Wales.<sup>121</sup> In 1918, the Scottish Local Government Board deplored Scotland's 'unenviable position' of 7 maternal deaths

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<sup>120</sup> Winter, 117-141, 119.

<sup>121</sup> A.K. Chalmers, *The Health of Glasgow, 1818-1925* (Glasgow, 1930), 258; M.W. Flinn, *Scottish Population History* (Cambridge, 1977), 417.

per 1,000 births, compared to England where the rate was 3.9 deaths.<sup>122</sup> A maternal mortality rate almost twice that of England's is one indicator that Scotland had a poorer standard of health than its southern neighbour.

Winter believes it is the decline of infant mortality in wartime Britain that provides 'the most clear-cut indication of the surprisingly favourable effects of war conditions on the survival chances of the civilian population of this country.' Once more, however, when examined closely the picture is far less 'clear-cut' in Scotland than it is in England. Winter readily acknowledges that Scotland's infant mortality rate declined at a slower pace than England's, but he nevertheless points out that 'the most striking gains in infant survival rates' in Scotland occurred during the First World War.<sup>123</sup> While the figures support his assertion, the comparative decline between Scotland and England and Wales was cause for sombre reflection among Scottish health authorities. During the latter half of the nineteenth century, the infant mortality rate in Scotland had been significantly lower than that of England, but the accelerated pace of decline in England and the far slower pace in Scotland led to an unprecedented situation. According to Dr. A.K. Chalmers, Glasgow's MOH: 'The relationship of these rates in both countries is reversed and for the first time the rate for England and Wales is lower than that for Scotland.'<sup>124</sup>

Table 1: Infant Mortality Rates in Britain, 1861-1920

	1861-1870	1871-1880	1881-1890	1891-1900	1901-1910	1911-1920
England & Wales	154	149	142	153	128	100
Scotland	121	123	119	128	116	106

Source: *Glasgow Medical Officer of Health, Annual Report for 1922*, p. 7.

<sup>122</sup> *25<sup>th</sup> Annual Report of the LGB(Sc) for 1919*, Cmd. 824 (1920), p. xxiii.

<sup>123</sup> Winter, 141-3.

<sup>124</sup> *Report of Glasgow MOH for 1922*, 7-8.

Whatever factors were responsible for the decline in infant mortality in the first two decades of the twentieth century, they were much more active in England and Wales than they were in Scotland.

Winter further states that the decline was in part due to a reduction in the incidence among infants of gastro-enteritis, which he believes provides additional proof of better nutrition among the population. His reference, however, although he does not make it clear in his text, relates only to England and Wales.<sup>125</sup> Scottish health authorities were well aware that Scotland did not share this reduction. Chalmers acknowledged that ‘the reduction of infantile diarrhoea’ was a major factor in England’s diminishing infant mortality rate, but, he noted, ‘there is no evidence that any corresponding differential factor has been operative in Scotland.’<sup>126</sup> Rather, Scotland experienced an increase in the incidence of infantile diarrhoea, prompting the Scottish Local Government Board in 1917 to issue a circular to local authorities on the ‘excessive mortality among children’ arising from diarrhoea, and urging them to appoint additional health visitors to deal with the situation.<sup>127</sup>

Dr. Leonard Findlay, a physician at Glasgow’s Hospital for Sick Children, conducted an intensive study during the war into the causes of infant mortality. Writing in 1917, and including data up to 1916, Findlay showed that the number of infant deaths in Glasgow from gastro-enteritis was approximately the same in 1916 as it had been in 1913.<sup>128</sup> Findlay doubted that wartime wages were a factor in the decline of infant mortality, pointing out that in 1912, a year of great industrial unrest and financial hardship, the infant death rates dipped in most of the large towns of Scotland and England. Rather, he believed the decline in infant mortality was due to a

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<sup>125</sup> Winter, 144. Winter takes his information from Wallis Taylor, ‘The Changing Pattern of Mortality in England and Wales. I. Infant Mortality’ (Winter, 322, note 37).

<sup>126</sup> *Report of Glasgow MOH for 1922*, 8.

<sup>127</sup> *British Medical Journal*, 14 July 1917, 63.

<sup>128</sup> Leonard Findlay, ‘The Causes of Infantile Mortality,’ in *The Mortalities of Birth, Infancy and Childhood* (MRC SRS no. 10, 1917), Chart 6.



decrease in epidemic diseases such as measles and whooping cough, writing that the importance of these diseases and their complications ‘as a cause of death during the first year of life cannot be over-estimated.’<sup>129</sup>

The most difficult part of Winter’s thesis to accept, in relation to wartime Clydeside, is his claim that the greatest gains in the infant survival rate occurred in the most overcrowded urban areas. By examining the effect of war conditions on infant mortality in working class communities, Winter finds that the wartime decline was ‘significantly greater’ in the areas which had high pre-war rates, and that the ‘greatest wartime gains were registered in areas of inadequate urban housing in the pre-war period.’<sup>130</sup> Once more we find an inaccurate use of Scottish evidence by Winter, who has based his statement, in part, on chapter ten of Mackenzie’s volume on Scottish mothers and children. While Winter has moulded statistical tables to show an impressive wartime decline in the infant mortality rates of certain towns, Mackenzie’s chapter actually discusses the ‘destructive effect’ of Scotland’s working class housing on ‘the general death-rate, the infantile death-rate, the tuberculosis death-rate, and the death-rate of children from one to five.’<sup>131</sup> Not one sentence of Mackenzie’s chapter indicates satisfaction, or complacency, with the effect of bad housing on Scotland’s mortality rates. Winter also gives an erroneous impression of conditions in Coatbridge, which he uses as an example of an industrial district with a steep decline in infant mortality, stating that it was ‘well in advance of the Scottish pace of improvement in infant health.’<sup>132</sup> This optimistic statement flies in the face of contemporary evidence concerning Coatbridge. In his study of infant mortality, Findlay also singled out

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<sup>129</sup> Findlay, 38-9. Mackenzie provided a telling perspective into the prevalence of measles and whooping-cough (and the life-preserving purpose of the Carnegie report) by noting that in Scotland, 1911-1915, ‘the two diseases together killed 16,801 children under five, say sixteen battalions’ (Mackenzie, 276).

<sup>130</sup> Winter, 147-152.

<sup>131</sup> Mackenzie, 177, 180. Mackenzie’s volume does not express any satisfaction with Scotland’s infant mortality rate; indeed, the purpose of his report was to find better ways to deal with the preservation of maternal and infant life in Scotland.

<sup>132</sup> Winter, 148. Winter provides no source of evidence for this claim.

Coatbridge, but it was to point out that it was the only major town in Scotland to experience an *increase* in its infantile mortality rate in 1916, which Findlay attributed to an epidemic of measles in the town.<sup>133</sup>

In Winter's view, insanitary housing conditions did not detrimentally affect the chances of survival of most infants, as long as they were well fed. This view is unsustainable when applied to Glasgow's housing situation, which was already deplorable before the war, and which deteriorated rapidly during the war. Since 1911, there had been a continuous decrease in the number of houses available for occupancy in the Clyde district, which was accelerated by the great wartime influx of munitions and shipyard workers into the area. The population of Glasgow alone increased by 10%, rising from the 1911 Census figure of 1,008,487 to an estimated 1,112,704 in 1918. By May 1915, there were almost no unoccupied houses in any of the major industrial towns of the district.<sup>134</sup> As the number of available houses decreased, the number of households taking in lodgers increased by 235%, from 1,270 in 1915 to 4,251 in 1918.<sup>135</sup>

Glasgow's overcrowded housing conditions shocked the London-based officials at the Ministry of Munitions who wrote:

Two-thirds of the population of Glasgow were stated to live in one-room apartment houses in 1917; many of these single rooms were occupied by two families, and cases even occurred where each family took in lodgers, resulting in conditions better imagined than described.<sup>136</sup>

Concurrent with the rise in the number of overcrowded houses was a rapid deterioration in the standard of housing as the high cost of materials and labour prevented the construction of new

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<sup>133</sup> Findlay, 38. See Findlay's Chart III in appendix. Mackenzie's volume verified Coatbridge's increased infant mortality rate in 1916 (Mackenzie, 263). Mackenzie's volume, rather than showing 'the improvement of infant health in Scotland,' suggested areas of maternal and infant welfare that were desperately in need of improvement.

<sup>134</sup> Scott and Cunnison, 164, 168.

<sup>135</sup> *Report of Glasgow MOH for 1914-1919*, 146.

<sup>136</sup> *OHMM*, 5, v, 55.

houses and the repair of existing ones.<sup>137</sup> There was also an increase in the number of houses without water supply, and in the number of drains blocked or in a state of disrepair.<sup>138</sup> Furthermore, as there was ‘literally no other accommodation available,’ the local authorities ceased to exercise their powers under the Public Health Act and re-opened houses which they had condemned and closed as unfit for human habitation.<sup>139</sup>

It is hard to imagine that such a massive deterioration in housing conditions did not adversely affect the health of the population in general and the incidence of infantile deaths in particular. Winter cannot ignore the countless studies, conducted by health authorities and historians alike, on the association between Scotland’s insanitary, overcrowded housing, the spread of disease, and the prevalence of poor health and high death rates.<sup>140</sup> Certainly, neither Findlay nor Chalmers believed that a substantial reduction in the infant mortality rate of Glasgow could be achieved until the local authorities had tackled the problem of the city’s slum housing.<sup>141</sup> Years of experience in dealing with children from the slums of Glasgow had underlined Findlay’s belief in the detrimental influence of a poor environment on infant health. He wrote:

Not infrequently children are admitted to hospital suffering from marasmus, enteritis, or broncho-pneumonia and recuperate, and are given back to the parents almost normal children, only to return with a relapse in a matter of a month or even less. Again recovery may take place, but it is less likely; and should the child be dismissed well, it may even return a third time, when it will almost certainly die.<sup>142</sup>

In Glasgow, some working class homes were death traps for the children who lived in them.

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<sup>137</sup> Scott and Cunnison, 166-8.

<sup>138</sup> *Report of Glasgow MOH for 1914-1919*, 145.

<sup>139</sup> Paton and Findlay, 13; *OHMM*, 5, v, 39; Scott and Cunnison, 168.

<sup>140</sup> J.B. Russell, ‘On the “Ticketed Houses” of Glasgow,’ *Proceedings of the Philosophical Society of Glasgow*, (1888): 2-24; Enid Gaudie, *Cruel Habitations* (London, 1974); Cunnison and Gilfillan, *Glasgow*, 478; M.A. Crowther, ‘Poverty, Health and Welfare,’ in *People and Society in Scotland*, vol 2, (Edinburgh, 1990), 265-289. The Scottish Local Government Board attributed part of the country’s high maternal mortality rate to insanitary housing conditions, which had ‘intensified to an alarming degree’ during the war, constituting ‘a constant source of danger’ to women, as it was ‘well nigh an impossibility’ in some cases to achieve a necessary standard of cleanliness during their confinement. LGB(Sc), *Annual Report for 1919*, Cmd. 824 (1920), p.xxiii.

<sup>141</sup> Findlay, 40-1; Chalmers, *Health of Glasgow*, 216.

<sup>142</sup> Findlay, 41.

There may have been another reason, hidden from public view, contributing to the wartime decline of the infant mortality rate. It is impossible to know about the incidence of abortion, a subject even to this day shrouded in secrecy, but it is arguable that the pressures of war forced more women to make that choice than under peacetime conditions. The financial necessity of keeping a job may have been a factor. Writing in *The Lancet* in 1918, a female physician at a national filling factory talked about pregnant women employees taking 'female pills' or falling downstairs to induce a miscarriage. An advantage of retaining pregnant women in the workforce was that:

The worker will not be tempted to take drugs or to use other means to provoke miscarriage if she is free from the fear of losing work where she can earn a good wage.... I have heard of cases in which the worker when dismissed from a factory because of her condition has, in order to obtain bare necessities, gone rag-picking on some refuse heap and got into such a bad condition that both she and the child have been in great danger at the time of the actual confinement.<sup>143</sup>

Given the bleak alternatives facing pregnant women, it is hardly surprising that some chose the route of abortion. Other wartime conditions may have increased the incidence of abortion; for example, a newly widowed soldier's wife who already had too many young children to feed, or a married woman carrying an illegitimately conceived child and expecting her husband home from the Front. According to the wartime report of Glasgow's MOH, over one-third of the mothers of illegitimate children born in the city during the war were widows and married women.<sup>144</sup> A greater incidence of abortion would alter infant mortality rates, especially if the mothers lived in insanitary, overcrowded areas where babies were less likely to survive the first year of life.

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<sup>143</sup>Mary Deacon, 'Employment of Pregnant Women in Munitions Factories,' *The Lancet*, 7 Sept. 1918, 312. See also Rhoda H.B. Adamson, 'The Work of a Department for Employing Expectant Mothers in a Munition Factory,' *British Medical Journal*, 21 Sept. 1918, 309-10; Malcolm Brown, *The Imperial War Museum Book of the First World War* (London, 1991), 209.

<sup>144</sup> *Report of Glasgow MOH for 1914-1919*, 28.

This section has raised doubts about the relevance of Winter's thesis to conditions in Glasgow during the war. It is very difficult, if not impossible, to determine the state of health of a nation, region, or city, given the large number of complicated variables involved, and it is tempting to rely upon the most readily available form of historical information: copious and consistently presented statistics. We must, however, be wary of an over-reliance on statistics, which can often present a misleading view and rarely tell the full story. In 1917, Findlay cautioned his readers about the reliability of official statistics, stating that the annual reports of the Registrar General created an 'erroneous impression' by attributing one-third of all infant deaths in Scotland, to 'prematurity and congenital defects.' In his experience as a physician at Glasgow's Hospital for Sick Children, Findlay found a much smaller proportion of infant deaths was due to prematurity and congenital conditions, and a much larger proportion to environmental factors.<sup>145</sup>

More recently, the Scottish historian Sydney Checkland has questioned the validity of 'approach[ing] health history on a national basis, using aggregates and averages.' Although the study of national birth and death rates has its advantages, as it allows historians to comment about a society and compare it to others, it also has its shortfalls as a concentration on national averages clouds 'the really bad aspects' of certain geographic regions. Checkland points out that by the 1930s, even Major Greenwood, the Ministry of Munitions' leading medical statistician, challenged the use of national statistics, claiming that they cast 'an arithmetic veil' which obscured the 'real phenomena.'<sup>146</sup> Has Winter's 'Paradox of the Great War' cast an 'arithmetic

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<sup>145</sup> Findlay, 41-2. Winter acknowledges that 'inaccuracies in cause-of-death diagnosis ... undoubtedly exist,' causing a 'wide margin of error' in statistical analysis (Winter, 118). In the last year of the war, the Registrar General's official figures recorded that fully one half of all infant deaths in Glasgow was due to 'congenital causes' and 'other causes' (*25<sup>th</sup> Annual Report of the LGB(Sc) for 1919*, Cmd. 824 (1920), 23).

<sup>146</sup> Sydney Checkland, 'British Urban Health in General and in a Single City,' in *Health Care as Social History: the Glasgow Case*, ed. Olive Checkland and Margaret Lamb (Aberdeen, 1982), 189

veil' over the conditions on Clydeside? We think it has. Supported by an impressive display of statistical analyses, Winter has presented a picture of good health that is at variance with much evidence concerning many working class families in Clydeside during the war. Admittedly, Glasgow was notorious as a centre of urban deprivation and slum housing, but it nevertheless forms an important test case for Winter's hypotheses, especially given his insistence that the poorer sections of the working class and the most overcrowded centres of urbanization gained the most as a result of war conditions. Winter's thesis of the 'Paradox of the Great War,' while very persuasive when related to conditions in England and Wales, is not sustainable when applied to conditions in Scotland in general, and Clydeside in particular.

## **Conclusion**

### **The Post War Position of Women Munitions Workers in the West of Scotland**

The west of Scotland suffered badly in the post-war industrial collapse, experiencing the highest levels of unemployment in Britain. For the demobilized women workers employment prospects were bleak. Immediately after the cessation of hostilities the government provided an 'out-of-work' donation of 25s. a week but its administration became increasingly restrictive, discouraging women from applying and forcing them into positions as low-paid domestic servants. When women resisted the return to the bondage of domestic service, they were accused of being too choosy, preferring to live off of government doles while good jobs lay vacant. While Glasgow newspaper had applauded women munitions workers during the war, marvelling at their skill, cheerfulness, unflinching patriotism and impressively high output, in the post-war years they treated them with indifference and even hostility, referring to them as the 'idle rich' and railing against their refusal to work and their abuse of the out-of-work donation. Women munitions workers, who had been indispensable during the war, became objects of public animosity in the immediate post war years.

Historians have debated the post-war status of British women, discussing their political emancipation, their newfound assertiveness, enhanced sense of self-worth, and their patriarchal exclusion from the workforce.<sup>1</sup> But these were concerns of secondary importance to women in the west of Scotland. By 1924, with jobs almost non-existent, relief funds exhausted, and

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<sup>1</sup>Braybon, chapter 7; Woollacott, 105-12 and passim; Thom, *Nice Girls and Rude Girls*, chapter 9; Kozak, chapter 9; Marwick, *The Deluge*, chapter 3.

applications for poor relief rising at an alarming rate, the main issues confronting demobilized women munitions workers on Clydeside were abject poverty and the onset of malnutrition.

### **Mass Unemployment and the Out-of-Work Donation**

As we have seen, the government had spent huge amounts of money in erecting several munitions factories in the Clydeside area, notably the national projectile factories and the Scottish Filling Factory at Georgetown. In late 1918, with signs that the war was finally running its course, there were expectations among the factories' management that the government would further utilize their investments and convert the factories to peacetime production. In anticipation, the Georgetown board of directors drew up a carefully considered and comprehensive plan for the factory's post war use. The area, encompassing 540 acres, was almost entirely covered with workshops, stores and magazines. In addition, there were eight small hostels and 108 'well-designed and constructed' timber houses, each consisting of two or three rooms, a kitchen, scullery, coal cellar and larder: magnificent, spacious accommodation, indeed, compared to the average west of Scotland dwelling place. The directors' proposal was to use the large stores and workshops as factories and convert the smaller stores into additional housing. With some work and little expenditure, Georgetown had the potential of becoming an 'industrial township' accommodating 20,000 – 25,000 people. Municipal amenities were already on site including electric lighting and power, ample roads, two 'fully equipped' hospitals, two massive laundries, a cinema, four large canteens accommodating 1,600 – 2,500 each, and one canteen with seating for 4,000 which could be converted into a 'concert hall.' There were also several gardens and allotments on the land, which was sufficiently fertile to make it suitable for future development in market gardening.<sup>2</sup>

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<sup>2</sup> *OHSFF*, 34-9.



The release in 1917 of the Royal Commission on Housing in Scotland had revealed the appalling state of Scottish housing, which, the Georgetown directors pointed out, was bound to worsen when the demobilized soldiers and sailors returned home. The conversion of Georgetown to a self contained community presented a ‘great opportunity’ of meeting the ‘clamant need’ of housing some discharged and disabled men, as well as providing them with an occupation ‘which the Nation owes to those who have suffered and been broken in its defence.’ But it was not to be. Although the board took their proposal to Churchill, then Minister of Munitions, who passed ‘favourable’ comment on it, the plan never materialized.<sup>3</sup> Rather, the War Department took over the site, using it as an ordnance dump for ‘north Britain,’ and providing employment, not for several thousand but for a few hundred people, who had the work of inspecting, sorting, and preparing for disposal massive quantities of redundant munitions.<sup>4</sup>

At Cardonald NPF, there was a similar dashing of high hopes. Walton also had devised a plan to convert the factory to post war production, declaring himself committed ‘to the responsibility of establishing Cardonald and other factories... as great industries which shall carry us forward, I hope, into a peaceful future.’<sup>5</sup> At the end of November 1918, he travelled to London to submit his proposals to government officials, but returned to Glasgow as disappointed as the Georgetown board of directors, with the announcement that Cardonald was to close in less than a month.<sup>6</sup> Other appeals to Churchill, from Scotland’s Director of Munitions to the Scottish Trades Union Congress (STUC), urging him to convert the government factories to peacetime production, fell on deaf ears.<sup>7</sup> Within months of the Armistice, the factories were closed and

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<sup>3</sup> *OHSFF*, 34-9. The directors even suggested a possible industry for the new township: hand tufted carpets, indicating consideration of the physical disabilities of the returning men.

<sup>4</sup> HC Deb. vol. 120, c. 673-4, 29 Oct. 1919.

<sup>5</sup> *Govan Press*, 29 Nov. 1918, supplement.

<sup>6</sup> *Govan Press*, 20 Dec. 1918.

<sup>7</sup> PRO MUN 5/364/1121.3/1, Memorandum on Scotland’s War Activities, Appendix 11, ‘Demobilization,’ 8 Nov. 1918; STUC, Parliamentary Committee Minute Book, 20 Dec. 1918.

boarded up, one observer noting that Glasgow's Mile End NPF, 'once so busy with its teeming hundreds of workers, was now so deadly quiet,' reminding him of 'an extensive graveyard' <sup>8</sup>

There were also expectations that the government, as it had acted so swiftly and decisively in mobilizing the large female munitions workforce, would take similar action in organizing post war employment for them. At the 1918 STUC annual conference, Agnes Adams of the NFWW, protested against the 'government's delay in issuing its demobilisation proposals affecting women workers.' Pointing out women's great contribution to the war effort, she feared that mass unemployment would be their post war reward.<sup>9</sup> Another observer, pondering the future of the 2,500 Cardonald women workers, could not believe that it was the government's intention 'to simply dismiss these girls' and throw them on a highly competitive labour market which would compel them to accept 'an altogether inadequate living wage.' It seemed to the writer incomprehensible that 'the Government have not taken into consideration the position of these girls and formed some scheme whereby they may be helped to obtain work and earn an honest livelihood,' and he urged the authorities to reveal its resettlement plans for women in order to assuage their growing anxieties and 'misgivings.'<sup>10</sup> A few weeks after the Armistice, however, signs of disillusionment were setting in, one report noting that 'prospects of systematic, satisfactory and expeditious demobilization of women munition workers are remote in the extreme.'<sup>11</sup>

Very soon after the end of hostilities, munitions women were discovering that the lavish admiration and effusive gratitude heaped upon them during the war did not ensure them a place in the post war industrial world. Indeed, there was a rapid devaluation of their wartime accomplishments. One government functionary expressed his exasperation at listening to people

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<sup>8</sup> *Beardmore News*, 26 Mar. 1919.

<sup>9</sup> STUC, *21<sup>st</sup> Annual Report*, 1918, 50-1.

<sup>10</sup> *Govan Press*, 8 Nov. 1918, letter 'Reconstruction and Cardonald.'

<sup>11</sup> *Govan Press*, 29 Nov. 1918.

‘speaking of women workers as though they were infant prodigies.’ Rather than revealing that women had the ability to perform skilled processes, the nerve to tackle fast moving machinery, and the strength to shift tons of metal every day, in his opinion, war work had only ‘shown once more that female hands are adaptive, imitative, deft, and swift.’<sup>12</sup>

The fears of the skilled men, that the women would take their places after the war, were never realized as the restoration of jobs to demobilized servicemen proceeded in most places with very little friction. Throughout the war, the government had repeatedly pledged to restore skilled craftsmen to their pre-war positions, and in 1919 it fulfilled its promises with the Restoration of Pre-War Practices Act. Besides, the machine skills that the women had acquired at munitions making were not easily transferable to peacetime production. Indeed, the machines, which Glasgow women had manned so capably in the district’s projectile factories, were, according to a Ministry engineer, ‘more or less useless for civil purposes after the war.’<sup>13</sup> Moreover, many women, especially the wives or relatives of the enlisted men, did not want to keep their jobs and were happy to relinquish them to the returning men. In Glasgow, according to Scott and Cunnison, ‘a large proportion of the women quietly resumed their domestic occupations and the men went back into the jobs which had been “kept warm” for them by their women-folks.’<sup>14</sup>

Indeed, Clydeside employers exhibited ‘little inclination’ to retain their cadres of female labour.<sup>15</sup> There were a few exceptions, of course, notably Sir William Beardmore and Co., who continued to employ female labour at East Hope Street in the manufacture of the Hamworthy Pump, a relatively ‘simple’ device suitable for ‘divisional labour.’ Although the ASE district committee complained that only skilled men should be employed on the pump, they backed down

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<sup>12</sup> Dewar, *The Great Munitions Feat*, 318, 316-7.

<sup>13</sup> *War Cabinet Committee on Women in Industry, Appendices, Summaries of Evidence, etc.* Cmd. 167 (1919), 56; Cole, *Trade Unionism and Munitions*, chapter 12; More, 33-4.

<sup>14</sup> Scott and Cunnison, 128.

<sup>15</sup> Scott and Cunnison, 100, note 1.

when the firm threatened to discontinue production and close the factory, which would have resulted in the layoffs of the ASE men who set the tools for the women. The following year, Beardmore was resolutely continuing to use female labour on the manufacture of the pump, and the ASE were no closer to winning their case.<sup>16</sup>

Beardmore's retained small pockets of women workers in other parts of its widespread empire, but the temporary and unskilled nature of their work mollified the men, preventing them from raising objections. For example, in 1919, the company converted part of the Temple Fuse Factory at Anniesland into a Hand and Arm Department for the manufacture of 'mechanical hands' and artificial limbs for disabled servicemen. The short-term market for the products, however, ensured the closing of the department and the redundancy of the women within a few years.<sup>17</sup> In addition, seeing possibilities in the commercial operation of rigid airships, Beardmore's continued construction of the 'R' class airships at Inchinnan airfield, where they employed women on scraping and cleaning the oxen skins that were used to line the gas bags. By 1921, however, airship flights were no longer a viable commercial proposition, and the works at Inchinnan were closed.<sup>18</sup> A few women, therefore, managed to hold onto their wartime jobs for a short duration, but they formed a tiny fraction of the large, bustling female workforce that had made munitions in the west of Scotland.

The vast majority of women munitions workers were laid off immediately at the cessation of hostilities, causing widespread social and economic dislocation in the district. Although the government-controlled factories gave the women two week's wages in lieu of notice, hoping that 'the hardship will be more cheerfully borne,' the effects of mass unemployment were quickly felt. In Scotland, post war employment prospects for women were

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<sup>16</sup> *ASEMJR*, Oct. 1919, 25; Feb 1920, 35; May 1920, 33.

<sup>17</sup> *Beardmore News*, Oct. 1920, 6.

<sup>18</sup> Hume and Moss, 129-30, 162-3; Gilles and Wood, 48; *The Bulletin*, 19 Feb. 1919.

extremely bleak. While Lobnitz saw a number of employment opportunities for discharged men in shipbuilding, locomotive building, housing construction and public works, for the Scottish female munitions workforce, which numbered 100,000 at demobilization, he thought 'the outlook is less clear.'<sup>19</sup> As he anticipated, it was much more difficult for women than for men in the Glasgow area to find post war employment. Indeed, in the first few months of peace there were more than twice as many women registered at the city's employment exchanges than there were men. In the last week of February 1919, there were 12,500 men and 26,500 women on Glasgow's unemployment registers, representing a sharp rise from the previous week's figures. A month later, the numbers had risen yet again to 14,300 men and 30,700 women.<sup>20</sup> There were approximately 46,830 women in Scotland receiving the out-of-work donation at that time, showing that the great bulk of Scotland's unemployed women were located in the Clydeside region.<sup>21</sup>

Local newspapers encouraged former women munitions workers to return to their pre-war employment, considering it a measure of 'patriotism' to take up their old jobs again. They even tried to make jobs of drudgery sound like important, enticing work: 'skilled women are wanted badly in the textile and clothing industries. Capable laundry workers can pick and choose their jobs. Dressmakers, tailoresses, milliners, and all sort of needlewomen are at a premium.'<sup>22</sup> But some women who applied for reinstatement in their pre-war places of employment received harsh treatment and frequent rejection. One Paisley textile firm told a group of former Cardonald workers, who had journeyed from Govan looking for work, that 'in no circumstances could those in search of employment be seen at any time other than 6 a.m. to 8 a.m.' At another firm, the

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<sup>19</sup> PRO MUN 5/364/1121.3/1, Memorandum on Scotland's War Activities, Appendix 11, 'Demobilization,' 8 Nov. 1918.

<sup>20</sup> *Evening News*, 25 Feb. 1919; *Glasgow Herald*, 24 Mar. 1919, p. 5g.

<sup>21</sup> *Committee of Inquiry into the Scheme of Out-of-Work Donation, Minutes of Evidence*, Cmd. 407 (1919), 92. Hereinafter referred to as *Evidence to Out-of-Work Donation Inquiry*, Cmd. 407 (1919).

<sup>22</sup> *Bulletin*, 19 Dec. 1918.

women 'were catechized at length as to where they had been, the wages they'd been earning, what they'd been paying for lodgings and if married or single.' A fortunate few were finally offered employment but at considerably reduced wages, some accepting jobs at 20s. a week, despite the fact that they were paying 25s. a week for lodgings.<sup>23</sup> Other firms, including branches of the Scottish Cooperative Wholesale Society, simply refused 'point blank' to reinstate former workers.<sup>24</sup>

Immediately after the Armistice, the government had instituted a temporary scheme of unemployment benefit for discharged civilian war workers and returning servicemen. The 'out-of-work donation' amounted to 25s. a week for women over eighteen years of age, with additional allowances for dependent children, for a maximum period of thirteen weeks.<sup>25</sup> The work of administering the out-of-work donation to the tens of thousands of Scottish unemployed was so immense that the Ministry of Labour had to hire additional staff. Between November 1918 and April 1919, the staff at Scottish unemployment offices increased from 184 to 302 permanent workers, and from 303 to 1,546 temporary workers.<sup>26</sup> They also had to set up a number of temporary employment exchanges including one in a large lecture hall at the Royal Technical College, where on Fridays, a 'constant stream of women' filled the benches in the hall, lined up along the corridors, and spilled onto the street outside, waiting to collect their donation, often until 7 p.m. in the evening.<sup>27</sup>

The out-of-work donation was a judicious move on the part of the government to mitigate the extent of economic disruption following demobilization, but it was badly administered and grudgingly given. It also had the unintended effect of galvanizing and hardening public opinion

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<sup>23</sup> *Govan Press*, 29 Nov. 1918.

<sup>24</sup> *Govan Press*, 10 Jan. 1919. The SCWS former workers would likely be textile workers rather than shop assistants.

<sup>25</sup> Jane Lewis, *Women in England, 1870-1950*, 189-91.

<sup>26</sup> *Evidence to Out-of-Work Donation Inquiry*, Cmd. 407 (1919), 92.

<sup>27</sup> *Bulletin*, 11 Jan. 1919; Tuckwell Collection, 702/110.

against the former munitions women. By early 1919, a tremendous sea change had taken place in public attitudes. From being heroines of the war and saviours of the nation, they plummeted in public estimation to being ‘scroungers,’ ‘loafers,’ and the ‘idle rich.’<sup>28</sup> ‘Scandal of the Girl Slacker’ screamed one Glasgow newspaper headline, claiming: ‘State Benefit Keeps Munition Workers From Accepting Jobs.’<sup>29</sup> Another report soundly castigated the girls for abusing the ‘government’s generosity,’ stating: ‘Many citizens “hae their doots” about the wisdom of an indiscriminate dole to tens of thousands of women who but for the idle benefit might be more energetic in their quest for a fresh job, if not indeed less particular as to its nature.’ No one grudged the donation to ‘the lads who had answered the call of King and country,’ the report noted, ‘but with regards to the women war workers, matters are different.’ They had clearly been spoiled by the high wages they had earned doing munitions work and now they had the effrontery to turn down perfectly good jobs ‘if they did not happen to be exactly what they wanted.’ Moreover, it was particularly galling to see ‘a huge queue of strong, able-bodied young women line up each week to receive their 25s. while scores of citizens are at their wits’ end to get domestic help.’ The one bright prospect, the report noted, was that for many women the thirteen weeks’ benefit would expire at the beginning of March, and it looked forward to seeing ‘the effect upon the market.’<sup>30</sup>

The writer was about to be disappointed, however, as rather than curtailing its ‘generosity’ to the women, the government decided to extend it by an additional thirteen week period, although it reduced the rate of payment to 15s. a week. At the same time, they tightened the conditions under which the women qualified for the donation, putting a heavy onus on them

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<sup>28</sup> *Glasgow Weekly Record*, 15 Mar. 1919, in Tuckwell Collection, 702/115; *Evening News*, 25 Feb. 1919. Compare the panegyric one government Minister delivered to the Commons in 1916: ‘indeed, it is not too much to say that our Armies have been saved and victory assured largely by the women in the munition factories’ (HC Deb. vol. LXXXV, c. 1700, 15 Aug. 1916).

<sup>29</sup> *Glasgow Weekly Record*, 15 Mar. 1919, in Tuckwell Collection, 702/115.

<sup>30</sup> *Evening News*, 25 Feb. 1919; *Bulletin*, 19 Dec. 1918.

to show they were unable to find 'suitable' employment. They also instituted courts of referees to deal with appeals from those who had been denied the benefit. Increasingly, women found that employment exchanges disallowed their claims for the donation, and on appeal to the courts of referees, a large percentage, as high as 80%, were again turned down, mostly on grounds of 'refusal to accept suitable employment.'<sup>31</sup>

The 'Scandal of the Girl Slacker' was by no means confined to the Glasgow area. Rather, it caused a storm of protest at the national level, prompting the government to form a special committee to inquire into it and other alleged irregularities under the out-of-work donation scheme. Between May and July 1919, the committee heard evidence from a number of witnesses and published two reports.<sup>32</sup> One Scottish witness appearing before the inquiry was typical in his condemnation of the scheme. Henry Keith, a town councillor and ex-provost of Hamilton, gave evidence on behalf of the Lanarkshire Employment Committee, of which he was deputy chairman. The out-of-work donation, he informed the inquiry, was a social evil 'liable to create malingering in the decadent classes.' When it was first instituted the administration was very 'lax,' and the experience of receiving '25s. per week for doing nothing has had a demoralizing effect on many.'<sup>33</sup> Moreover, there were a high number of fraudulent claims, especially among charwomen. In Lanarkshire alone, excluding the city of Glasgow, there were at least 1,500 women under suspicion of applying for the donation 'without real necessity.' At the present time, however, he was pleased to report that his committee was taking a harder line, applying the regulations more stringently and refusing the donation in a great many cases. At the committee's

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<sup>31</sup> Andrews, 211-3; *Glasgow Weekly Record*, 15 Mar. 1919, in Tuckwell Collection, 702/115.

<sup>32</sup> Andrews, 211-3. See Committee of Inquiry into the Scheme of Out-of-Work Donation, *Interim Report* (Cmd. 196), *Final Report* (Cmd. 305), *Minutes of Evidence* (Cmd. 407).

<sup>33</sup> *Evidence to Out-of-Work Donation Inquiry*, Cmd. 407 (1919), 110-1.



meeting last week, he informed the inquiry, they had sixty claims, but, 'I do not think out of those sixty we granted ten. They were all more or less doubtful cases.'<sup>34</sup>

Fortunately for the unemployed women, a few weeks after Keith's presentation of evidence, a deputation from the STUC appeared before the inquiry to give the women's side of the story. The deputation was headed by William Shaw, Chairman of the STUC Parliamentary Committee and Secretary of the Glasgow Trades Council, and included Eleanor Stewart, the Scottish Women's Organizer of the Workers' Union and an outspoken, feisty advocate for the rights of working women. Although the STUC deputation was concerned with all aspects of the administration of the out-of-work donation, the bulk of its testimony concerned women workers whom it felt were being treated particularly harshly. Employment exchanges, they complained, were refusing to grant the women the donation even though there was no change in their circumstances. In addition, they were offering domestic service positions to women who had no experience of the work and no desire to be domestic servants. Stewart complained about the prevailing attitude which held that 'every woman should be glad to take domestic service, because some day she would be married and it would give her experience to help her look after her own house.' Stewart protested:

We have to suffer such humiliation. We do not go there as women to be told whether we are going to have a husband or not; we go there for fair treatment and for justice, and to decide whether...suitable employment is offered or not.<sup>35</sup>

The deputation, however, reserved its sharpest criticism for the courts of referees. Set up to assess appeals from workers who had been denied the donation, the courts comprised three members: a chairman, a representative of employers, and one of the workers. First, the STUC criticized the composition of the courts of referees, noting that the chairman was 'in all cases' an

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<sup>34</sup> *Evidence to Out-of-Work Donation Inquiry*, Cmd. 407 (1919), 115, para. 2163.

<sup>35</sup> *Evidence to Out-of-Work Donation Inquiry*, Cmd. 407 (1919), 152, para. 2830.

employer, which made it difficult for the worker assessor to argue the case of the applicant against two employer assessors.<sup>36</sup> In addition, when hearing appeals from women workers, courts of referees included female assessors, who, in Stewart's opinion, were 'incompetent,' ignorant of industrial conditions, and not qualified to sit in judgement of working women. Although female assessors were supposed to represent trade unions, she suspected they were from the Women's Citizen Association, a recently formed middle class body whose aim was to educate women on their new rights of citizenship. Rather than showing sympathy to female applicants, these women were as hard-headed as the men in turning down appeals.<sup>37</sup>

Second, the STUC objected to the courts of referees conducting their hearings in private, which allowed the chairmen to make arbitrary decisions and ride roughshod over the women, often cutting them off in mid-sentence, and causing them to come out of the hearing 'broken hearted.'<sup>38</sup> They also pried into the 'domestic affairs' of the women which, Stewart complained, had 'no relation whatsoever' to the business of the court and was particularly objectionable in the case of war widows.<sup>39</sup> Workers, the deputation claimed, had received much fairer treatment at the munitions tribunals, which had been conducted in public, ensuring uniformity of decision-making, and accountability on the part of the chairman. In addition, munitions tribunals had given workers a voice by allowing them the opportunity to call up in front of the court employers or foremen who had maligned or victimized them.<sup>40</sup> The courts of referees, by contrast, subjected

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<sup>36</sup> *Evidence to Out-of-Work Donation Inquiry*, Cmd. 407 (1919), 154, para. 2855.

<sup>37</sup> *Evidence to Out-of-Work Donation Inquiry*, Cmd. 407 (1919), p. 157, para. 2882-5; p. 151, para. 2826. The Glasgow Women's Citizen Association had close links to the former NUWW (*The Bulletin*, 13 Sept. 1918).

<sup>38</sup> *Evidence to Out-of-Work Donation Inquiry*, Cmd. 407 (1919), 155, para. 2865.

<sup>39</sup> *Evidence to Out-of-Work Donation Inquiry*, Cmd. 407 (1919), p. 156, para. 2873; p. 154, para. 2845.

<sup>40</sup> *Evidence to Out-of-Work Donation Inquiry*, Cmd. 407 (1919), p. 154, para. 2848; p. 155, para. 2866.

the women to questions about their private life, routinely rejected their claims, and caused them to 'suffer dire poverty in silence.'<sup>41</sup>

The STUC deputation concluded that there was 'a tightening up process going on which shows quite clearly that women are being put off donation on the slightest pretext.'<sup>42</sup> They also maintained that a campaign was afoot to discredit the donation, aiming to restrict it or abolish it altogether. The great publicity given to 'bogus claims' in the press had misled the public who never got to hear of the destitute women whose genuine claims the courts of referees had rejected. The deputation told the inquiry that they 'could go on for hours giving you cases of absolute hardship so far as women are concerned.'<sup>43</sup> Stewart gave several examples including one of a young unmarried mother who had refused to take domestic service work: '[she] was willing to take daily work so as to be able to get home at night, but her donation was stopped, and she came to me in a state of absolute distraction.' Stewart had not only to argue the woman's case in the court of referees, she also had 'to endeavour to do something to place a covering over her head.'<sup>44</sup> The recent drop in unemployment figures for women, she further pointed out, which many regarded 'with great satisfaction,' did not indicate a decrease in unemployment, but rather a rejection of the courts of referees and a refusal to go on the unemployment register. She told the inquiry of the many women who had come to her in desperation, willing to 'do anything rather than go back before the court of referees.'<sup>45</sup>

For many working class Glasgow women, the war had come full circle. From their experience with the SSFA in 1914 and 1915 to their experience before the courts of referees in

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<sup>41</sup> *Evidence to Out-of-Work Donation Inquiry*, Cmd. 407 (1919), 155, para. 2865.

<sup>42</sup> *Evidence to Out-of-Work Donation Inquiry*, Cmd. 407 (1919), 156, para. 2866.

<sup>43</sup> *Evidence to Out-of-Work Donation Inquiry*, Cmd. 407 (1919), 156, para. 2870.

<sup>44</sup> *Evidence to Out-of-Work Donation Inquiry*, Cmd. 407 (1919), 152, para. 2832.

<sup>45</sup> *Evidence to Out-of-Work Donation Inquiry*, Cmd. 407 (1919), 157, para. 2876. The Inquiry Committee took notice of Stewart's evidence, asking subsequent witnesses if they had knowledge of similar mistreatment of women workers before the courts of referees. See para. 2903-4, 2914-5, 2955.

1919, impoverished women had to suffer the indignity of appearing before a panel of middle class representatives, who made rude inquiries into their private lives and passed judgement on them, holding the power to grant them a short financial reprieve or to consign them to absolute penury and certain starvation. The difference was that in 1914-1915, women had approached the SSFA to relieve the financial hardships caused by their husbands enlisting in the forces; whereas in 1919, many women who appeared before the courts of referees were widows or had husbands disabled by their war wounds.

### **Return to Domestic Service**

At the 1918 STUC annual conference, Agnes Adams of the NFWW, echoing the sentiments of other labour women, had called upon the government to institute training schemes for discharged women war workers 'to equip them for new occupations.' Emphasising the great contribution to the war effort of women who 'have borne the burden of overtime and night work for a long period,' it was not unreasonable to suggest that the government take steps to ensure the women decent post war employment prospects.<sup>46</sup> The government eventually did set up training schemes, but rather than equipping women for 'new occupations,' they trained them in the age-old, low paid, unskilled work of domestic service.

In late 1919, the Ministry of Labour asked the Glasgow College of Domestic Science to organize training programs for unemployed war workers. Emphasising that the matter was 'urgent,' the Ministry gave the 'carefully selected' students, who were ex-munitions workers 'of the domestic servant class,' an allowance of 20s. a week while on the twelve week training course. They also made 'a promise to take up domestic service... a binding condition' of their

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<sup>46</sup> STUC, *21<sup>st</sup> Annual Report, 1918*, 50-1.

contract.<sup>47</sup> The training scheme's curriculum provides an idea of the backbreaking nature of domestic service work, and an explanation for the reluctance of many to enter into it. As well as a broad range of food preparation and cookery instruction, the women also learned the fine points of laundry work which included:

The arts of washing, starching and ironing; the care of household linen and napery; the 'doing up' of prints, muslins, cretonnes, casement curtains; the laundering of delicate dress fabrics like silk and voile; the arrangement of the 'family wash'; the removal of stains; and other useful knowledge.

The instruction in the housewifery department, which formed a large part of the 'duties of the general servant,' was equally exhaustive and exhausting:

It begins with elementary sweeping and dusting, and proceeds to the morning work of a sitting room; the setting of breakfast, lunch, afternoon tea, and supper tables; clearing away and washing up; the morning work of bedrooms; the cleaning of silver, cutlery, boots and shoes; the care of carpets; the polishing of furniture; window cleaning; turning out a room; economy of gas and fuel; and the care of household utensils.

And if that was not enough, a study was also made of 'the science of systematic house-cleaning – daily, weekly, and periodical.'<sup>48</sup> On completion of the course 'in a satisfactory manner,' the College awarded the students a 'certificate of good conduct and competence.'<sup>49</sup> Women who had mastered machines in engineering workshops were now scrubbing sinks and polishing silverware.

Despite the heavy schedule and the unpopularity of the work, there was no shortage of women keen to get a place in the programme and receive the training allowance of 20s. a week. In January 1920, as the first batch of forty women were about to complete the course, the Ministry sanctioned funding for training an additional 100 women which brought a 'rush of

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<sup>47</sup> Glasgow Caledonian University (GCU), Glasgow and West of Scotland College of Domestic Science (GWSCDS), Minute Book, 22 Oct. 1919, 10 Dec. 1919; *The Bulletin*, 14 Jan. 1920, p. 12. I am grateful to Carole McCallum, archivist at Glasgow Caledonian University, for providing this information.

<sup>48</sup> *The Bulletin*, 14 Jan. 1920.

<sup>49</sup> GCU, GWSCDS, Minutes, 22 Oct. 1919.

applicants.’<sup>50</sup> However, it is unlikely that the government training programs brought much relief to the area as the few hundred women who attended the college would have done little to solve Glasgow’s problem of 30,000 unemployed women. During the war, women had proved themselves capable of learning a number of different skills, even to the extent of breaching the hallowed ground of skilled engineers. After the war, however, government-training programs were not designed to broaden their employment opportunities; rather they offered working class women training in a job that guaranteed them a life of servitude and drudgery.

Despite the ‘rush of applicants’ anxious to get a place on the government’s training schemes, many unemployed women refused to accept domestic work. Dissatisfaction with low wages, long hours, and high-handed treatment from the ‘mistress’ of the household caused many women to reject domestic service outright or regard it as a job of last resort. Some of those who did consider a position were no longer willing to tolerate the conditions of a live-in maid constantly at the beck and call of a middle class mistress, and demanded improvements in the work and wages of pre-war domestic service. One indignant middle class woman told of her fruitless search for a servant at a Glasgow employment exchange where there were 500 unemployed women on the register. Of the 500, she found ‘only one girl was prepared to take the situation at her own figure of 17s a week...with additional stipulations regarding “outings.”’ Refusing to meet ‘these exacting demands,’ the woman left the exchange ‘still maidless.’<sup>51</sup> This newfound assertiveness of prospective domestic servants, which would have been almost unthinkable before the war, raises an interesting point about the changes the war had brought upon working class women.

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<sup>50</sup> *The Bulletin*, 14 Jan. 1920. Drake estimated that in January 1920 there were about 3,000 women in Ministry training schemes in all of Britain (Drake, *Women in Trade Unions*, 108).

<sup>51</sup> *Glasgow Herald*, 15 Jan. 1921, p. 5e.

### **The Changes Wrought by War**

Historians have argued that war was a liberating experience for women, claiming that even those who faced unemployment on the cessation of hostilities had benefited as they had become more assertive and conscious of their rights, and less willing to tolerate poor treatment and exploitation. Other historians have suggested, however, that for many women the war brought no lasting change. While there was an increase in the number of women in the 'pink collar' jobs of shop assistants and office workers, most women had no option but to return to their pre war positions. Others have pointed out that changes were different for middle class women than they were for working class women. In recognition of women's part in winning the war, the government legislated changes to the political, social and economic status of women. The 1918 Representation of the People Act gave the vote to women property owners over the age of thirty, the 1918 Parliament (Qualification of Women) Act allowed women to stand for Parliament, and the 1919 Sex Disqualification (Removal) Act opened up to women all professions except the church, the stock exchange and the civil service. Unfortunately, none of the above brought benefit to women of the working class. The only act that affected them was the 1918 Restoration of Pre-War Practices Act by which the government fulfilled its wartime pledges to the trade unions and ensured the removal of women from the 'men's' jobs.<sup>52</sup>

Others have suggested that wartime experience with labour unions had allowed working class women to gain a better understanding of the power of organization, which they took with them into their post war working lives, making them more ready to organize and take industrial action than they had been before the war.<sup>53</sup> Writing shortly after the war, Drake was the first to expound this view, noting that although the female membership of general unions fell

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<sup>52</sup> Woollacott, 182-3, and passim; Braybon, chapter 7; Thom, chapter 9; Neal A. Ferguson, 'Women's Work: Employment Opportunities and Economic Roles, 1918-1939,' *Albion*, 7 (1975): 55-68.

<sup>53</sup> Sheila Lewenhak, *Women and Trade Unions* (London, 1977), 166-7.

dramatically on the closure of the munitions factories, when the dismissed women found new employment they not only rejoined the unions but also brought in new recruits. According to Drake, the 'impulse to organize' was evident in the years immediately following the war in the traditional women's trades of needlework, laundry work, waitressing and even domestic service. Women, she declared, had learned two important lessons as a result of their wartime industrial experience: the power of organization, and the value of their own labour.<sup>54</sup>

The experience of the NFWW bears out Drake's account. In the immediate aftermath of the war, the women's union experienced a large drop in their membership figures in all areas of Britain, with the Scottish branches falling by 41%. Mrs Lauder, the Scottish organizer, spoke of their discouragement at 'watching great branches which had been built up with such care and energy collapse when great munition works closed down.'<sup>55</sup> Shortly afterwards, however, there were signs that women were taking the ethos of unionization into their new spheres of employment. The NFWW post war annual report noted 'great progress' in a number of new areas which was 'directly traceable to the work of shop stewards and active members who left munition factories at the end of the war.'<sup>56</sup> In 1919 and 1920, the NFWW in Scotland organized branches of textile workers, laundry workers, jam makers, dressmakers, hosiery workers, handkerchief hemmers, as well as women in the confectionary trades and mineral water factories, agitating for improvements in their pay and working conditions.<sup>57</sup>

There was even a movement to organize domestic servants leading to the formation of a Domestic Servants Union which boasted forty branches and over 4,000 members in the first few months after the war. The aim of the union was to raise the status of domestic service by

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<sup>54</sup> Drake, *Women in Trade Unions*, 108, 181.

<sup>55</sup> NFWW, *10<sup>th</sup> Annual Report for the Years 1918 and 1919*, 7.

<sup>56</sup> NFWW, *10<sup>th</sup> Annual Report for the Years 1918 and 1919*, 7, 5. For a first hand account of determined organization of confectionary workers in Glasgow, with midnight meetings for women who did not finish work until 11 p.m., see Lewenhak, 166-7.

<sup>57</sup> *Woman Worker*, Feb 1920; Apr. 1920, 4; Aug-Sep. 1920, 16; Feb. 1921, 10.



enforcing the women's demands for a minimum weekly wage, improved hours of work, and the abolition of the maid's uniform.<sup>58</sup> In January 1919, Jessie Stephen,<sup>59</sup> Secretary of the Domestic Workers' Section of the NFWW, announced: 'It is recognized by the majority of fair-minded people that there will have to be revolutionary changes in the status and conditions of domestic service.'<sup>60</sup> Stephen was well qualified to speak on the subject having been a servant herself in Glasgow where, in the early months of the war, she had formed a fledgling domestic servants union, which had gained affiliation to the Glasgow Trades Council.<sup>61</sup> After the war, however, she found her goal of organizing a servants' union was considerably easier, noting that her NFWW section was 'organizing domestics by the thousand.'<sup>62</sup> Some branches exhibited a high degree of activity; for example, in 1919 the members of the Edinburgh branch took part in the city's May Day parade, carrying their caps and aprons on poles to show that it was their intention 'to abolish those shameful badges of servility and slavery.'<sup>63</sup> It appears, however, the organization of domestic servants was a short-lived venture, probably due to the isolated and unregulated nature of domestic service which made it difficult to achieve effective union organization. Nevertheless, their brief flush of activity was an indication that women had picked up some important lessons in industrial organization as a result of their wartime work experience.

There was also a vigorous movement in Glasgow to organize workers in the catering trade which culminated in a waitress strike in 1920. Taking advantage of the huge surfeit of female labour, restaurants and tearooms in the city exploited their staff by paying them abysmally low wages and subjecting them to wretched working conditions. Working from 8:00 a.m. to 8:00

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<sup>58</sup> Andrews, 214-5. See also Woollacott, 185.

<sup>59</sup> **Jessie Stephen** (1893-1979) born in London, moved to Glasgow at age eight, a member of the ILP at sixteen, Stephen returned to London during the war to work with Sylvia Pankhurst's Workers' Suffrage Federation.

<sup>59</sup> *Forward*, 10 May 1919.

<sup>60</sup> Tuckwell Collection, 609/57.

<sup>61</sup> GML, GTCM, 4 Nov. 1914, 9 Dec. 1914, 17 Feb. 1915; Pankhurst, *Home Front*, 372-3.

<sup>62</sup> Tuckwell Collection, 609/57.

<sup>63</sup> *Forward*, 10 May 1919.

p.m. Monday to Friday, and from 8:00 a.m. to 9:00 p.m. on Saturday, with only one half day off per week, waitresses received between 8s. and 12s. per week in wages.<sup>64</sup> If that was not bad enough, the restaurants also deducted fines from the women's pay for breaking crockery. For example, at Kerr's cafes in Glasgow, the women had to pay fines ranging from 6d. for breaking a saucer; 9d. for a cup; 1s. for a plate; and 2s. for a wineglass. Kerr's also fined the women 3d. if they were late in the morning, and insisted that they purchase their own uniforms from the company.<sup>65</sup>

Determined to oppose such treatment, the NFWW organized the waitresses and kitchen staff, demanding a 44-hour week, double time for working on public holidays, two weeks holiday in the year after twelve months service, and the provision of a uniform.<sup>66</sup> When the local Restaurateurs' Association refused even to meet the NFWW representatives, the union sent letters and reports to the local press informing the public of the women's predicament and naming the restaurants.<sup>67</sup> Unfazed, the restaurants dismissed, without notice or reason, several women whom they suspected of union agitation. The matter eventually came to a head at three restaurants where the women took strike action for a number of weeks. In the end, however, despite energetic agitation from the NFWW and the full support of the Glasgow Trades Council, the waitresses were 'beaten by their own class,' when non-union women accepted their jobs and broke the strike.<sup>68</sup> Although some women made valiant attempts in the post war years to use their lessons of unionization and forge a new status for themselves, they could not overcome the consequences of a bulging labour market overflowing with women desperate for a job of any description.<sup>69</sup> The

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<sup>64</sup> *Forward*, 20 Dec. 1919, 2.

<sup>65</sup> GUABRC, UGD, 102/3/17. See photocopy in appendix.

<sup>66</sup> *Woman Worker*, Feb. 1920.

<sup>67</sup> *Woman Worker*, Feb. 1920; *Forward*, 20 Dec. 1919, 2.

<sup>68</sup> GML, Glasgow Trades Council, *Annual Report, 1919-1920*, 11.

<sup>69</sup> The NFWW itself did not survive long in the post war era. During the war, it had experienced an unprecedented rate of growth, primarily due to the enlistment of munitions workers in its ranks. Although it maintained a burst of activity in the immediate post war years, in 1921 it merged with the

war had brought only short-term changes to the lives of Scottish working class women as adverse economic conditions prevented a permanent change in their status or improvement in their lives.

### **Economic Depression and Grinding Poverty**

So far our description of the post war position of former women munitions workers in the west of Scotland could apply to women in other industrial areas of Britain with a large concentration of munitions manufacturing. Where the experience of women in the west of Scotland differed was in the extent of poverty and social deprivation that they suffered. The economic depression of the 1920's hit Scotland harder than any other area in Britain. According to WW Knox, 'Scotland experienced lower rates of economic growth than the rest of the UK, performed more poorly over a range of industries, and endured a level of unemployment much higher than the UK average.'<sup>70</sup> In the 1920's, areas of England experienced considerable economic growth as a result of the development of mass production and assembly line jobs in the motor vehicle industry, electrical engineering, and the manufacture of consumer goods. No such growth took place in Scotland. Rather, the west of Scotland's economy suffered from an over concentration in the staple trades of shipbuilding, steel making, heavy engineering and coal mining which collapsed in the post war years.<sup>71</sup>

In such grim economic conditions women workers fared very badly indeed. Employment prospects were bleak. There were no opportunities to continue in the metal working industries that women in some industrial areas of England experienced.<sup>72</sup> There was a 'catastrophic contraction' in Scotland's textile and clothing industries which had employed over one-third of

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National Union of General Workers. A few months prior to the merger, on 1 January 1921, the NFWW's driving force, Mary Macarthur, died at the age of forty, marking 'the end of an era' in the history of women's trade union organization (Lewenhak, 171-5).

<sup>70</sup> Knox, 189.

<sup>71</sup> Knox, 189-90.

<sup>72</sup> For example, women in Sheffield found employment in silver plating (Woollacott, 111).

all Scottish working women before the war.<sup>73</sup> We have already seen that many women were forced into domestic service work, while others were open to exploitation in low paid, menial work such as waitressing. The situation was even more desperate for yet other women who were too poor to afford clothes even to go to work. Margaret Irwin of the SCWT posted a public appeal for donations of cast-off clothing to help women who wanted to get into domestic work but were unable to do so 'through lack of an outfit.'<sup>74</sup>

Thousands of women had no alternative but to apply for poor relief. An emergency fund of £5,000, instituted by Glasgow Corporation to provide food 'tickets' to 'citizens in distress,' was quickly exhausted, and there were calls for the council to provide immediately an additional £10,000.<sup>75</sup> The Glasgow Distress Committee, which was also inundated with applicants for relief, did not have sufficient funds to meet the increase in applications and sent a deputation to Parliament 'to press the claims of Scotland upon the Treasury.'<sup>76</sup> The Charity Organization Society also experienced an increase in applications, noting 'a complete change in the class' of those seeking help, as many were the families of 'better class artizans who were practically unknown applicants during previous years.'<sup>77</sup>

There was a dramatic rise in the number of women in the Glasgow area applying to the poor law authorities. In Lanarkshire, the county containing the city of Glasgow, the number of female applicants for relief jumped from 8,195 in 1919, to 10,269 in 1920, and to 13,010 in 1921. These figures represented between 41% and 44 % of the total number of female applicants for poor relief in all Scottish counties, indicating that Lanarkshire had by far the highest concentration of poverty in all of Scotland. In addition, in the years 1918 – 1921, over half of all

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<sup>73</sup> McIvor, 'Women and Work,' 140.

<sup>74</sup> *Glasgow Herald*, 30 May 1921, p. 9d.

<sup>75</sup> *Glasgow Herald*, 11 Jan. 1921, p. 7h; 12 Jan. 1921, p. 12b.

<sup>76</sup> *Glasgow Herald*, 10 Nov. 1920.

<sup>77</sup> Queen Margaret Settlement Association, *25<sup>th</sup> Annual Report* (1921-22), 6-7.

the female inmates of Scottish poorhouses were in Lanarkshire. The county also recorded the greatest percentage of deaths of paupers and dependents. While Lanarkshire pauper deaths represented between 40% and 44% of all Scottish pauper deaths, the figures for pauper dependents were even more sobering as almost 50% were in Lanarkshire, and in 1921, the figure reached an astonishing 63%.<sup>78</sup>

It was impossible that such grinding poverty would not have an impact on the health of the population. Life expectancy was lower in Glasgow than in all other parts of Britain. In 1920-22, the average life expectancy for females was 59.6 years in England and Wales, 56.4 years in Scotland, and 50.8 years in Glasgow. There was a similar pattern in male life expectancy: 55.6 years in England and Wales, 53.1 years in Scotland, and 48.4 years in Glasgow.<sup>79</sup> The wartime deterioration in housing conditions had turned the city's slum districts into breeding grounds for a number of communicable diseases, primarily tuberculosis, but also including an epidemic of small pox that struck Glasgow in 1920.<sup>80</sup>

The social workers at the Queen Margaret Settlement in Glasgow's Anderston district saw the effects of poverty first hand. Its report for 1921-22 noted 'another year of grave difficulty' with families 'obviously at the brink of starvation.' The settlement ran two small homes for invalid children, but it could not meet the demand for places for children suffering from 'prolonged malnutrition.'<sup>81</sup> The city's working class children were considerably smaller in height and lighter in weight than the British standard average. In 1918, Glasgow School Board's Medical Officer of Health reported on the physical condition of children in six of the city's poorest schools. He found that thirteen-year-old girls were 19 lbs. lighter and 2.7 inches smaller

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<sup>78</sup> Calculated from SRO, HH40/169 – HH40/172; HH40/153 – HH40/156. The population of Lanarkshire formed approximately 30% of the Scottish population.

<sup>79</sup> G. Melvyn Howe, *Man, Environment and Disease in Britain* (New York, 1972), 205.

<sup>80</sup> Howe, 204.

<sup>81</sup> Queen Margaret Settlement Association, *25<sup>th</sup> Annual Report (1921-22)*, 6-7.

than the British standard average heights and weights for children of that age. The corresponding figures for boys were 16 lbs. lighter and 3.5 inches smaller.<sup>82</sup>

Indeed, it is possible that the only children in Europe who were lighter in weight than the children of the Glasgow slums were those in post war Vienna, a city notorious for appalling levels of civilian starvation during the war. In 1921, the Glasgow University team researching the causes of rickets, led by Noel Paton and including Margaret Ferguson who had conducted the study of working class diets in wartime Glasgow, journeyed to Vienna to conduct studies among that city's emaciated population. They found that working class children in Vienna, who had suffered severe malnutrition during the war, were on average three and a half pounds lighter than children from one-roomed houses in Glasgow.<sup>83</sup> Glasgow's poorest children, therefore, in terms of weight and height, were much closer to the starving children of wartime Vienna than to the average British child.

It was, of course, not just children who suffered malnutrition but adults as well, including former women workers. In the early 1920's, the Women Workers Section of the NUGW conducted an investigation into the plight of unemployed women which included the following description of a twenty-two year old Glasgow woman:

[Her] father had been in the army and often loses his work because of the need for periodical treatment in the infirmary. There is not a single penny coming into the house. The girl had evidently been a bright girl, but mal-nutrition and despair had placed their marks on her, and she appeared dazed and incapable of giving direct answers to questions put.<sup>84</sup>

While some historical accounts of working women in World War One emphasise their political status, emancipation and sense of self worth, these issues become somewhat academic and

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<sup>82</sup> *Forward*, 3 May 1919, 1.

<sup>83</sup> Madge Gribbon and Margaret Ferguson, 'Nutrition in Vienna,' *The Lancet*, 5 Mar. 1921, 474-6.

<sup>84</sup> TUC Library, Box HD 6137, NUGW, Women Workers' Section, Memo on Position of Unemployed Women Submitted to Archbishop of Canterbury, 25 Apr. 1923.

irrelevant in a discussion of former women munitions workers in the west of Scotland, where dire poverty prevented any appreciation of newfound freedoms or emancipation.

### **Concluding Remarks**

We have used this study of Clydeside's female munitions workforce to address two historiographical points of debate: the nature of 'Red' Clydeside, and the health of women munitions workers. Iain McLean has maintained that Red Clydeside was little more than the narrow conservatism of skilled engineers obstructing the dilution of labour. The unrest on the Clyde in the early months of 1916 was caused by skilled craftsmen defending their trade privileges by fighting to exclude women from the workshops.

This thesis has refuted McLean's arguments by presenting evidence of class cooperation among the male and female workforce of Parkhead Forge, and suggesting that the root of the dilution and deportation crises was deep class anger at the exploitative practices of Sir William Beardmore. The terms of the Parkhead Dilution Agreement included the appointment of a shop committee which would monitor the wages and job processes of the new female workers to ensure that the cost of the work was not less than it was before. Beardmore not only refused to recognise Kirkwood and the other shop stewards as the shop committee, he also withdrew Kirkwood's long-standing privilege of free access to all the shops in Parkhead Forge. At the centre of the dilution crises were skilled workmen determined not to exclude women from the Howitzer Shop, but to ensure that Beardmore did not use female labour to increase his profits.<sup>85</sup> The dilution struggle on Clydeside was an expression of class war, not craft conservatism.

While this thesis has challenged the views of McLean, it has made scant reference to the arguments of James Hinton, the other main protagonist in the Red Clydeside historiographical

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<sup>85</sup> At the end of the war, Beardmore's had a credit balance of £2,275,336; for this and further details of the company's post war financial situation, see Hume and Moss, 147-9.

debate. We have found no evidence to substantiate Hinton's view of a missed revolutionary opportunity on Clydeside. While women munitions workers were active in wartime trade union organization and industrial disputes, there is no evidence that they absorbed the fiery revolutionary rhetoric delivered on the Clyde during the war. Women on strike were much more likely to be protesting cuts in piecework prices, than to be calling for the overthrow of the capitalist system. This is not to suggest that there were not female workers with a highly developed political consciousness. As our investigations focused on the role of Kirkwood, reputedly the weak link of the CWC, and not on William Gallacher, its firebrand chairman, we have uncovered no evidence to shed further light on the nature of this body, or the revolutionary potential of the Clyde.

What we have discovered, however, are many examples of deep class anger. From the impertinent questions of the SSFA visitors, to the superior, controlling attitude of welfare supervisors and canteen organizers, to the harsh rejection of applicants at the courts of referees, the close association of the classes during the war generated smouldering class tension and resentment. In this respect, this thesis falls more closely in line with the work of John Foster, and Joseph Melling and R.J. Morris, who have treaded the middle ground and situated Red Clydeside between the 'revolutionary potential' argument of Hinton and the 'deeply-divided working class' argument of McLean. According to Foster, there was greater class cohesiveness in Glasgow during the war, as working class struggles against the common enemy of employers and profiteers overshadowed gender and sectional differences. Melling's study of the agency of ILP networks also argues for the growth of class consciousness in Glasgow, noting the 'bridging [of] sectional and gender divisions,' and an atmosphere of 'generalized conflict.'<sup>86</sup>

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<sup>86</sup> Foster, 'A Proletarian Nation?' 216-22; Melling, 'Work, Culture and Politics,' 109.



There are many additional examples of ‘generalized conflict’ which, due to space limitations, are not covered in this thesis, but which add further substance to the suggestion of a working class unified by common grievances. Among the main issues galvanizing working class rage and resentment were food supply and housing conditions. In 1917 and 1918, there were loud protests over food shortages, price increases, profiteers, and working class women and children shivering in food queues.<sup>87</sup> There was also widespread condemnation of the Lord Provost’s selection of Glasgow’s Food Control Committee, which included three wholesale provision merchants, two food importers, a sugar broker, and one of the largest bread manufacturers in the city, but no representatives from working class organizations.<sup>88</sup> In addition, there was outrage at the inequitable distribution of food, and at Glasgow’s ‘ludicrous’ food economy campaign, which advised working class people, including children, to economise by eating less bread, at the same time as shops in ‘better class districts’ displayed confectionary and pastry in their windows. As one observer pointed out: ‘working women have resented “advice” from females wearing clothes the cost of which would feed working-class families for months.’<sup>89</sup>

The housing situation was equally tense. Mary Barbour and Jessie Ferguson, the leaders of the rent strikes of 1915, did not sit back in satisfaction after the passing of the Rent Restriction Act, but had continued to agitate for improvements in the deplorable condition of working class housing. In February 1918, they formed part of a deputation to the Secretary of State for Scotland, bringing to his attention the severe congestion in Glasgow housing. While Ferguson told the Secretary that ‘they were determined to take drastic measures to compel the government to concede the demands of the workers,’ Barbour warned him that ‘very little would cause a great

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<sup>87</sup> *Glasgow Herald*, 31 Dec. 1917; 8 Feb. 1918; *ASEMJR*, Feb. 1918, p. 23.

<sup>88</sup> Glasgow Trades Council, *Annual Report*, 1917-18; GTCM, 15 Aug. 1917; Sep.-Oct. 1917, passim; *Glasgow Herald*, Aug.-Oct. 1917, passim; *Forward*, Aug.-Oct., passim.

<sup>89</sup> *The Herald*, ‘Scottish Notes,’ 12 May 1917; 26 May 1917; GTCM, Oct. 1917.

deal of trouble in Govan at the present time.’<sup>90</sup> Although further research is needed into these key areas of working class discontent, it is possible that the class hostility which boiled over on Clydeside in January 1919 was inspired less by revolutionary rhetoric than it was by mounting anger over glaring class inequalities such as food distribution and housing conditions.

We have also used this study to examine the health of women munitions workers, arguing that conditions in factories jeopardized the workers’ health which led to a very high attrition rate amongst the women. To bolster our argument it is important to recognize the role of censorship and manipulation of the press during times of war. Certainly, reports of women munitions workers appearing in Glasgow newspapers presented a very one-sided view. In the early years of the war, when stories of women munitions workers first appeared in newspapers, they featured photographs of women in workshops, operating machinery and surrounded by shells. In 1917 and 1918, however, once the novelty of munitions women had worn thin, the press tended to emphasise their patriotism and their good health. It was a regular occurrence to see photographs of women munitions workers participating in sporting events, or taking part in parades, sitting on decorated floats and proudly proclaiming their war work.<sup>91</sup> By contrast, it was highly unusual to see a photograph of a munitions worker as a weary and work-worn woman such as the one that appeared in *The Bulletin* in an article promoting day nurseries, and which closely reflects the description of the debilitating effects of munitions work that we have described in chapter four. We have no way of balancing these two disparate images of women munitions workers, no way of assessing how representative each was of the larger female munitions worker population. What

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<sup>90</sup> *Glasgow Herald*, 4 Feb. 1918.

<sup>91</sup> *The Bulletin*, 14 May 1917, p. 12; 11 Jun. 1917, p. 12; 12 Jun. 1917, p. 12; 2 July 1917, p. 12; 3 Sept. 1917, p. 7; 10 Sept. 1917, p. 12; 24 Sept. 1917, p. 7; 15 Oct. 1917, p. 7. There are also countless newspapers articles making extravagant claims such as: ‘There is not a healthier class of women than those engaged in the shell-making and shell-filling factories of Scotland’ (*Glasgow Herald*, 24 Aug. 1916, p. 4h).

is certain, however, is that the press frequently featured the first image and gave scant attention to the latter.

It was not just the selective reporting of the wartime press which obscured the health risks associated with munitions work, but also the post war accounts of some leading authorities. Take, for example, Adelaide Anderson, the chief woman factory inspector during the war, who had an intimate knowledge of factory conditions and their effect on women's health. We have already noted Anderson's confidential evidence to the War Cabinet Committee on Women in Industry in November 1918:

In the last stage [of the war] we had to press [women] into processes which were in our view *too heavy – that we had always thought too heavy for women – heavy processes like the forging of bullet proof steel billets, the noses of shells and in retort house work.... The pressing of women into the utmost limits of what we thought it was possible for them to do.*<sup>92</sup>

In 1923, Anderson published a memoir of her experience as a factory inspector which included the following account of women's wartime work:

The urgent need in 1917 and 1918 of trying to substitute [women] for men, not only in process work that was likely to be suitable for them, but also in many processes and manual work heavier than had yet been attempted – for example, the forging of bullet-proof plates, in driving overhead cranes, in certain heavy foundry processes. None of these (surviving the experimental stages) ... appear to be heavier or more laborious, however, than work done long years before by women in tin-plate works, in fireproof brick works, in timber yards, or galvanizing works.<sup>93</sup>

The forthright tone of Anderson's confidential statement is tempered in her published account where she conveys an impression of the women's work which is clearly different from her original view. We get the sense that in her 1923 account, Anderson was being careful not to cast women's wartime working experience in an unfavourable light.

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<sup>92</sup> PRO MUN 5/88/342/17, evidence of Anderson to WCCWI, Physiological Sub-Committee, 21 Nov. 1918 (italics added). See *supra*, p. 248.

<sup>93</sup> Anderson, *Women in the Factory*, 233 (parenthesis in original).

In her post war published text, Anderson also claimed that 'sickness among the women [during the war] was not increasing, but rather diminishing,' and provided the following statement to substantiate her view: 'I learned by special enquiry that an almoner's records in a large general hospital in a great munition area showed that as few as thirty women and girl munition workers had attended as out-patients in six months.'<sup>94</sup> A search in the Greater Glasgow Health Board Archives reveals a different picture. At Glasgow Royal Infirmary, also a large general hospital in a great munitions area, in the six-month period between 10 October 1917 and 8 April 1918, sixty-seven women and girl munitions workers were admitted as patients for periods ranging from one day to 189 days, with the average length of stay being thirty-one days. It is impossible to know how many of the women's illnesses and injuries were occupationally related, but a perusal of the presenting complaints suggests a large proportion. For example, women were admitted suffering from numerous fractures, sprains and lacerations, concussions, burns, hernias, septic hands and fingers, arthritis and sciatica, severe abdominal pain, prolapsed uterus, dysmenorrhoea, and three cases of 'avulsion of scalp.'<sup>95</sup> Most of these complaints appeared in chapter four as potential injuries and illnesses which women suffered as a result of their munitions work. Glasgow Royal Infirmary was one of the largest, but by no means the only, hospital in the area. We should not therefore think that the figure of sixty-seven represents the total number of women munitions workers in the area admitted to a hospital during this six-month period. The figures for Glasgow Royal nevertheless present a much more serious picture than the impression conveyed by Anderson's reference to the thirty patients in the out-patient department. Obviously, an intensive study of health records is necessary before a more satisfactory assessment of the effects of munitions work on women's health can be formed.

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<sup>94</sup> Anderson, *Women in the Factory*, 243-4.

<sup>95</sup> GGHBA, HH 67/56/62, Admission Register for Glasgow Royal Infirmary, 1917-1918.

The large discrepancy between Anderson's account and that revealed by the Glasgow Royal Infirmary archives leads us to question the reliability of evidence and opinion in wartime and post war reports. Certainly the reports of the IFRB and the MRC relating to women workers' health, while providing copious statistical data, are often written in guarded language, with a minimum of discussion and a tendency to sidestep definite opinions and conclusions.<sup>96</sup> Written during a period when the government considered it vital not to cause alarm, lower morale, or deplete the ranks of munitions workers, it is highly likely that the reports did not discuss the full extent of their findings. Historian Margaret Barnett, in her work on the politics of food supply during the war, has noted the nature of official wartime reports, remarking that 'many accounts written by wartime functionaries... provide a widely misleading picture.'<sup>97</sup> We are not suggesting that Anderson deliberately set out to mislead the public in her memoir. We do believe, however, that she was restrained in her criticisms of wartime factory conditions, downplaying the extent to which they compromised the health and safety of women workers, and careful not to disclose any negative aspect of women's wartime work which had been continually portrayed in the press as an heroic feat performed by healthy women.<sup>98</sup>

The overriding image of munitions women projected by the wartime press was one of robust good health. Government reports and authoritative post war accounts did little to dispel this image. After the war, it was important for the psychological re-building of Britain that post war commentators did not dwell on the agonising circumstances of the war. In their 1924 account of wartime Clydeside, Scott and Cunnison gave a hint of the post war frame of mind:

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<sup>96</sup> Helen Jones has also remarked upon the detailed but restrained nature of the IFRB reports, which she attributes to the pioneering character of the Board (Jones, 'Industrial Health Research,' 147).

<sup>97</sup> L Margaret Barnett, *British Food Policy During the First World War* (London, 1985), 202.

<sup>98</sup> Compare also H.M. Vernon's two accounts on the influence of fatigue on the causation of accidents: *Industrial Fatigue and Efficiency* (1921), 188-99; and *The Health and Efficiency of Munition Workers* (London, 1940), 91-4. The prevarication in the earlier account is replaced by a clear warning of the dangers of working long hours in the later account.

Already the memory of the life of the people during war time is becoming faint and blurred. This in fact is the inevitable consequence of a psychological law according to which, when both emotion and activity are most intense, the subsequent memory is faint.<sup>99</sup>

We have to be wary of accepting accounts written during the war and in the immediate post war period as entirely accurate reflections of the turmoil and trauma experienced on the Home Front. Although their sufferings cannot compare to the horror and carnage experienced by the soldiers in the field of battle, it is nevertheless the contention of this thesis that women munitions workers formed a significant proportion of the human toll of the First World War.

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<sup>99</sup> Scott and Cunnison, 174.

## **BIBLIOGRAPHY**

### **Archival Sources**

#### **Glasgow Caledonian University Archives**

Glasgow and West of Scotland College of Domestic Science, Minute Books

#### **Glasgow Caledonian University. William Gallacher Memorial Library**

Autobiography of Helen Crawford. Typescript copy. (Original held in Marx Memorial Library, London)

Scottish Trades Union Congress, Annual Reports and Minute Books

Miscellaneous material collected by Audrey Canning, librarian.

#### **Glasgow City Archives**

House of Industry for Indigenous Women, Minute Book

Medical Officer of Health for Glasgow, Annual Reports

Scottish Council for Women's Trades, Annual Reports

#### **Glasgow Greater Health Board Archives**

Glasgow Royal Infirmary, registers and ward journals

#### **Glasgow Mitchell Library**

Glasgow ILP Federation, Minute Books

Glasgow Trades Council, Annual Reports and Minute Books

Scottish Brassmoulders' Union, Annual Reports

West of Scotland Women's Suffrage Association, Minute Book

#### **Glasgow University Archives and Business Records Centre**

Papers of:

Barr and Stroud, Optical Instrument Makers

William Beardmore and Co., Engineers

British Dynamite Co.

Highland Girls' Club for Munition Workers

H.E.R. Highton

North British Locomotive Co.

Queen Margaret Settlement Association

William Weir, first Viscount Weir of Eastwood

#### **Imperial War Museum**

Women at Work Collection

Department of Photographs

#### **People's Palace Museum, Glasgow**

Letters of Jeanie Riley

#### **Public Record Office, London**

Records of the Ministry of Munitions

**Scottish Record Office**

Scottish Office. Papers on Wartime Policy. HH31.

**Strathclyde University Archives**

Glasgow Royal Technical College, Minutes of Governors and Committees

**Trade Union Congress Library, London**

National Federation of Women Workers, Annual Reports

Gertrude Tuckwell Collection

**University of Warwick, Modern Records Centre**

Workers' Union, Annual Reports

**Government Publications****Parliamentary Papers**

Cabinet Papers, CAB 24, GT Papers, 1917-1918

Hansard's House of Commons Debates, 5<sup>th</sup> series

Chief Inspector of Factories and Workshops, *Annual Report for the year 1914*. Cd. 8051 (1914-1916)

----- *Annual Report for the Year 1916*. Cd. 8570 (1917-1918)

----- *Annual Report for the Year 1917*. Cd. 9108 (1918)

----- *Annual Report for the Year 1918*. Cmd. 340 (1919)

----- *Annual Report for the Year 1919*. Cmd. 941 (1920)

----- *Annual Report for the Year 1920*. Cmd. 1403 (1921)

Local Government Board for Scotland. 20<sup>th</sup> *Annual Report*. Cd. 8041 (1914-1916)

----- 21<sup>st</sup> *Annual Report*. Cd. 8273 (1916)

----- 22<sup>nd</sup> *Annual Report*. Cd. 8517 (1917-1918)

----- 23<sup>rd</sup> *Annual Report*. Cd. 9020 (1918)

----- 24<sup>th</sup> *Annual Report*. Cmd. 230 (1919)

----- 25<sup>th</sup> *Annual Report*. Cmd. 824 (1920)

Ministry of Munitions. Health of Muniton Workers Committee. *Industrial Efficiency and Fatigue. Interim Report*. Cd. 8511 (1917)

----- *Industrial Health and Efficiency. Final Report*. Cd. 9065 (1918)

----- *An Investigation of the Factors concerned in the Causation of Industrial Accidents*. Cd. 9046 (1918)

War Cabinet Committee on Women in Industry. *Report of the Committee*. Cmd. 135 (1919)

----- *Appendices, Summaries of Evidence, etc.* Cmd. 167 (1919)

Medical Research Committee. 5<sup>th</sup> *Annual Report, 1918-1919*. Cmd. 412 (1919)

----- 6<sup>th</sup> *Annual Report, 1919-1920*. Cmd. 1088 (1921)



*Report of the Administration of National Health Insurance in Scotland, 1917-1919.* Cmd. 827 (1920)

*Committee of Inquiry into the Scheme of the Out-of-Work Donation, Minutes of Evidence, Appendices, Index.* Cmd. 407 (1919).

*12<sup>th</sup> Report of Conciliation and Arbitration, 1914-1918,* PP 1919, xiii (391)

*Report of Conciliation and Arbitration, 1920,* PP 1921, (185)

### **Non-Parliamentary Papers**

Ministry of Munitions. *History of the Ministry of Munitions.* 12 vols. (1920-1924). Reprint. Sussex: Harvester Microform Press, 1976.

----- *Official History of the Scottish Filling Factory, Georgetown.* Glasgow, 1919.

### Medical Research Committee, Special Report Series

Chalmers, A.K., Leonard Findlay, et al. *The Mortalities of Birth, Infancy and Childhood.* (MRC SRS no. 10) London: HMSO, 1917.

Dunluce, Viscount and Major Greenwood, *An Inquiry into the Composition of Dietaries.* (MRC SRS no. 13) London: HMSO, 1918.

Ferguson, Margaret and Leonard Findlay. *A Study of Social and Economic Factors in the Causation of Rickets.* (MRC SRS ) London: HMSO, 1918.

Findlay, Leonard. 'The Causes of Infantile Mortality.' In *The Mortalities of Birth, Infancy and Childhood*, 37-42. (MRC SRS no. 10) London: HMSO, 1917.

Greenwood, Major and A.E. Tebb. *An Inquiry into the Prevalence and Aetiology of Tuberculosis among Industrial Workers, with Special Reference to Female Munition Workers.* (MRC SRS no. 22) London: HMSO, 1919.

----- *A Report on the Causes of Wastage of Labour in Munitions Factories Employing Women.* (MRC SRS no. 16) London: HMSO, 1918.

Moore, Benjamin. *The Causation and Prevention of Tri-Nitro-Toluene (T.N.T.) Poisoning* (MRC SRS no. 11) London: HMSO, 1921.

O'Donovan, W.J. *T.N.T. Sickness and Toxic Jaundice* (MRC SRS no. ) London: HMSO, 1921.

Paton, N. and L. Findlay. *Poverty, Nutrition and Growth: Studies of Child Life in the Cities and Rural Districts of Scotland.* (MRC SRS no. 101) London, HMSO, 1926.

### Industrial Fatigue Research Board

Broughton, Gladys M., Ethel M. Newbold, and Edith C. Allen. *A Statistical Study of Labour Turnover in Munition and Other Factories.* (IFRB Report no. 13) London: HMSO, 1921.

Greenwood, Major and Hilda M. Woods. *A Report on the Incidence of Industrial Accidents upon Individuals with special reference to Multiple Accidents.* (IFRB Report no. 4) London: HMSO, 1919.

Osborne, Ethel E. *The Output of Women Workers in Relation to Hours of Work in Shell-making.* (IFRB Report no. 2) London: HMSO, 1919.

Osborne, Ethel E. and H.M. Vernon. *The Influence of Temperature and other Conditions on the Frequency of Industrial Accidents.* (IFRB Report no. 19) London: HMSO, 1922.

Vernon, H.M. *The Speed of Adaptation of Output to Altered Hours of Work.* (IFRB Report no. 6) London: HMSO, 1920.

### Newspapers and Periodicals

*The Ardrossan and Saltcoats Herald*  
*The ASE Monthly Journal and Report*  
*The Beardmore News*  
*The Bulletin*  
*Cardonald News*  
*Clydebank Press*  
*The Engineer*  
*Forward*  
*The Glasgow Herald*  
*Govan Press*  
*Labour Leader*  
*The New Statesman*  
*Paisley and Renfrewshire Gazette*  
*Partick and Maryhill Press*  
*Solidarity*  
*Strike Bulletin*  
*The Times*  
*Woman Worker*  
*The Worker*  
*The Women's Dreadnought\**  
*Workers' Union Record*

\* (from July 1917, *The Workers' Dreadnought*)

Primary Sources

- Adamson, Rhoda and H. Palmer-Jones. 'The Work of a Department for Employing Expectant Women in Munition Factories.' *British Medical Journal*, 21 Sept. 1918, 309-10.
- Addison, Christopher. *Four and a Half Years*. 2 vols. London: Hutchinson, 1934.
- Anderson, Adelaide Mary. *Women in the Factory: an Administrative Adventure, 1893-1921*. London: John Murray, 1922.
- Anderson, John and Ellen Davidson Anderson. 'On the Health of Munition Workers in a Shell-Filling Factory.' *Glasgow Medical Journal* 97 (1922): 1-15; 98-109.
- Andrews, Irene Osgood and Margaret A. Hobbs. *Economic Effects of the War Upon Women and Children in Great Britain*. New York: Oxford University Press, 1921.
- Beveridge, W.H. *British Food Control*. London: Oxford University Press, 1928.
- The Book of High Explosives*. s.l., [1907]. (GUABRC)
- Chalmers, A.K. *The Health of Glasgow, 1818-1925*. Glasgow: printed by the authority of the Corporation, 1930.
- Cole, G.D.H. *Trade Unionism and Munitions*. Oxford: Clarendon, 1923.
- *Workshop Organization*. Oxford: Clarendon, 1923.
- Collis, Edgar L. and Major Greenwood. *The Health of the Industrial Worker*. New York: Arno Press, 1977; reprint, 1921.
- Deacon, Mary A.S. 'The Employment of Pregnant Women in Munition Factories.' *The Lancet*, 7 Sept. 1918, 311-2.
- Dewar, George A.B. *The Great Munitions Feat, 1914-1918*. London: Constable, 1921.
- Dorman, A. *A History of the Singer Co. (U.K.)*. (typescript, Clydebank Public Library).
- Drake, Barbara. *Women in the Engineering Trades*. London: Allen and Unwin, 1917.
- *Women in Trade Unions*. London, Allen & Unwin, 1921.
- Ferguson, Margaret. 'The Diets of Labouring Class Families During the Course of the War.' *Journal of Hygiene* 18 (1920): 409-416.
- 'The Family Budgets and Dietaries of Forty Labouring Class Families in Glasgow In War Time.' *Proceedings of the Royal Society of Edinburgh* 37 (1917): 117-36.
- 'A Further Study of the Diets of Labouring-Class Families in Glasgow in War Time.' *Proceedings of the Royal Society of Edinburgh* 38 (1918): 40-47.

- Fraser, Helen. *Woman and War Work*. New York: G. Arnold Shaw, 1918.
- Fyfe, T.A. *Employers and Workmen under the Munitions of War Acts, 1915-1917*. London: William Hodge, 1918.
- Gallacher, William. *Revolt on the Clyde: an Autobiography*. London: Lawrence and Wishart, [1936].
- Greenwood, Major. 'Problems of Industrial Organisation.' *Journal of the Royal Statistical Society* 82 (1919): 186-221.
- Gribbon, Madge and Margaret Ferguson. 'Nutrition in Vienna.' *The Lancet*, 5 Mar. 1921, 474-6.
- Hamilton, Mary Agnes. *Mary Macarthur: a Biographical Sketch*. Westport, Conn.: Hyperion, 1926.
- Hamilton, Peggy. *Three Years, or For the Duration: the Memoirs of a Munition Worker*. London: Peter Owen, 1978.
- Highton, H.E.R. 'Report on the Employment of Women in the Engineering and Shipbuilding Trades: Glasgow and the Clyde.' In *Labour, Finance and the War*, ed. A.W. Kirkaldy, 99-141. London: Pitman, 1917.
- . 'Report on Engineering Industry, Clyde District.' Appendix 1. Barbara Drake, *Women in the Engineering Trades*, 113-33. London: Allen and Unwin, 1917.
- Hutton, J.E. *Welfare and Housing: a Practical Record of War-Time Management*. London: Longmans, Green, 1918.
- Kirkaldy, A. W., ed. *British Labour: Replacement and Conciliation, 1914-1921: being the Result of Conferences and Investigations by Committees of Section F of the British Association*. London: Pitman, 1921.
- . *Industry and Finance: War Expedients and Reconstruction*. London: Pitman, 1918.
- . *Industry and Finance: War Expedients and Reconstruction*. (supplementary volume) London: Pitman, 1920.
- . *Labour, Finance and the War*. London: Pitman, 1917.
- Kirkwood, David. *My Life of Revolt*. London: Harrap, [1935].
- Labour Party. *Report of a Special Committee appointed by the Annual Conference of the Party held at Manchester in January 1917 to inquire into and Report upon the circumstances which resulted in the Deportation in March 1916 of David Kirkwood and other workmen employed in Munition Factories in the Clyde District*. London: Labour Party, [1918].
- Livingstone-Learmonth and Barbara Martin Cunningham. 'The Effects of Tri-Nitro-Toluene on Women Workers.' *The Lancet*, 12 Aug. 1916, 261-4.

- Macarthur, Mary. 'The Women Trade Unionists' Point of View.' In *Women and the Labour Party*, ed. Marion Phillips. London: Headley Brothers, 1918.
- Mackenzie, W.L. *Scottish Mothers and Children: Being a Report on the Physical Welfare of Mothers and Children (Scotland)*. Dunfermline: The U.K. Carnegie Trust, 1917.
- McLaren, Barbara. *Women of the War*. New York: Doran, 1918.
- The Manufacture of Locomotives and other Munitions of War, during the period 1914-1919*. Glasgow: North-British Locomotive Co. Ltd., 1920.
- Martindale, Hilda. *From One Generation to Another: 1839-1944*. London: Allen & Unwin, 1944.
- Moses, Milton. 'Compulsory Arbitration in Great Britain during War.' *Journal of Political Economy* 26 (1918): 884-900.
- Murphy, J.T. *The Workers' Committee: an Outline of its Principles and Structure*. (n.d.) (GUABRC, UGD 102/3/7).
- Nobel's Explosives Company. *The Book of High Explosives*. Tillotson Press, n.d.
- Pankhurst, Sylvia. *The Home Front: a Mirror to Life in England during the World War*. London: Hutchinson, 1932.
- Paton, Noel. 'Observations on the Cause of Rickets.' *British Medical Journal*, 7 Dec. 1918.
- Pull, Ernest. *The Munition Worker's Handbook: a Guide for Persons Taking Up Munition Work*. London: Lockwood, 1916.
- Rowntree, B.S. *Poverty: a Study in Town Life*. London: Macmillan, 1902.
- Scott, W.R. and R. Cunnison. *The Industries of the Clyde Valley During the War*. London: Oxford University Press, 1924.
- Squire, Rose. *Thirty Years in the Public Service*. London: Nisbet, 1927.
- Stone, Gilbert, ed. *Women War Workers*. London: Harrap, 1917.
- Taylor, T. *Ardeer Factory: an Outline of its History, 1873-1923* (typescript, 1923).
- Tully, Annabel M. T. and Elizabeth M. Urie. 'A Study of the Diets and Economic Conditions of Labouring-Class Families in Glasgow in June, 1922.' *Glasgow Medical Journal* 98 (1922): 353-368.
- Tully, Annabel M. T. 'A Study of the Diets and Economic Conditions of Artisan Families in Glasgow in May, 1923.' *Glasgow Medical Journal* 101 (1924): 1-13.
- 'A Study of the Nutrition and Economic Conditions of Working-Class Families in Glasgow in April, 1921.' *The Lancet*, 2 July 1921, 57-9.

Vernon, H.M. *Industrial Fatigue and Efficiency*. New York: Arno, 1977. [reprint, London: Routledge, 1921].

----- *The Health and Efficiency of Munition Workers*. London: Oxford UP, 1940.

Walton, Cecil. *Welfare Study: What It Is*. Glasgow: MacClure, MacDonald, n.d.

Wolfe, Humbert. *Labour Supply and Regulation*. London: Clarendon, 1923.

Yates, L.K. *The Woman's Part: a Record of Munitions Work*. New York: Doran, [1918].

### Secondary Sources

Adams, R.J.Q. *Arms and the Wizard: Lloyd George and the Ministry of Munitions, 1915-1916*. London: Cassell, 1978.

Aitken, Keith. *The Bairns o' Adam: the Story of the Scottish Trades Union Congress*. Edinburgh: Polygon, 1997.

Albert, Alice. 'Fit Work for Women: Sweated Home-workers in Glasgow, c. 1875-1914.' In *The World is Ill-Divided*, ed. Eleanor Gordon and Esther Breitenbach, 158-77. Edinburgh: Edinburgh UP, 1990.

Barnett, L. Margaret. *British Food Policy in the First World War*. London: Allen & Unwin, 1985.

Boston, Sarah. *Women Workers and the Trade Union Movement*. London: Lawrence and Wishart, 1980.

Braybon, Gail. *Women Workers in the First World War: the British Experience*. London: Croom Helm, 1981.

Breitenbach, Esther, and Eleanor Gordon, ed. *Out of Bounds: Women in Scottish Society, 1800-1945*. Edinburgh: Edinburgh UP, 1992.

Brown, Malcolm. *The Imperial War Museum Book of the First World War*. London: Sidgwick and Jackson, 1991.

Bryder, Linda. 'The First World War: Healthy or Hungry?' *History Workshop Journal* 24 (1987): 141-57.

----- 'Tuberculosis and the MRC.' In *Historical Perspectives on the Role of the MRC*, ed. Joan Austoker and Linda Bryder, 1-22. Oxford: Oxford UP, 1989.

Campbell, R.H. *The Rise and Fall of Scottish Industry, 1707-1939*. Edinburgh: John Donald, 1980.

Checkland, Sydney. 'British Urban Health in General and in a Single City.' In *Health Care as Social History: the Glasgow Case*, ed. Olive Checkland and Margaret Lamb, 158-69. Aberdeen: Aberdeen UP, 1982.

- Condell, Diana and Jean Liddiard. *Working for Victory: Images of Women in the First World War, 1914-1918*. London: Routledge and Kegan Paul, 1987.
- Corr, Helen. 'An Exploration into Scottish Education.' In *People and Society in Scotland, 1830-1914*, ed. W. Hamish Fraser and R.J. Morris, 290-309. Edinburgh: John Donald, 1990.
- Culleton, Claire A. *Working-Class Culture, Women, and Britain, 1914-1921*. New York: St. Martin's Press, 1999.
- Cunnison, J. and J.B.S. Gilfillan. *Glasgow*. (Third Statistical Account of Scotland). Glasgow: Collins, 1958.
- Devine, T.M. 'Women Workers, 1850-1914.' In *Farm Servants and Labour in Lowland Scotland, 1770-1914*, ed. T.M. Devine, 98-123. Edinburgh: John Donald, 1984.
- Dewey, P.E. 'Nutrition and Living Standards in Wartime Britain.' In *The Upheaval of War*, ed. Richard Wall and J.M. Winter, 197-219. Cambridge: Cambridge UP, 1988.
- Dickson, Tony, and James H. Treble, ed. *People and Society in Scotland, III: 1914-1990*. Edinburgh: John Donald, 1992.
- Downs, Laura Lee. *Manufacturing Inequality: Gender Division in the French and British Metalworking Industries, 1914-1939*. Ithaca: Cornell UP, 1995.
- Duncan, Robert, and Arthur McIvor, ed. *Militant Workers: Labour and Class Conflict on the Clyde, 1900-1950: Essays in Honour of Harry McShane (1891-1988)*. Edinburgh: John Donald, 1992.
- Ferguson, Neal. 'Women's Work: Employment Opportunities and Economic Roles, 1918-1939.' *Albion* 7 (1975): 55-68.
- Flinn, Michael W. *Scottish Population History*. Cambridge: Cambridge UP, 1977.
- Foster, John. 'A Proletarian Nation? Occupation and Class since 1914.' In *People and Society in Scotland*, vol. 3, ed. A. Dickson and J.H. Treble, 201-240. Edinburgh: J. Donald, 1992.
- .'Strike Action and Working-Class Politics on Clydeside, 1914-1919.' *International Review of Social History* 35 (1990): 33-70.
- Fraser, W. Hamish, and R.J. Morris, ed. *People and Society in Scotland, II: 1830-1914*. Edinburgh: John Donald, 1990.
- Gillies, J.D. and J. Wood. *Aviation in Scotland*. Glasgow: Royal Aeronautical Society, 1966.
- Glasgow Labour History Workshop. *The Singer Strike Clydebank, 1911*. Clydebank: Clydebank District Library, 1989.
- Gordon, Eleanor, *Women and the Labour Movement in Scotland*, Oxford: Clarendon, 1990.

- , and Esther Breitenbach, ed. *The World is Ill Divided: Women's Work in Scotland in the Nineteenth and Early Twentieth Centuries*. Edinburgh: Edinburgh UP, 1990.
- Griffiths, Gareth. *Women's Factory Work in World War One*. Stroud: Alan Sutton, 1991.
- Hamilton, Mary Agnes. *Mary Macarthur: a Biographical Sketch*. Westport, Conn.: 1926.
- Harvie, Christopher. *No Gods and Precious Few Heroes: Scotland, 1914-1980*. London: Edward Arnold, 1981.
- Hinton, James. *The First Shop Stewards' Movement*. London, Allen & Unwin, 1973.
- Howe, G. Melvyn. *Man, Environment and Disease in Britain*. New York: Barnes and Noble, 1972.
- Hume, John R. and Michael S. Moss. *Beardmore: the History of a Scottish Industrial Giant*. London: Heinemann, 1979.
- Ineson, Antonia and Deborah Thom. 'TNT Poisoning and the Employment of Women Workers in the First World War.' In *The Social History of Occupational Health*, ed. Paul Weindling, 89-107. London: Croom Helm, 1985.
- John, Angela. *By the Sweat of Their Brows: Women Workers at Victorian Coal Mines*. London: Croom Helm, 1980.
- Johnston, Ian. *Beardmore Built: The Rise and Fall of a Clydeside Shipyard*. Clydebank: Clydebank District Libraries and Museum, 1993.
- Jones, Helen. 'Industrial Health Research under the MRC.' In *Historical Perspectives on the Role of the MRC*, ed. Joan Austoker and Linda Bryder, 137-62. Oxford: Oxford UP, 1989.
- Kenefick, William, and Arthur McIvor, ed. *Roots of Red Clydeside. 1910-1914?: Labour Unrest and Industrial Relations in West Scotland*. Edinburgh: John Donald, 1996.
- King, Elspeth. *The Hidden History of Glasgow's Women: the Thenew Factor*. Edinburgh: Mainstream, 1993.
- Knox, W.W. *Industrial Nation: Work, Culture and Society in Scotland, 1800-Present*. Edinburgh: Edinburgh UP, 1999.
- Knox, William, ed. *Scottish Labour Leaders, 1918-39: A Biographical Dictionary*. Edinburgh: Mainstream, 1984.
- Knox, William and Helen Corr. "'Striking women": Cotton Workers and Industrial Unrest, c. 1907-1914.' In *Roots of Red Clydeside, 1910-1914?: Labour Unrest and Industrial Relations in West Scotland*, ed. William Kenefick and Arthur McIvor, 107-28. Edinburgh: John Donald, 1996.
- Lee, Clive H. 'The Scottish Economy and the First World War.' In *Scotland and the Great War*, ed. Catriona Macdonald and E.W. McFarland, 11-35. East Linton: Tuckwell, 1999.



- Levine, Philippa. "'Walking the Streets in a Way No Decent Woman Should": Women Police in World War I,' *Journal of Modern History* 66 (1994): 34-78.
- Levitt, Ian. *Poverty and Welfare in Scotland, 1890-1948*. Edinburgh: Edinburgh UP, 1988.
- Lewenhak, Sheila. *Women and Trade Unions: an Outline History of Women in the British Trade Union Movement*. London: Benn, 1977.
- . 'Women in the Leadership of the Scottish Trades Union Congress, 1897-1970.' *Scottish Labour History Society Journal* 7 (1973): 3-23.
- Liddington, Jill. *The Long Road to Greenham: Feminism and Anti-Militarism in Britain since 1820*. London: Virago, 1989.
- . 'The Women's Peace Crusade: the History of a Forgotten Campaign.' In *Over Our Dead Bodies: Women against the Bomb*, ed. Dorothy Thompson, 180-98. London: Virago, 1983.
- Macdonald, Catriona M.M., and E.W. McFarland, ed. *Scotland and the Great War*. East Linton: Tuckwell, 1999.
- MacDougall, Ian. *Hard Work, Ye Ken: Midlothian Women Farm Workers*. Edinburgh: Tuckwell, 1996.
- . *An Interim Bibliography of the Scottish Working Class Movement, and of Other Labour Records held in Scotland*. Edinburgh, 1965.
- . *Voices From War and Some Labour Struggles: Personal Recollections of War in Our Century by Scottish Men and Women*. Edinburgh: The Mercat Press, 1995.
- McFeely, Mary Drake. *Lady Inspectors: the Campaign for a Better Workplace, 1893-1921*. Oxford: Blackwell, 1988.
- McIvor, A.J. 'Gender Apartheid?: Women in Scottish Society.' In *Scotland in the Twentieth Century*, ed. T.M. Devine and R.J. Findlay, 138-73. Edinburgh: Edinburgh UP, 1996.
- . 'Manual Work, Technology, and Industrial Health, 1918-39.' *Medical History* 31 (1987): 160-189.
- . 'Women and Work in Twentieth Century Scotland.' In *People and Society in Scotland, 1914-1990*. vol. 3, ed. Tony Dickson and James H. Treble, 138-73. Edinburgh: J. Donald, 1992.
- McLean, Iain. *The Legend of Red Clydeside*. Edinburgh: J. Donald, 1983.
- McShane, Harry and Joan Smith. *Harry McShane: No Mean Fighter*. London: Pluto, 1978.
- Marwick, Arthur. *The Deluge: British Society and the First World War*. New York: W.W. Norton, 1965.

- . *Women at War, 1914-1918*. Glasgow: Fontana Paperbacks, in association with The Imperial War Museum, 1977.
- Melling, Joseph. *Rent Strikes: People's Struggle for Housing in West Scotland, 1890-1916*. Edinburgh: Polygon, 1983.
- . 'Work, Culture and Politics on "Red Clydeside": the ILP during the First World War.' In *The ILP on Clydeside: From Foundation to Disintegration*, ed. A.J. McKinlay and R.J. Morris, 83-122. Manchester: Manchester UP, 1991.
- Mess, H.A. *Factory Legislation and its Administration, 1891-1924*. London: King, 1926.
- Mitchell, David. *Monstrous Regiment: the Story of the Women of the First World War*. New York: Macmillan, 1965.
- More, Charles. *Skill and the English Working Class, 1870-1914*. London: Croom Helm, 1980.
- Morris, R.J. 'The ILP, 1893-1932: Introduction.' In *The ILP on Clydeside: from Foundation to Disintegration*, ed. A.J. McKinlay and R.J. Morris, 1-19. Manchester: Manchester UP, 1991.
- . 'Skilled Workers and the Politics of 'Red' Clyde: a Discussion Paper.' *Journal of the Scottish Labour History Society* 19 (1984): 6-17.
- Moss, Michael S. and J.R. Hume. *Workshop of the British Empire: Engineering and Shipbuilding in the West of Scotland*. London: Heinemann, 1977.
- Pedersen, Susan. 'Gender, Welfare, and Citizenship in Britain during the Great War.' *American Historical Review* 95 (1990): 983-1006.
- Reader, W.J. *Architect of Air Power: The Life of the First Viscount Weir of Eastwood, 1877-1959*. London: Collins, 1968.
- . *The Weir Group: a Centenary History*. London: Weidenfeld and Nicolson, 1971.
- Scottish Record Office. *The First World War*. Edinburgh: HMSO, 1986.
- Slaven, A. and S. Checkland, ed. *Dictionary of Scottish Business Biography*. Aberdeen: Aberdeen UP, 1990.
- Smyth, James J. 'Rents, Peace, Votes: Working Class Women and Political Activity in the First World War.' In *Out of Bounds: Women in Scottish Society, 1800-1945*, ed. Esther Breitenbach and Eleanor Gordon, 174-96. Edinburgh: Edinburgh UP, 1992.
- Smout, T.C. *A Century of the Scottish People, 1830-1950*. New Haven: Yale UP, 1986.
- Stanley, Beryl. 'Women in Unrest, 1914-1918.' *Labour Monthly* (1940): 458-64.
- Stevenson, John. *British Society, 1914-45*. London: Penguin, 1984.

- Thane, Pat. 'The Working Class and State 'Welfare' in Britain, 1880-1914.' *The Historical Journal* 27 (1984): 877-900.
- Thom, Deborah. *Nice Girls and Rude Girls: Women Workers in World War One*. London: Tauris, 1998.
- . 'Women at the Woolwich Arsenal, 1915-1919.' *Oral History* 6 (1978): 58-73.
- Treble, James H. 'The Characteristics of the Female Unskilled Labour Market and the Formation of the Female Casual Labour Market in Glasgow, 1891-1914.' *Scottish Economic and Social History* 6 (1986): 33-46.
- Winter, J.M. *The Great War and the British People*. London: Macmillan, 1986.
- Whiteside, Noelle. 'Industrial Welfare and Labour Regulation in Britain at the Time of the First World War.' *International Review of Social History* 25 (1980): 307-31.
- Woollacott, Angela. 'From Moral to Professional Authority: Secularism, Social Work, and Middle-Class Women's Self-Construction in World War I Britain.' *Journal of Women's History* 10 (1998): 85-111.
- . "'Khaki Fever" and its Control: Gender, Class, Age and Sexual Morality on the British Home Front in the First World War.' *Journal of Contemporary History* 29 (1994): 325-47.
- . 'Maternalism, Professionalism and Industrial Welfare Supervisors in World War I Britain.' *Women's History Review* 3 (1994): 29-56.
- . *On Her Their Lives Depend: Munitions Workers in the Great War*. Berkeley: University of California Press, 1994.
- Worthington-Williams, Michael. *The Scottish Motor Industry*. Aylesbury: Shire, 1989.
- Wrigley, Chris. *David Lloyd George and the British Labour Movement*. Sussex: Harvester Press, 1976.

### Theses

- Kozak, Marion. 'Women Munitions Workers During the First World War.' Ph.D. Hull University, 1976.
- Rubin, Gerry. 'The Enforcement of the Munition of War Acts 1915-1917, with Particular Reference to Proceedings before the Munitions Tribunals in Glasgow, 1915-1921.' Ph.D. Warwick University, 1984.