‘The Poor Man’s Disease’: Glasgow’s Sanitary Battle Against Typhus in the Nineteenth Century

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I have often thought, that were all the scenes of wretchedness, occasioned by our Epidemic, even those only which pass daily under the eyes of our District Surgeons, with others of the profession, who visit the mansions of the poor, collected into one narrative; they would form a curious, and certainly, no inconsiderable, chapter, in the history of human misery.

~Richard Millar, Physician at the Glasgow Royal Infirmary (1818)[1]

[1] Richard Millar, *Statements Relative to the Present Prevalence of Epidemic Fever Among the Poorer Classes of Glasgow: Together with Some Suggestions, Both for Affording More Adequate Assistance to the Sick, and for Checking the Farther Progress of the Contagion: In a Letter Addressed to the Honourable, the Lord Provost of Glasgow* (Glasgow: Young, Gallie, & Company for John Smith and Son, 1818), p. 41.

Introduction

Epidemic typhus. A louse-borne disease caused by the bacteria *Rickettsia prowazekii*[2] which has been traditionally associated with times of famine, war and mass migration, but in the nineteenth century became synonymous with the plight of the working class in industrial Glasgow. Throughout the century, typhus was responsible for incalculable suffering as it infected thousands of working-class citizens, causing Glasgow's mortality rates to become one of the highest of any British city.[3] Typhus contributed to shaping Glasgow's history by revealing the darker aspects of industrialization and silently eroding laissez-faire policies which had placed the emphasis on maximizing profit over the welfare of the people. Reducing the prevalence of typhus required the collaborative efforts of several great physicians, politicians and social reformers who worked to improve the sanitary conditions of the city. Towards the end of the nineteenth century, these efforts proved successful, and typhus was largely subdued by the late 1880s. Today, typhus remains a rare disease in Glasgow because of modern sanitation measures and medical advancements. However, evidence of the city's nearly century-long battle with the disease can still be seen in Glasgow's new city centre, which was constructed between 1866 and the 1890s to replace the old, dilapidated city centre that was known to contain many typhus foci.[4]

Although the impact of typhus in Glasgow in the nineteenth century was significant, few studies have been conducted on how the disease changed the trajectory of the city's sanitary history. Through an analysis of physicians' casebooks from fever wards during typhus epidemics, sanitary reports written by both Scottish and English sanitary commissions, and the recorded reflections of those present during the sanitary revolution in Glasgow, this thesis will examine how typhus shaped society, sanitary reform and the landscape in Glasgow throughout the nineteenth century.

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[2] In Glasgow, epidemic typhus prevailed, however, there are two other variants; murine typhus, spread by fleas infected with the bacteria *Rickettsia typhi* and scrub typhus, spread by larval mites infected with the bacteria *Orientia tsutsugamushi*. (Centers for Disease Control and Infection, 'Typhus Fevers', (2020) <https://www.cdc.gov/typhus/index.html#:~:text=Typhus%20fevers%20are%20a%20group,body%20lice%20spread%20epidemic%20typhus> [accessed 10 June 2022].)

[3] Rory Williams, 'Medical, Economic and Population Factors in Areas of High Mortality: The Case of Glasgow', *Sociology of Health & Illness,* 16.2 (1994), 143-181 (p. 144).

[4] The term foci, in this instance, is referring to a place that contains the requisite factors needed to transmit infections. In the case of typhus in nineteenth-century Glasgow the foci were traditionally confined to the lower-class neighbourhoods where malnourished people crowded together, sharing bedding or clothes. (James Bell and James Paton, *Glasgow: Its Municipal Organization and Administration* (Glasgow: James MacLehose and Sons, 1896), p. 224.)

The first chapter will address the period between 1818, which marked the first typhus epidemic of the nineteenth century, and 1849, when national health legislation was rejected in Scotland. This period is significant because Glasgow began experiencing commercial and industrial success with the rise of the textile trade following advancements in steam technology which allowed for mechanized cotton spinning.[5] The textile factories needed to maintain a large workforce to manage the machinery, causing a large influx of migrants –mostly from the Highlands and Ireland because of contemporaneous potato famines and clearances in the Highlands to accommodate increased sheep pastoralism– to enter Glasgow.[6] This influx caused a severe housing crisis by the early-nineteenth century which unscrupulous landlords capitalised upon, allowing multiple people to live in cramped, 'made-down', one-roomed houses. As there were no regulations regarding the maintenance of buildings in Scots Law, the overcrowded tenements quickly produced unsanitary conditions.[7] Typhus thrived in these overcrowded conditions because the lice which transmit typhus between humans need to maintain an environment of approximately twenty-nine degrees Celsius or else they will perish.[8] The close proximity between people enabled lice to easily travel from fevered or dead typhus victims to new hosts with little change to their environmental temperature.[9]

This prevalence of typhus in Glasgow gave physicians the opportunity to discover the relationship between the overcrowded conditions of working-class housing and the transmission of the disease as early as 1818. Additionally, physicians observed that typhus rarely infected upper-class citizens, who lived on the periphery of Glasgow in spacious, sanitary neighbourhoods. This led the physicians to infer that typhus 'might not inaptly be termed the *poor man's disease'*.[10] This conviction led Glaswegian physicians to support the rejection of national sanitary laws introduced in 1849 under the Public Health (Scotland) Bill, as the proposed legislation failed to address overcrowding and the needs of impoverished citizens who were most at risk of contracting typhus.

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5 Irene Maver, *Glasgow,* (Edinburgh: Edinburgh University Press, 2000), p. 170.

6 Géraldine Vaughan, 'The Irish Famine in a Scottish Perspective 1845-1851', *Memory(s), Identities, Marginalities in the Contemporary Western World*, (2015) https://doi.org/10.4000/mimmoc.1763 (paras. 2-3 of 25).

7 United Kingdom Parliament, 'Scottish Land Law Terms', (2005) <https://www.gov.uk/guidance/scottish-land-law-terms-notice-7423> [accessed 18 May 2023] (paras. 6, 8 of 120).

8 Anne Hardy, 'Urban Famine or Urban Crisis? Typhus in the Victorian City', *Medical History,* (1988), 401-425 (p. 406).

9 Ibid.

10 Richard Millar, *Clinical Lectures on the Contagious Typhus Epidemic in Glasgow and the Vicinity, During the Years 1831 and 1832* (Glasgow: University Press, 1833), p. 11.

The period following this rejection will be examined in the second chapter. Between the year 1849 and the passage of the 1867 Public Health (Scotland) Act, Glasgow experienced significant growth in its public health sector. With a decentralized public health system still in effect, Glasgow's local authorities sponsored several bills such as the 1856 Public Nuisance Removal (Scotland) Act and the 1862 and 1866 Police Acts in Parliament, which after being passed into law, installed many prophylactic measures to prevent typhus. Namely, the advent of a ticketing system aimed to reduce overcrowding introduced under the 1862 Police Act, overseen by Glasgow's first medical officer of health, William Tennant Gairdner (1824-1907), who was appointed in 1863.[11] This period also saw the evolution of powers conferred in sanitary laws in Glasgow, from insufficient temporary powers hastily enacted during typhus epidemics to permanent powers which effectively reduced typhus in the municipality.

Finally, the third chapter will analyse the drafting and passage of the 1867 Public Health (Scotland) Act and Glasgow's reticent incorporation of national sanitary laws into its public health system. This integration of national sanitary laws allows for a comparative analysis to be conducted on the effectiveness of local versus national sanitary legislation in Glasgow using the 1869 typhus epidemic as a metric of success. As these new laws were being enacted and enforced, the landscape of Glasgow was also beginning to transform under the provisions of the 1866 City Improvement Act. The act was created with the acknowledgement that typhus would never be subdued in Glasgow until the source of infections was eradicated. In Glasgow's case, this was the overcrowded tenement buildings largely confined within the old city centre. Thus, throughout the final three decades of the nineteenth century, Glasgow embarked in a major municipal revision. The results of these efforts were impressive, as typhus cases declined rapidly, effectively breaking the disease's nearly century-long grip in Glasgow.

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[11] *An Act to Consolidate and Amend the Acts Relating to the Police and Statute Labour of the City of Glasgow: And for Other Purposes; Passed 7th August 1862* (London: Eyre and Spottiswoode, 1862), pp. 109, 160.

Literature Review

Early records of typhus in Glasgow are sparse because at the dawn of the nineteenth century it was believed that typhus, or fever, had largely been eradicated in the city. In fact, there were so few cases that physicians giving clinical lectures at the Glasgow Royal Infirmary experienced great difficulty in finding cases to teach students about the symptomology of typhus.[12] This period of respite ended in 1815, coinciding with the conclusion of the Napoleonic Wars (1803-1815) and the economic downturn which followed. A quote from historian Anne Hardy gives an apt description of the circumstances in Glasgow following the end of the conflict: 'There were four horsemen of the Apocalypse: War, Famine, Disease and Death… [and] for most of history the disease most commonly linked with this awful partnership has been typhus'.[13]

Demobilized soldiers returning to Glasgow could not find work, resulting in a sharp rise in unemployment which would persist into the 1830s.[14] The high rates of poverty created an environment ideal for the rampant spread of typhus in Glasgow. Richard Millar (by 1760-1833), who had succeeded Robert Cleghorn as lecturer of materia medica at the University of Glasgow in 1791, concernedly noted that typhus cases had doubled every successive twelve months from sixteen patients in 1812 to 714 in 1817.[15] With the rise of typhus came an increase in literature regarding the effects of typhus on working-class citizens in Glasgow. As Millar stated in a clinical lecture during the 1831-1832 academic year,

> …by a laboured enumeration of motives, how much it concerns every student be well acquainted with this disease, I hold to be superfluous labour. It will be sufficient if I remind you, that there is no malady of more frequent occurrence than fever, and none to which you will be oftener called in …your future practice.[16]

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[12] Millar, *Statements Relative to the Present Prevalence of Epidemic Fever Among the Poorer Classes of Glasgow,* pp. 5-6.

[13] Hardy, p. 401.

[14] Helen Dingwall, *A History of Scottish Medicine: Themes and Influences, 1st ed.* (Edinburgh: Edinburgh University Press, 2002), p. 175.

[15] Roger L. Emerson, 'Glasgow University in the Age of Dundas', in *Academic Patronage in the Scottish Enlightenment: Glasgow, Edinburgh, and St Andrews Universities,* (Edinburgh, Edinburgh University Press, 2008), p. 186. Millar, *Statements Relative to the Present Prevalence of Epidemic Fever Among the Poorer Classes of Glasgow,* pp. 7-8. Beyond his long tenure with the university where he was elected to be the first Regius Professor of Materia Medica in 1831, Millar also had an esteemed career as a senior physician in the Glasgow Royal Infirmary and served as President of the Royal College of Physicians and Surgeons of Glasgow for four terms in 1800 to 1802; 1806 to 1808; 1818 to 1820; and 1826 to 1828. (Richard Millar, *Clinical Lectures on the Contagious Typhus Epidemic in Glasgow*, p. iii. Tom Gibson, *The Royal College of Physicians and Surgeons of Glasgow: A Short History Based on the Portraits and Other Memorabilia*, (Edinburgh: MacDonald Publishers, 1983), p. 63.)

[16] Millar, *Statements Relative to the Present Prevalence of Epidemic Fever Among the Poorer Classes of Glasgow,* p. 1.

Much of the early literature regarding typhus in Glasgow was written by medical professionals who described their experiences working in fever wards during typhus epidemics.[17] From their observations and interactions with patients, many Glaswegian physicians became proponents of contagion theory, which held that diseases were spread through human contact and infectious matter.[18] Thus, the solution these physicians proposed to eradicate typhus was the isolation of infected individuals in fever hospitals to contain the contagion before it spread beyond its typical foci of the lower-class neighbourhoods of Glasgow.

Millar, a recognized supporter of contagion theory, was one of the most prolific writers during this period on matters of typhus. In 1818, during the typhus epidemic which descended upon industrial Glasgow, Millar not only cared for the ill but also became a stalwart advocate for preventative measures against future epidemics, an attribute which persisted throughout his entire career.[19] His letters and pamphlets provide insight on topics such as how typhus was treated in the Glasgow Royal Infirmary and concerns physicians had regarding the city's overcrowded and unsanitary conditions.[20] They also reveal the physician's frustration with Glasgow's authorities chronic unpreparedness, as Millar frequently criticised their failures to implement preventative measures while typhus was still relatively 'concentrated to particular districts, lanes, and closes, … to afford a tolerably fair opportunity of something like total extirpation'.[21] Notably, his final work on typhus entitled *Clinical Lectures on the Contagious Typhus Epidemic in Glasgow, and the Vicinity, During the Years 1831 and 1832* was published the year of his death.[22]

Another influential authority on typhus in the first half of the nineteenth century was Robert Cowan (1796-1841), a professor of forensic medicine at the University of Glasgow

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17 Moses Steven Buchanan, *History of the Glasgow Royal Infirmary, From its Commencement in 1787, to the Present Time* (Glasgow; London; Edinburgh: James Lumsden and Son; Longman and Co.; Adam Black, 1832), p. 7.

18 Notably, contagion theorists diverged from the popular theory held in England that disease was caused by 'miasmas', or bad air, in the atmosphere.

19 Gibson, *The Royal College of Physicians and Surgeons of Glasgow*, p. 65.

20 Millar, *Statements Relative to the Present Prevalence of Epidemic Fever,* p. 13 and Richard Millar, *A Letter to the Fever Committee on Their Hitherto Unsuccessful Attempts to Restrain Typhus Contagion in Glasgow; On the Present Extent of the Epidemic; And on the New, or Additional, Means That May Be Found Requisite in Order to Ensure Its Abatement, or Suppression* (Glasgow: Young, Gallie, and Company, 1818), p. 9.

21 Millar, *Statements Relative to the Present Prevalence of Epidemic Fever,* p. 16.

22 Contrasting Millar's persistent efforts to bring about change in public health was his staunch belief in the older notion of the 'pure physician' and the days of the 'gold-headed cane, the powdered wig and the flowing red cloak'. (Gibson, p. 63) Although he fought hard to retain this system throughout his tenure with the Royal College of Physicians and Surgeons of Glasgow, he was ultimately overruled. (Ibid.)

and physician at the Glasgow Royal Infirmary.[23] By observing typhus patients in the Infirmary, Cowan came to believe that the conditions Glasgow's impoverished population lived and laboured under predisposed them to catching typhus from visiting or living with someone who was already infected.[24] He also called for an investigation of the monetary losses typhus caused Glasgow. In his *Vital Statistics of Glasgow* (1838), he outlined the approximate cost of treating typhus patients in the fever hospitals over twenty years, stating that the city spent £5,000 on the erection of temporary fever hospitals during typhus epidemics, £8,566 maintaining these fever hospitals and £32,536 treating 21,691 typhus patients at the expense of the Royal Infirmary.[25] Cowan closed this economic segment on a humanitarian note, observing that, 'In short, the prevalence of Fever in Glasgow presents obstacles to the promotion of social improvement among the lower classes, and is productive of an amount of human misery, credible only to those who have witnessed it'.[26]

In Scotland during the mid-nineteenth century, dialogue surrounding typhus remained centred on contagion and deprivation, while sanitarians in England continued to subscribe to the older theory of disease transmission, which attributed typhus and other diseases to miasmas, or bad air, arising from human or animal waste. The significance of this theoretical divide became great when the British government began sanctioning commissions in the late 1830s to investigate methods for reducing expenditures concerning communicable diseases.[27] As these commissions would be tasked with producing recommendations to rectify poor sanitary practices, whether the authors of the subsequent reports chose to attribute the transmission of typhus and other diseases to miasmas or infectious matter became an important factor in the sanitary revolution in Britain. Thus, the debate between these two schools of thought is especially useful in understanding why public health legislation was accepted in 1848 in England and Wales but rejected by Scotland in 1849.[28]

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[23] Edwin Chadwick, *Report on the Sanitary Condition of the Labouring Population of Great Britain; Edited with an Introduction by M.W. Flinn* (Edinburgh: Edinburgh University Press, 1965), p. 214.

[24] Ibid.

[25] Robert Cowan, *Vital Statistics of Glasgow* (Glasgow, Edinburgh: David Robertson; Adam and Charles Black, 1838), p. 13.

[26] Ibid.

[27] Christopher Hamlin, *Public Health and Social Justice in the Age of Chadwick: Britain,1800-1854* (Cambridge: Cambridge University Press, 1998), p. 4.

[28] Many scholars, including Michael Flinn, Christopher Hamlin and Sheonagh Martin attribute the timing and the highly public nature of the debate between Alison and sanitarians such as Edwin Chadwick and Neil Arnott to the delay and subsequent denial of the Public Health (Scotland) Bill of 1849. (M.W. Flinn, 'Introduction', in Edwin Chadwick, *Report on the Sanitary Condition of the Labouring Population of Great Britain; Edited with an Introduction by M.W. Flinn* (Edinburgh: Edinburgh University Press, 1965), pp. 72-73. Christopher Hamlin, 'William Pulteney Alison, The Scottish Philosophy, and the Making of a Political

The leader of the contagionist thinkers in Scotland during the mid-nineteenth century was William Pulteney Alison (1790-1859), the Chair of Medicine at Edinburgh University.[29] Like Millar and Cowan, Alison discovered that there was a strong connection between overcrowding in working-class neighbourhoods and typhus infections through his work treating the poor in Edinburgh. This led him to argue in *Observations on the Management of the Poor in Scotland, and its Effects on the Health of the Great Towns* (1840) that the government should be responsible for reducing poverty and disease through amended poor relief laws.[30] Alison's ideas resonated with contemporaries such as Robert Perry (1783-1848), who is perhaps best remembered for his role in distinguishing typhoid and typhus as two different diseases in 1836 while serving as a surgeon at the Glasgow Royal Infirmary.[31]

A fellow contagionist, Perry wrote in his 'Observations on Continued Fever, as it Occurs in the City of Glasgow Hospitals' (1836), that 'typhous [sic] fever is an idiopathic disease solely produced by contagion'[32] and 'that no other fever, arising either from general causes, as cold, fatigue, …is capable of generating this specific poison, or, in other words, producing contagious typhus'.[33] In this text Perry also explored the aetiology of typhus and found that there was a tendency for typhus to spread amongst housemates in the overcrowded slums of Glasgow.[34] During the 1843 typhus epidemic Perry created a comprehensive map of the typhus foci in different districts of Glasgow, which was later published in *Facts and Observations on the Sanitary State of Glasgow* (1844).[35] In doing

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Medicine', *Journal of the History of Medicine and Allied Sciences* 61.2 (Oxford, Oxford University Press, 2006), p. 182. Sheonagh M.K. Martin, *William Pulteney Alison: Activist Philanthropist, and Pioneer of Social Medicine* (St. Andrews, University of Saint Andrews, 1997), p. 353.)

29 The Royal College of Physicians of Edinburgh, 'William Pulteney Alison', (2023) <https://www.rcpe.ac.uk/heritage/college-history/william-pulteney-alison> [accessed 20 January 2023] (para. 3 of 8).

30 William Pulteney Alison, *Observations on the Management of the Poor in Scotland, and its Effects on the Health of the Great Towns* (Edinburgh: William Blackwell & Sons, 1840), pp. 24-25.

31 Perry later became the Senior Physician to the Infirmary (1844) and served as the President of the Royal College of Physician and Surgeons of Glasgow from 1843 to 1845. He was also an original member of the Glasgow Medical Society founded in 1814. (Glasgow University Library Special Collections Department, 'Robert Perry: Facts and Observations on the Sanitary State of Glasgow' (2006) <https://www.gla.ac.uk/myglasgow/library/files/special/exhibns/month/feb2006.html#:~:text=Robert%20Perry%20(1783%2D1848),years%2C%20initially%20as%20a%20surgeon.> [accessed 12 July 2022].)

32 Robert Perry, 'Observations on Continued Fever, as it Occurs in the City of Glasgow Hospitals', *Edinburgh Medical and Surgical Journal* 45.126 (1836), 64-70 (p. 66).

33 Ibid.

34 Ibid., p. 64.

35 Glasgow University Library Special Collections Department, 'Robert Perry', (paras. 7-8 of 25).

so, Perry produced the first illustrative example of the causal link between poverty and typhus which would later influence Scotland's public health laws.[36]

Of the authors who espoused the opposing miasmic theory during the mid-nineteenth century, two men became prominent in the sanitary reform movement: Thomas Southwood Smith and Edwin Chadwick. Smith (1788-1861), was a Unitarian minister who chose to pursue medicine later in life, graduating from the University of Edinburgh with a M.D. in 1816.[37] A prolific writer, Smith published several works regarding the spread of disease and sanitary reform. His most influential manuscript, *Treatise on Fever* (1830), established Smith as an authority on typhus. The main tenets established in his treatise were: firstly, 'epidemics prevail where there were sanitary defects'; secondly, epidemics were not necessarily caused by poverty but by the 'want of pure air not of food'; and finally, that fever was 'pre-eminently a disease of adult age'.[38] His treatise attracted the attention of Chadwick, who would later become a lifelong colleague.

Chadwick (1800-1890) also changed careers early in life, starting as a barrister before being appointed as a commissioner of inquiry on the English Poor Law Amendment Act (1834).[39] In 1838, Parliament enlisted Chadwick to head a commission investigating the sanitary conditions of the large towns and cities of Britain to discover ways of preventing epidemics and reducing the government's expenditures.[40] Chadwick alone published the commission's findings in the *Report on the Sanitary Conditions of the Labouring Population of Great Britain* (1842) because other members refused to be associated with what they considered to be a radical document.[41] This reticence was caused by the report's stark descriptions of the short, brutal lives of the urban working class in Britain, which were likely to prompt parliamentary action. Chadwick had anticipated this and included a series of measures which could be enacted to improve sanitary conditions in working-class districts. Like Smith, Chadwick supported miasma theory, causing him to focus solely on ventilation and the creation of sewage systems to cleanse cities of waste.[42] In 1848, Parliament used the recommendations in his report as the foundation of their Public Health Act. As Chadwick did not acknowledge contagionists' views on sanitary reform and

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36 Ibid., (para. 13 of 25).
37 Arthur S. MacNalty, 'The History of State Medicine in England: The FitzPatrick Lectures, 1946', *The Journal of the Royal Institute of Public Health and Hygiene,* 10.3 (March 1947), 96-108, (p. 97).
38 Ibid.
39 Ibid., p. 96.
40 Flinn, 'Introduction', p. 47.
41 Ibid., p. 1.
42 Chadwick, p. 288.

largely relied on the English legal system to implement public health measures, a similar Bill designed for Scotland was rejected in 1849 causing the nation's public health system to remain decentralized until the passage of the 1867 Public Health (Scotland) Act.[43]

The writer bridging the chronological gap between early scholars who wrote about typhus in the mid-nineteenth century and literature written by scholars in the twentieth and twenty-first centuries is James Burn Russell (1837-1904), Glasgow's first full time medical officer of health following his appointment in 1872. Arguably, Russell's most famous pamphlet is a transcription of his lecture addressing the Park Parish Literary Institute, given on 27 February 1888, entitled *Life in A One Room*.[44] The purpose of the lecture was to educate upper-class citizens in Glasgow about the poor housing conditions which continued to prevail amongst the working class. Throughout the lecture, Russell connected the abundance of one-roomed houses in Glasgow to the high prevalence of disease and elevated mortality rates.[45] He concluded his speech by asking the audience to consider what their own lives would look like in these circumstances, lying hungry and sick with no privacy.[46] His efforts to bring attention to the plight of Glasgow's poorest residents highlights the physician's ongoing advocacy on behalf of the poor.

Russell's second major work, *The Evolution and Function of Public Health Administration* (1895), serves as one of the most comprehensive histories of public health in Glasgow ever published. Throughout the treatise, Russell emphasized the role typhus played in the development of Glasgow's public health system in statements such as,

> The total number of *cases of infectious disease of every description* registered in the books of the Sanitary department was 17,108, so putting altogether aside the increase of population, if every case of infectious disease … was a case of Typhus, we should not have in absolute numbers now-a-days in Glasgow as many cases as there were of Typhus alone in the epidemic years in the first half of this century. In the seven years (1836-42) the average number of Fever cases was estimated to be 8,570, and in the five years of compulsory notification (1890-94) the average of *all* the cases notified was only 6,715 per annum…[47]

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43 MacNalty, p. 99.

44 James Burn Russell, *Life in a One Room: Or, Some Serious Considerations for the Citizens of Glasgow* (Glasgow: James Maclehose & Sons, 1888).

45 Ibid., p. 11.

46 Ibid., p. 10.

47 James Burn Russell, *The Evolution and Function of Public Health Administration*: *As Illustrated by the Sanitary History of Glasgow in the Nineteenth Century, and Especially Since 1854, With an Exposition of Results* (Glasgow: William Hodge & Co., 1895), p. 12.

To illustrate different conceptions about typhus and sanitary reform throughout history, Russell included statements from many contagionists such as Cowan and Robert Graham (1786-1845) while also noting the sanitary measures that had been occurring in England because of Chadwick's work.[48] In doing so, Russell adopted a more centralist stance than his predecessors, echoing a larger movement occurring in public health towards comprehensive public schemes which addressed both parties' concerns.

Considering the vast quantity of literature produced in the nineteenth century pertaining to typhus in Glasgow it is interesting to observe the significant decline in writing on the subject which occurred during the twentieth and twenty-first centuries. This is despite the enormous effects typhus had in the city, which is poignantly described in a quote by Russell at the close of the nineteenth century,

> Hospital accommodation was originally provided by the Glasgow municipality solely for the treatment of Typhus. In fact, all the sanitary energy which … we [now] expend upon the whole fraternity of infectious disease was 30 years ago concentrated in a death-or-life struggle with this one disease.[49]

Today, historians typically relegate typhus as an inferior disease in the development of Glasgow's public health system, using it instead to highlight economic depressions or to substantiate claims about the unsanitary conditions produced because of the rapid rate of industrialization in the nineteenth century. In dismissing typhus as a peripheral detail of Glasgow's sanitary history, historical analyses have remained limited on the impact the disease had on medicine and sanitary reform in the city. This portion of the literature review will examine the admittedly limited secondary works available on the history of typhus in Glasgow and provide a description of how this thesis will position itself within these existing articles to advance research on how typhus shaped the medical, legislative and architectural landscape of Glasgow in the nineteenth century.

John Comrie's multi-volume *History of Scottish Medicine* (1932) and *History of Scottish Medicine to 1860* (1927) shall serve as the foundation of the analysis of modern literature regarding typhus in Glasgow in the nineteenth century both for their impressive breadth and limitations. Comrie's works provide a comprehensive history of medicine in Scotland from primitive times and early healing wells of the first Christians c. sixth century to the legislative advances in medicine in the late nineteenth century.[50] Expectedly, as the texts

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48 Ibid., pp. 13-18.
49 Ibid., p. 63.
50 John D. Comrie, *History of Scottish Medicine,* Vols. I and II (London: Bailliere, Tindall and Cox, 1932).

explore an expansive period they are limited to a name, location and date approach. For example, there is very little written on the topic of typhus, save a paragraph detailing the distinction of typhus from typhoid in 1836 by Perry in Glasgow and later in an excerpt regarding William Henderson's (1810-1872) distinction of typhus from relapsing fever in 1843.[51] This manner of writing overlooks many of the intricacies needed to understand complex topics such as popular opinions surrounding diseases like typhus throughout history, correspondences which detail the day-to-day operations of hospitals during epidemics, or local figures such as Richard Millar in Glasgow who was not mentioned in Comrie's volumes but played a crucial role in documenting and treating typhus in the early nineteenth century. It remains, however, that Comrie's works are useful 'prosopographically,'[52] in understanding how Scotland's unique medical system developed.

Comrie's texts inspired later literature such as David Hamilton's *The Healer's: A History of Medicine in Scotland* (1981), which explicitly references his desire to build upon the history Comrie provided in *History of Scottish Medicine*.[53] This book provides a more detailed analysis of Scottish medicine, particularly in the eighteenth and nineteenth centuries, which enabled typhus to be featured more frequently, with the caveat that the disease was used to highlight the extent of socioeconomic depressions and lack of sanitation throughout centuries.[54] Contextually, Hamilton grounds his limited analysis of typhus in the nineteenth century to the voluntary hospital system and how demand for bedspace often exceeded the capacity of the hospitals, leading to the erection of temporary fever wards and increased mortality rates.[55] This thesis will examine in greater detail the frustration these inadequacies caused Glasgow's medical professionals such as William Tennant Gairdner and James Burn Russell, who found themselves expending a great deal of energy and resources to mitigate the shortages of beds and staff during typhus epidemics.

Observations on the Early Public Health Movement in Scotland (1952) by J.H.F. Brotherston also examines Scottish medicine on a national rather than municipal level. Notably, unlike Comrie and Hamilton Brotherston chose to focus on the public health

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51 John D. Comrie, *History of Scottish Medicine to 1860* (London: Bailliere, Tindall and Cox, 1927), pp. 230, 275.
52 Dingwall, p. 114.
53 David Hamilton, *The Healers: A History of Medicine in Scotland* (Edinburgh: Canongate Publishing LTD, 1981).
54 Ibid., pp. 9, 12, 43, 95.
55 Ibid., pp. 178, 180-181.

movement in Scotland during the late eighteenth and nineteenth centuries. This approach enabled Brotherston to conduct highly detailed qualitative and quantitative analyses of the early public health movement in Scotland, which sets this text apart from more general histories of Scottish medicine. Furthermore, typhus is featured more heavily in this text pertaining to how shifts in the economic and political spheres of nineteenth-century Scotland created an environment conducive to the rapid spread of typhus and other diseases. Particularly useful for this thesis were the numerous tables Brotherston created outlining the mortality rates from fever in the late eighteenth and early nineteenth centuries, as they show the rise in deaths from fever from 8.24 percent between 1795-1800 to approximately twenty percent of deaths in 1837 alone.[56]

Similarly, historian Andrew Gibb's 'Industrialization and Demographic Change: A Case Study of Glasgow' (2002) also advanced studies on Glasgow's struggles with typhus by offering a statistical analysis of the Glasgow Bills of Mortality to demonstrate how the city's population was ravaged during each typhus epidemic in the first half of the nineteenth century.[57] Although Gibb utilized these statistics to illustrate how industrialization negatively affected the living standards in Glasgow, the results of his quantitative analysis can be utilized by researchers building case studies examining the history of typhus in the city. Both Brotherston and Gibb's work were referenced when building the quantitative aspects of this thesis.

Another influential secondary source is Helen Dingwall's book entitled, *A History of Scottish Medicine: Themes and Influences* (2003). In this text, Dingwall explores themes such as the interaction between medicine and religion in Scotland leading to the gradual secularization of medicine in the mid-1800s and the gradual formalisation of medicine as a profession in Scotland. To accomplish the latter Dingwall uses Jürgen Habermas' theory 'that scientific knowledge became much less restricted and available' to the greater population over time, leading to a shrinking of the 'sphere between the very secluded royal court and the general' public as a framework. Her rationale for utilizing this theory was that it offered

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[56] Note, the term fever in the early nineteenth century was typically used as the umbrella term for relapsing fever, and typhus before the two febrile diseases were classified as distinct entities. While this introduces limitations in understanding the exact number of typhus victims, these charts allow one to roughly estimate the number of deaths from the disease in Glasgow during the early nineteenth century. (J.H.F Brotherston, *Observations on the Early Public Health Movement in Scotland,* (London: H.K. Lewis and Company, 1952), pp. 30, 58-59.)

[57] Andrew Gibb, 'Industrialization and Demographic Change: A Case Study of Glasgow, 1801-1914', in *Population and Society in Western European Port Cities, c. 1650-1939,* edited by Richard Lawton and W. Robert Lee (Liverpool: Liverpool University Press, 2002), p. 47.

> implications to the relationships between lay and professional medical practitioners; between patient and both types of practitioner, and the evolution of exclusive medical institutions. Increasing access to previously restricted medical knowledge had the result of stimulating the institutions to re-emphasise and confirm their rights to be exclusive within this broad and widening public sphere of knowledge.[58]

Although typhus is not a major thematic element in this book, only being mentioned once amongst other diseases to highlight the decline in living conditions during the Industrial Revolution in Scotland, Dingwall's analysis of the increased interactions between patients and practitioners raises an interesting point which will be explored in greater detail in this thesis.[59]

Sydney Checkland's chapter 'British Urban Health in General and in a Single City' included in the anthology *Health Care as a Social History: The Glasgow Case* (1982) also offers insight into this heightened interaction between provider and patient; however, the exploration is conducted on a municipal level. The text provides an analysis of the history of Glasgow's public health system, especially the gradual emphasis placed on preventative measures and the importance of advocacy on the part of medical professionals, who became increasingly involved in public policy on behalf of their institutions and patients. This thesis will build upon Checkland's exploration of these themes to provide a tangible example of how 'the system of training, qualification organization, status and functioning of doctors… in Glasgow evolved a pattern of power, politics and prestige [which] was of great importance for the working and evolution of the system'.[60]

Another chapter from this anthology, entitled 'Local Government and the Health Environment' (1982) by Olive Checkland was helpful for understanding the ideological divide between the English sanitarians and Scottish physicians. Checkland utilized the prevalence of typhus and cholera in Glasgow to outline the prevailing theories about disease in the mid-1800s. These concepts were then used to highlight the nuanced aspects of miasma and contagion theories and the ideological divide between English sanitarians such as Chadwick and Southwood Smith and Scottish physicians such as Alison and

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58 Dingwall, p. 9.
59 Ibid., p. 165.
60 Sydney Checkland, 'British Urban Health in General and in a Single City', in Olive Checkland and Margaret Lamb*, Health Care as a Social History: The Glasgow Case*, (Aberdeen: Aberdeen University Press, 1982), 171-190 (p. 181).

Cowan.[61] Understanding this difference in opinion between the two nations' eminent figures in sanitary reform is crucial for conducting an analysis of how typhus influenced public health in Glasgow both medically and legislatively.

Considering the critical importance of the differences in theoretical approaches between the sanitarian-led miasmatic theorists and the Scottish contagion theorists regarding Glasgow's sanitary history, Olive Checkland's work is unique. Interestingly, very little secondary literature on this topic exists. Rather, many sources examining sanitary reform in Britain tend to focus solely on Chadwickian public health reform in England and Wales neglecting the parallel contagionist-driven sanitary reform in Scotland. This can be observed in Christopher Hamlin's, *Public Health and Social Justice in the Age of Chadwick: Britain, 1800-1854* (1998). The focus of this piece centres on the development and implementation of sanitary reform policies based on Chadwick's 1842 report in England and Wales. Although the debate between Alison and Chadwick is mentioned in some detail, the consequential outcomes of the rejection of the 1849 Public Health (Scotland) Bill in Scotland are excluded and the focus remains heavily centred on reform in England.[62]

This speaks to a larger imbalance in secondary literature where there is a great deal of research which explores the effects cholera had on British society and sanitary reform, while typhus takes a minor, evidentiary role in histories on British public health. One potential explanation is that Chadwickian sanitary reform has dominated secondary research, and cholera, a waterborne disease caused by *Vibrio cholera*,[63] was greatly reduced by his water cleansing and sewerage scheme, thus serving as the best example of Chadwick's impact on sanitary reform in Britian.[64] In contrast, typhus was only indirectly affected by Chadwick's sanitation methods which highlights deficits in his methodology in both his sanitary schemes and ideas regarding poor law reform. For example, Parliament's article 'The 1848 Public Health Act' (2023) examines Chadwickian public health

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61 Olive Checkland, 'Local Government and the Health Environment', in Olive Checkland and Margaret Lamb*, Health Care as a Social History: The Glasgow Case,* (Aberdeen: Aberdeen University Press, 1982), 1-15 (p. 4).

62 Hamlin, *Public Health and Social Justice in the Age of Chadwick,* pp. 173-175.

63 Centers for Disease Control and Prevention, 'Cholera: Vibrio Cholerae Infection', (2022) <https://www.cdc.gov/cholera/illness.html#:~:text=Cholera%20is%20an%20acute%20diarrheal,be%20severe%20and%20life%2Dthreatening.> [accessed 10 April 2023] (para. 1 of 8).

64 The United Kingdom Parliament*,* 'The 1848 Public Health Act', (2023) <https://www.parliament.uk/about/living-heritage/transformingsociety/towncountry/towns/tyne-and-wear-case-study/about-the-group/public-administration/the-1848-public-health-act/> [accessed 23 December 2023].

initiatives through cholera, almost entirely omitting typhus although Chadwick explicitly mentions the detrimental effects of typhus on the working population of Britian throughout his *Sanitary Report* (1842).[65]

Another possible explanation for this inequity in research between cholera and typhus can be found in Margaret Pelling's *Cholera, Fever, and English Medicine, 1825-1865* (1978) which provides a comprehensive analysis of the theories surrounding epidemic disease in the nineteenth century using cholera as a case study. Although the text is largely concentrated on English medicine as the title suggests, it gives valuable insights into the complex nature of defining the aetiology of diseases in the early to mid-nineteenth century prior to scientific advancements in microscopy and the discovery of the microorganisms responsible for cholera and typhus. One example Pelling provides which is particularly relevant to this thesis, is a theory which emerged in Britian during the 1830s which held that cholera and typhus were one disease because cholera often appeared in impoverished localities where typhus was known to be endemic.[66] She included a quote from an 1832 periodical in the *Examiner* which stated,

> Cholera observes in its progress the laws of ordinary epidemics, being influenced by the same physical conditions, and attacking similar classes of persons. 'Naturally, what had been proved of typhus applied to cholera as well: that the most powerful predisposing condition was not destitution or starvation, but the habitual respiration [*sic*] of impure air'.[67]

Although this theory did not prevail, it does illuminate the difficulty medical historians face when analysing primary sources regarding infectious diseases such as typhus, cholera, and typhoid written during this period. Similarly, the interchanging terminology[68] and diagnostic criteria surrounding typhus have posed challenges in researching the exact numbers of typhus cases in Glasgow during the nineteenth century, even after typhus was distinguished from typhoid (enteric fever) in 1836 and the symptomology became widely recognized by physicians documenting cases under their care. While literature surrounding cholera also poses similar challenges to researchers regarding language and classifications,

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65 Ibid.

66 Margaret Pelling, *Cholera, Fever and English Medicine, 1825-1865*, (Oxford: Oxford University Press, 1978), p. 48.

67 Ibid., p. 48.

68 In the eighteenth and early nineteenth centuries it was not uncommon to see different clinical terminology used for diagnostically distinguishable typhus. Popular terms for typhus included fever, true typhus, and for some physicians who studied under the distinguished physician and lecturer William Cullen the titles synocha, typhus petechialis and typhus icteroides were utilized frequently. (Guenter B. Risse, '"Typhus" Fever in Eighteenth-Century Hospitals: New Approaches to Medical Treatment', *Bulletin of Medical History* 59 (1985): 176-195 (p. 177).)

the unique presentation of cholera symptomatically and the cross-class infections that led to dynamic and hasty action on the part of politicians make conducting historical analyses of cholera's effect on populations and politics less fallible.

While research on cholera continues to yield valuable insights into public health reform, studies of both diseases remain important when examining the history of medicine in Glasgow during the nineteenth century. As historian M.W. Flynn aptly wrote, 'while cholera had briefly galvanized otherwise moribund corporations into temporary frantic activity, typhus simulated the medical profession concern, investigation, and indignation'.[69] Both of these reactions led to the eventual reconfiguration of public health in Glasgow and in greater Britian. To fill this gap within existing literature surrounding typhus, this thesis will attempt to define the estimated number of documented typhus cases throughout the nineteenth century in statistics provided by leading physicians and Glasgow's Chief Medical Officers of Health. This will provide contextual evidence of how prevalent typhus was in Glasgow endemically while also highlighting the severity of the epidemics which affected the population.

John Butt's 1971 article entitled 'Working-Class Housing in Glasgow, 1851-1914' is useful in highlighting the contribution of housing to the spread of the disease. Butt's text explores the housing crisis in Glasgow's city centre which had long been a concern of physicians because diseases such as cholera and typhus were especially prevalent in the overcrowded and unsanitary dwellings. In the mid-nineteenth century, this housing crisis began to garner attention from the city's politicians, particularly John Ure and John Blackie, who both served terms as Lord Provost of Glasgow and became known for their individual contributions to improving living conditions in the city.[70] Butt focuses on the creation of the City Improvement Trust under the City of Glasgow Improvement Act and Glasgow's Ninth Police Act, both passed in 1866. He takes a critical stance towards the work of the Improvement Trust, suggesting that the project 'shunted [working people] out of slums into the nearest, next-worst property'.[71] This echoes the sentiments of Russell, acting in his capacity as Glasgow's Medical Officer of Health, who spoke of his concerns about the non-prioritization of working-class housing by the Trust in the late 1870s and early 1880s.

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69 Flynn, 'Introduction', pp. 10-11.

70 John Butt, 'Working-Class Housing in Glasgow, 1851-1914' in S.D. Chapman, *The History of Working-Class Housing: A Symposium* (Newton-Abbott: David and Charles, 1971), 56-92 (p. 61).

71 Ibid.

Economic historian R.A. Cage's offers a similar analysis to Butt in 'The Standard of Living Debate: Glasgow, 1800-1850' (1983) but uses a limited analysis of typhus and the discrepancy in wages and the cost of living in Glasgow to demonstrate the decline in living standards during the nineteenth century with the advent of the industrial revolution. Similarly, Irene Maver's *Glasgow* (2000), drew connections between typhus and political discontent during economic depressions in Glasgow, noting: 'A telling indication of the extent of social dislocation in the city was the first major outbreak of typhus fever in 1818, which one medical professional attributed to the conditions endured by a numerous, crowded, dirty, and poor population'.[72]

The works of Butt, Cage and Maver are important because their choice to use typhus to disprove conceptions that living standards rose during industrialization, is strong evidence that historians have acknowledged, however briefly, the important role this disease had in shaping Glasgow's history.[73] This thesis will build upon these brief analyses by exploring the criticisms of the Glasgow Improvement Trust's work in the late nineteenth century Butt raised, while also illustrating the beneficial aspects of the Trust's work from a public health perspective. This work will also review the destruction and subsequent reconstruction of the city's centre which, together with advanced sanitary practices and greater access to clean water through the Loch Katrine Scheme (1859), contributed to the final decline of typhus at the end of the nineteenth century. Despite vocal concerns regarding the lack of housing built by the Trust, the improvement scheme was met with gratitude from physicians who once risked their lives in slums treating typhus patients.[74] Medical professionals in Glasgow noted the absence of typhus in the new construction erected by the Trust,[75] a detail that is often neglected in secondary literature which tends to focus on the economic impact in the city. This thesis will also expand upon Maver's idea of social dislocation to address the question of why heightened class divides and economic

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72 Maver, p. 64.

73 R. A. Cage, 'The Standard of Living Debate: Glasgow, 1800-1850', *The Journal of Economic History,* 43.1 (1983), 175-182 (p. 180).

74 Ebenezeer Duncan, 'Sanitary Legislation and the Duties of the Medical Profession in Relation to the Public Health', *Glasgow Medical Journal,* 18.2 (1882), 87-99 (pp. 96-97).

75 There must be a qualifier here, as many testimonies appear to have been lost to history. Those displaced by the Improvement Trust typically did not write of their experiences, thus, one must rely on secondary accounts provided by those studying their movements, such as James Burn Russell's pamphlet entitled 'On the Immediate Effects of the Glasgow Improvement Trust at the Last May Term as Regards the Inhabitants Displaced, With Remarks on the Question of Preventing the Recurrence of the Evil Which The Trust Seeks to Remedy'. (James Burn Russell, 'On the Immediate Results of the Operations of the Glasgow Improvement Trust at Last May Term, as Regard the Inhabitants Displaced, With Remarks on the Question of Preventing the Recurrence of the Evils Which the Trust Seeks to Remedy', *Philosophy Society* (1874), 207-225.)

downturns in the nineteenth century led to a reticence to allot the budgetary expenditures required to build permanent fever hospitals for working class typhus patients.

To better analyse the evolution of the hospital system in Glasgow, J. Jenkinson, M. Moss, and I. Russell's, *The Royal: The History of Glasgow Royal Infirmary, 1794-1994* (1994) was consulted, as it offers a comprehensive history of the Glasgow Royal Infirmary. Throughout the nineteenth century, the infirmary was crucial in preventing typhus from spreading from working-class neighbourhoods to more affluent areas in Glasgow during epidemics. Especially relevant to this thesis is the chapter, 'Feverish Times, 1816-1860' which describes the effect typhus had on the subscriber system employed by the Glasgow Royal Infirmary during the typhus epidemic of 1818. Typhus upended this classed system of healthcare in 1818 according to Jenkinson, et al. who wrote that '[t]his intention, to put recommended patients first, was soon to be overtaken by circumstance, as the number of fever patients admitted to the royal during epidemics grew in numbers to the extent that the hospital was on many occasions forced to turn fever patients away, due to a lack of available beds'.[76] In addition to acknowledging the critical changes typhus brought to the healthcare system, Jenkinson, et al. described the treatment of typhus patients in the Glasgow Royal Infirmary during epidemics, which was largely palliative in the absence of knowledge pertaining to how the disease proliferated. The common treatment was:

> …[a] warm bath…, with shaving of the head, invariably, on admission, a route long followed in our Infirmary; afterwards, cathartics, so as to preserve a regularly open belly; evaporating lotions, blisters applied to the head and other parts, when requisite; diaphoretics, anodynes, rubefacients, and finally, the usual stimulants, wine, spirits and sulphuric ether.[77]

This examination of the history of fever, including typhus, through the Glasgow Royal Infirmary which was the epicenter of treatment during the worst typhus epidemics in the city, sets the backdrop for the first chapter of this thesis. The first section of this thesis will expand the early history of typhus in Glasgow beyond the Royal Infirmary's walls to include the advocacy of the physicians on behalf of their patients and the reticence of the Glasgow Fever Board to take tangible action to prevent further epidemics in the city. It will also explain how Scottish physicians' observations in hospitals such as the Glasgow Royal Infirmary and patient testimonials led medical professionals to believe that some form of contagion was responsible for the spread of typhus. This theoretical stance would

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[76] J. Jenkinson, M. Moss, and I. Russell, *The Royal: The History of Glasgow Royal Infirmary, 1794-1994*, (Glasgow Bicentenary Committee, 1994), p. 50.
[77] Ibid., p. 53.

prove critical when the Public Health (Scotland) Bill was brought to a vote in Parliament in 1849.

The implications of the rejection of the Public Health (Scotland) Bill in 1849 would have profound effects on sanitary reform in Scotland. While there is little secondary literature available which focuses on this topic, sociologist Rory Williams' article entitled 'Medical, Economic and Population Factors in Areas of High Mortality: The Case of Glasgow' (1994) explores the potentially negative effects of the decision not to support the Bill in Scotland. In this original work, Williams conducted a comparative analysis using Glasgow as a case study to find factors in regional inequalities in Britain's mortality rates.[78] He suggested that Glasgow's high mortality rates later in the nineteenth century could be traced back two factors in particular: the rejection of the 1849 Public Health (Scotland) Bill, which delayed the adoption of national sanitary legislation and the provisions of the Scottish Poor Law, which did not allow for relief to be given to abled-bodied paupers.[79] This comprehensive article offers unique insights into why Glasgow's death rates were higher than other cities in Britain in the mid-nineteenth century and provides a scholarly analysis of the multitude of theories perpetuated by scholars across several disciplines, which opens different avenues of research for works such as this.

Finally, as this thesis recognizes the work of several great physicians in reducing the prevalence of typhus in Glasgow, biographies exploring the life and work of Alison, Gairdner and Russell were referenced frequently. Sheonagh Martin's *William Pulteney Alison: Activist, Philanthropist and Pioneer of Social Medicine* (1997) which explores Alison's life, education, and social reform provided contextual evidence for how his philosophical outlook on public health and Scotland's poor laws shaped Scottish sanitary legislation, particularly the rejection of Chadwickian legislation in the 1840s. Similarly, Christopher Hamlin's 'William Pulteney Alison' (2006) examines the importance of Alison and Chadwick's rivalry during this period, as Chadwickian social reform politics exercised almost total control over public health policies during Alison's lifetime, delaying the implementation of a national health system in Scotland.[80] For information about the life and work of James Burn Russell, particularly the sanitary reform in Glasgow that took place under Russell and his predecessor William Tennant Gairdner, Edna Robertson's biography entitled, *Glasgow's Doctor: James Burn Russell, 1837-1904* (1998), was

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78 Williams, p. 144.
79 Ibid., p. 155.
80 Hamlin, 'William Pulteney Alison, pp. 145-147.

consulted.[81] Her work was especially vital in understanding how Russell's upbringing in Glasgow and his religious background as a devout Congregationalist influenced his beliefs regarding poverty, housing, and healthcare reform.[82]

While the aforementioned sources have contributed to the historiographical discussion of typhus and sanitary reform in Glasgow, there is a need for a study focusing solely on how typhus was a major and formative problem in Glasgow during the nineteenth century. Little has been written on the outcome of the debate between the contagionists in Scotland and the miasmic theorists in England leading up to the rejection of the 1849 Public Health (Scotland) Bill. This is also true of the subsequent period in Glasgow before the enactment of the 1867 Public Health (Scotland) Act. Additionally, the reductionist nature of the contemporary reports regarding the gravity of typhus epidemics in Glasgow has led to the impression that typhus was merely a disease that flared in low-income neighbourhoods during times of mass migration and economic depression.

This thesis will serve to illustrate that typhus caused a significant rise in death rates in Glasgow, changed the landscape of the city, and influenced the development of the public health system in both Glasgow and Scotland more broadly.[129] Furthermore, it will contribute to current research surrounding the debate between the contagionists and miasmic theorists in the 1840s leading to the rejection of the 1849 Public Health (Scotland) Bill. The subsequent era of municipal reform in Glasgow enables a comparative analysis of the effectiveness of local laws passed between 1849 and 1866 and national laws passed under the 1867 Public Health (Scotland) Act, using typhus as an indicator of efficacy. This will begin to address the gaps in the existing literature and open new avenues of research for other medical history researchers to build upon in the future.

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81 Edna Robertson, *Glasgow's Doctor James Burn Russell, 1837-1904* (East Lothian: Tuckwell Press, 1998).

82 Ibid., p. 17.

129 Additionally, the confined foci of typhus, which were largely confined to the slums of Glasgow, make it ideal for conducting a comparative analysis on how effective sanitary laws were regarding the working class, unlike cholera, which had foci that extended to infect members of all socioeconomic classes. (William Tennant Gairdner, *Memorandum for the Chairman of the Sanitary Committee to Accompany a Map of the Sanitary Districts of Glasgow by the Medical Officer of Health,* (Glasgow: Robert Anderson, 1865), p. 7.)

Chapter 1: The Early History of Typhus in Glasgow and the Rejection of the 1849 Public Health (Scotland) Bill

Glasgow, like many other municipalities that rose to power during the industrial revolution, is a city which experienced a great deal of fluctuation in the first half of the nineteenth century. The rapid expansion of the textile industry brought international recognition to Glasgow as a global leader in manufacturing and trade; however, it also introduced unintended consequences such as severe overcrowding and the erosion of class cohesion as living conditions in the working-class neighbourhoods declined. Perhaps the most significant of these negative consequences was the re-emergence of typhus, a disease which had been largely absent in the city between 1800 and 1812, but which grew exponentially to epidemic levels in 1818.[130] Glaswegian physicians who had once struggled to obtain typhus patients to teach their students about the symptomatic presentation of typhus, found themselves inundated by fevered and delirious[131] patients complaining of severe head pains and body aches.[132]

The return of typhus afforded ample opportunities for physicians to observe how typhus was spread within the community. As early as spring of 1818, physicians in Glasgow concluded that typhus was transmitted through human interaction or contact with clothing, furniture or blankets infected with some form of contagion.[133] They also noted the striking class divide in those admitted to hospitals like the Glasgow Royal Infirmary for treatment, which was confirmed in subsequent typhus epidemics. For example, at the height of the 1843 typhus epidemic physicians observed that approximately sixty-five percent of patients admitted to the Glasgow Royal Infirmary's fever wards were destitute.[134]

By the early 1840s, the fact that typhus was caused by infectious matter was widely accepted amongst Glasgow's physicians as was the relationship that had been established between poverty and typhus. Notably, during this same period, the British government, which had traditionally espoused a laissez-faire approach to public health, began to

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130 Millar, *Statements Relative to the Present Prevalence of Epidemic Fever,* pp. 5-6.

131 It was this symptom of confusion which gave typhus (derived from the Greek word *typhos* for haze) its name. (Centers for Disease Control and Infection 'Epidemic Typhus', para. 2 of 6.)

132 Ibid.

133 Millar, *Clinical Lectures on the Contagious Typhus Epidemic in Glasgow,* p. 5. The exact method of transmission would not be discovered until 1909, when Charles Nicolle (1866-1936) discovered the connection between typhus and lice. (Myron G. Schultz and David M. Morens, 'Charles-Jules-Henri Nicolle', *Emerging Infectious Diseases* 15.9 (2009), 1519–1522 (pp. 1520-1521).

134 William Pulteney Alison, *Observations on the Epidemic Fever of MDCCCXLIII in Scotland, and its Connection With the Destitute Condition of the Poor* (Edinburgh; London: William Blackwood and Sons, 1844), p. 10.

express an interest in reducing its expenditures through investigations of prophylactic measures which could prevent diseases from spreading. Seizing the opportunity to reduce typhus and other diseases in Glasgow and Scotland more broadly, physicians advocated for reforms of the Scottish poor laws to address the housing crisis and lack of resources for working-class citizens.

Unfortunately for the Scottish physicians, they were of the minority opinion, as most English physicians and sanitarians espoused the miasmic theory that diseases like typhus were spread through bad smells, 'effluvia', that arose from waste. The leader of the English sanitarians, Edwin Chadwick (1800-1890), exerted a great deal of influence in parliament following the publication of his *Report on the Sanitary Conditions of the Labouring Population of Great Britain* in 1842. Thus, members of parliament looked to his work when drafting national public health legislation for England and Wales in 1848 and for Scotland in 1849.[135] Problems arose, however, when the Scots discovered that Chadwick and subsequently Parliament had taken a narrow, malarial approach to public health, which only addressed cleansing water sources and installing sewage systems to wash away effluvia producing waste. Thus, while the Public Health Act (1848) was adopted in England and Wales, the 1849 Public Health (Scotland) Bill was resoundingly rejected, with the ayes attaining thirty-three votes and the nays taking ninety-six of the votes for a majority of sixty-three.[136] Scotland's rejection of the 1849 Bill marked a significant divergence in public health between Scotland and the rest of Britain. While England and Wales initiated sanitary reform under a centralized system, Scotland retained its devolved public health system for approximately two more decades.

It was under this decentralized sanitary system that Glasgow honed its ability to combat typhus; therefore, an examination of what led Scotland to reject national health legislation in 1849 must be included in this thesis. To accomplish this, the first part of this chapter will examine the reporting by physicians in Glasgow of typhus cases among the city's working class.[137] Their observations in fever hospitals and documentation of patients'

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135 The United Kingdom Parliament, 'The 1848 Public Health Act', para. 1 of 7.

136 Hansard, United Kingdom Parliament, 'Public Health (Scotland) Bill', (10 May 1849).

137 Note, there are inherent limitations in using these sources, such as diagnostic biases which could be introduced based on the living or financial situation of the patients, the fact that the exact aetiology of typhus was unknown until 1909 when the ectoparasitic nature of the disease was discovered and a lack of cohesive diagnostic tools available to physicians in the first half of the nineteenth century. However, the sources were carefully reviewed by the symptomology described by medical professionals who were highly experienced with treating typhus to mitigate fallibilities. It remains that when the evidentiary importance is weighed, the qualitative information gathered from physicians' ward notes and patient testimonies better enables one to analyse popular theories surrounding the causal factors of infection. The documents reveal an interesting

testimonies during typhus epidemics between 1818 and 1847 are crucial in understanding not only how medical professionals viewed their patients with the disease but why the patients believed they had contracted typhus. The second portion will investigate legislative responses to typhus in Glasgow during the first half of the nineteenth century to provide the contextual background necessary to draw a comparative analysis with later public health measures. Finally, the third section will analyse the debate between the Scottish contagionists and the English miasmic theorists in the 1840s to better understand why the contagionists concerns were largely ignored when parliament was creating the 1848 Public Health Act and 1849 Public Health (Scotland) Bill.

1.1 Typhus Makes a Reappearance in Glasgow

At the start of the nineteenth century, it appeared that Glasgow's health outlook was improving as the mortality rates declined significantly between 1791 and the early 1820s, almost to the point of converging with those in England.[138] However, between 1831 and 1871 the decline in mortality suddenly ended.[139] The abrupt reversal in Glasgow's mortality rates positively correlated with the rise in population during the zenith of the textile industry in the 1830s and 1840s. As the population in Glasgow swelled from 77,385 inhabitants in 1801 to 274,324 residents in 1841, the city's infrastructure began to collapse as the stagnant rate of new residential construction failed to keep up with population.[140]

This housing crisis forced new immigrants moving into Glasgow to find accommodation that largely fell into three categories, the most popular being small apartments in the city centre which lacked sanitary facilities of any kind.[141] The second form of housing was created when former middle-class apartments were divided into tiny makeshift cells to accommodate numerous low income families.[142] Finally, the most unfortunate

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pattern of attribution to contact, which medical professionals observed and based their theories upon, however, there were a smaller number of patients who believed exposure to the elements had brought on their symptoms. The diverse nature of patients' responses to physicians' questioning is shown in the following pages, exhibiting the difficulty practitioners would have faced in determining the causal factors of typhus, making the consensus they reached –that typhus is caused by some form of contagious matter exchanged through contact– notable.

138 Williams, p. 143.

139 Ibid.

140 Cage, 'The Standard of Living Debate: Glasgow, 1800-1850', p. 179.

141 As Glasgow still operated under the feudal system, which gave landowners unfettered ownership to their property, there were no regulations pertaining to the structure or safety of buildings. (United Kingdom Parliament, 'Scottish Land Law Terms', paras. 6, 8 of 120.) and Gibb, pp. 45-46.

142 Ibid.

impoverished citizens were forced to live in the 600-700 dilapidated and unsanitary lodging-houses in the old urban core of Glasgow.[143] As the living conditions in the city deteriorated, infectious diseases like typhus, which had been declining almost to the point of eradication, made a strong resurgence, becoming endemic diseases in the slums of Glasgow which occasionally flared to epidemic proportions.

It is generally agreed that the most significant disease of deprivation which drove the mortality rates upwards in Glasgow[144] during the nineteenth century was typhus.[145] Prior to the introduction of the Scottish Registration Act (1855) and the standardized reporting of deaths from typhus, the exact numbers of deaths from the disease remains inconclusive. There are also inherent limitations when gathering statistical evidence, as typhus deaths were often documented under the ambiguous term 'fever' which typically encompassed relapsing fever and typhus. Despite the challenges presented, extensive research was conducted utilizing both primary and secondary sources to provide contextual quantitative information to better understand the impact typhus had during the first half of the nineteenth century.

Robert Cowan, serving as a physician in the Glasgow Royal Infirmary between 1836 and 1838 noted with some alarm that typhus in Glasgow was rising rapidly compared to other British cities. He wrote in his *Vital Statistics of Glasgow* (1838) that in Manchester, a manufacturing city with a population of 227,808, similar to that of Glasgow according to the census of 1831, the number of cases seen in hospitals had *declined* from the start of the century.[147] Between 1797 and 1806 a total of 4,618 fever patients were treated at the Manchester Fever Hospital whereas in Glasgow during the same period only 883 fever patients were treated at the Glasgow Royal Infirmary.[148] In contrast, between 1829 and

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143 Ibid.

144 Evidence that the impact of typhus was greater in Glasgow compared to other British cities can be found in statistics provided by James Stark, the unofficial registrar of Edinburgh and Leith and a fellow at the Royal College of Physicians of Edinburgh which show that the deaths from typhus in Glasgow from 1838-1844 were 6,221 as compared to 1,082 deaths in Dundee in the years 1839-1845 and Perth which reported 176 deaths from typhus between 1838-1841. (James Stark, *Contributions to the Vital Statistics of Scotland,* (London: Harrison and Son, 1851), p. 38).

145 R. A. Cage 'Health in Glasgow', in *The Working Class in Glasgow, 1750-1914* edited by R. A. Cage (London, Croom Helm, 1987), p. 57. For context, in the nineteenth century, cholera was responsible for four major epidemics, with the deadliest epidemic occurring in 1849 with 3,885 deaths reported. Relapsing fever, another disease associated with the social deprivation index, had two major epidemics in the nineteenth century with the deadliest epidemic causing 1,398 mortalities in 1843. Typhus, which was both epidemic and endemic, was responsible for seven major epidemics in the nineteenth century, with the deadliest epidemic occurring in 1847 with 4,346 deaths. (Russell, *Evolution and Function of Public Health Administration,* pp. 14 and 33.)

147 Cowan, p. 11

148 Ibid.

1836 Manchester Fever Hospital treated an average of 497 fever patients annually while the Glasgow Royal Infirmary treated a yearly average of 1,842 patients during this same seven-year period.[149] The statistics from 1836 alone are revealing. That year Manchester Fever Hospital treated 780 fever patients while the Glasgow Royal Infirmary was overwhelmed with 3,125 fever sufferers.[150] Similarly in Edinburgh, another major Scottish city, the annual average number of typhus patients treated between the years of 1834 and 1836 was 756 2/3, while in Glasgow during the same period the annual average was 2,162 1/3 patients.[151] During the first half of the century, typhus was responsible for epidemics in 1818, 1828, 1837 and 1847, leading physicians in Glasgow to remark that 'the overcrowding and wretchedness of the late years has brought typhus with it, a disease that not long ago was almost as rare in the large cities of Scotland as ague now is'.[152]

Epidemic Year	Approximate Mortality Rate[157]
1818-1819	171[158]
1827-1828	40[159]
1837	2,180
1847	4,346

Table 1.1 Early Typhus Epidemics Mortality Rates. Sources: 1818-1819, James Cleland, *Statistical Tables Relative to the City of Glasgow, with Other Matters Therewith Connected*, (Glasgow: J. Lumsden, 1823), p. 197. 1828. William Weir, 'Report of Diseases Among the Poor of Glasgow, During November and December 1827, and January 1828', *Glasgow Medical Journal,* 1.2 (May 1828), pp. 219-227 (p. 219). John Stirling, 'Report of Diseases Among the Poor of Glasgow, During February, March, and April, 1828', *Glasgow Medical Journal,* 1.3 (August 1828), pp. 333-338 (p. 333). John Paterson, 'Report of Diseases Among the Poor of Glasgow During May, June, and July, 1828', *Glasgow Medical Journal,* 1.4 (November 1828), pp. 436-440 (p. 436). William Young, 'Report of Diseases Among the Poor of Glasgow, Treated Under the Direction of the District Surgeons, During August, September, and October, 1828', *Glasgow Medical Journal,* 2.5 (February 1829), pp. 101-103 (p. 101). Andrew Buchanan, 'Report of Diseases Among the Poor of Glasgow, treated under the Direction of the District Surgeons, During November and December, 1828, and January, 1829', *Glasgow Medical Journal,* 2.6 (May 1829), pp. 213-214 (p. 213). 1837, Cage, 'Health in Glasgow', p. 57. 1847, R.S. Orr, 'Historical and Statistical Sketch of the Progress of Epidemic Fever in Glasgow

149 Ibid.
150 Ibid.
151 Ibid., p. 12.
152 Cage, 'Health in Glasgow', p. 64. See Table 3.3 for the approximate mortality rates caused by typhus between 1794 and 1894.
157 This table has been constructed through extensive research of both primary and secondary documents and is intended to provide contextual quantitative evidence for the typhus epidemics that occurred in the first half of the century in Glasgow, acknowledging the limitations mentioned earlier in this chapter.
158 While there are no reports available on the total number of deaths in 1818-1819, there were 171 deaths registered at the Spring Gardens Fever Hospital. Gibb also gave an estimate that the typhus epidemic in 1818-1819 resulted in a forty-two percent increase in the death rates over the previous five-year average. (Gibb, p. 48)
159 This is a conservative estimate of the death rates in 1828 obtained from the *Glasgow Medical Journal* 'Report[s] of Diseases Among the Poor of Glasgow'.

During the Year 1847', *Edinburgh Medical Surgical Journal,* 1.69 (April 1848), pp. 363-378 (p. 370).

Typhus was particularly devasting for industrial cities as it targeted citizens in the prime of their lives. Men aged twenty to twenty-five constituted approximately 21.23 percent of all typhus deaths while women aged fifteen to twenty contributed to another 23.38 percent of the total mortalities, with women's deaths exceeding men's in every age prior to twenty-five.[160] This is notable because the 1831 census also recorded an excess of males at every age under fifteen in Glasgow, after which women outnumbered men by 28,573.[161] According to historian Irene Maver, this is because work was readily available for women in both the industrial and domestic sphere.[162] Linen spinning in factories remained a skill largely dominated by women even after mechanization and many of the upper-class citizens employed female servants to provide household help.[163]

The age of the victims meant that typhus prostrated those who represented the working strength of communities, paralyzing their activities.[164] Thus, physicians were forced to divert their attention away from other diseases and work to reduce typhus to restore the vitality of both working-class individuals and Glasgow's economic endeavors.[165] Throughout the first half of the nineteenth century, physicians who worked in fever hospitals like Millar who treated typhus patients in 1818 or Perry who treated patients during the 1837 typhus epidemic documented the suspected aetiology of typhus through patient testimonials provided during the admissions process.[166] For example, in Perry's casebook, typhus was frequently associated with contagion, as evidenced in Thomas Watson's case. Watson was a rope-spinner from Stockwell who had been admitted to the fever ward on 26 August 1837 with a severe headache, abdominal pain and widespread typhus eruption.[167] Upon hearing his personal history, Perry made a note on his case file that Watson's case was most definitely caused by contagion.[168] According to Glaswegian

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160 Cowan, p. 20.

161 James Cleland, *A Historical Account of Bills of Mortality and the Probability of Human Life, in Glasgow and Other Large Cities* (Glasgow: Glasgow University Press, 1836), p. 9. According to Andrew Anderson, during the year 1837-1838, 1 in 8.6 of men and 1 in 7.3 women admitted for typhus died, highlighting a trend of more women than men dying of typhus. (Andrew Anderson, *Observations on Typhus: Abridged from an Essay Submitted to the Faculty of Physicians and Surgeons of Glasgow in 1840* (Glasgow: George Richardson, 1840), p. 7.)

162 Maver, p. 37.

163 Ibid.

164 Russell, *The Evolution and Function of Public Health Administration*, pp. 81-82.

165 Ibid.

166 Anderson, *Observations on Typhus,* p. 4.

167 National Health Service of Greater Glasgow and Clyde Archives, HB14 67/52/76, Robert Perry, Robert Stewart, David Angus, Alen R~~s~~, *Alison St. Fever House Number 2 Hard Vol. IV,* 23 August 1837, p. 8.

168 Ibid.

physician, Andrew Anderson (1817-1870), approximately half of the typhus cases admitted for treatment between 1837 and 1838 were traced back to contagious matter.[169]

For the patients unsure of the origins of their typhus infection physicians would simply write 'origin: unknown' or 'patient can assign no cause for […their] complaints.[170] Roughly one fourth of all patients in the first four decades of the nineteenth century could not find a causal factor in their infection with typhus.[171] Margaret Marneck, a twenty-four-year-old typhus patient who was admitted into Millar's care on 10 July during the 1818 typhus epidemic fell into this category of patients.[172] During her convalescence, Marneck suffered from a violent headache, lack of appetite, and pain in her back but when Millar prompted her to remember what happened prior to her becoming ill, she merely replied that she could 'assign no cause' for her symptoms.[173]

The remaining one fourth of typhus patients simply attributed their worsening condition to exposure to the elements, particularly if the weather had been cold or rainy just before they fell ill.[174] For example, in Millar's notes there was a patient named Elizabeth McGonagle, an eighteen-year-old who was admitted to the fever ward for typhus during the 1818 epidemic for symptoms including severe diarrhoea, headache, inflamed eyes and generalized pain.[175] When Millar questioned her about what she suspected had led her to become infected with typhus, she replied that it was most likely because she had been turned out of her lodgings and forced to spend the entire night in the open air.[176]

Through observing thousands of testimonies similar to Watson's by the 1840s, physicians in Glasgow determined that there was a connection between typhus and contagious matter, concluding that they had found 'that the great majority of those whose disease arose from contagion had been in constant intercourse with infected persons'.[177] With this conviction,

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169 Anderson*, Observations on Typhus,* p. 4.
170 Perry, Stewart, Angus, R~~s~~, *Alison St. Fever House Number 2 Hard Vol. IV,* p. 8.
171 Anderson*, Observations on Typhus,* p. 4.
172 National Health Service of Greater Glasgow and Clyde Archives, HB14/67/52/18, Richard Millar, *Fever Records*, 7 July to 18 October 1818, p. 7.
173 Ibid.
174 Anderson, *Observations on Typhus*, p. 4
175 Millar, *Fever Records*, p. 10.
176 Ibid.
177 Ibid., p. 4. This early contagionist theory would be advanced by English statistician William Farr (1807-1883) in the 1830s and 1840s, when he developed the concept of 'zymotic diseases', which encompassed epidemic, endemic and contagious diseases of a specific nature, which 'propagated in a peculiar manner' and were 'known by experience to become epidemic in unhealthy places.' By the 1840s, enough was known about the properties of gases to disregard them as direct agents of disease. (Margaret Pelling, 'Contagion/Germ Theory/Specificity', in *Companion Encyclopedia of the History of Medicine*, edited by William F. Byrum and Roy Porter (London: Routledge, 1993), pp. 324-325.)

physicians argued that the most effective means of reducing typhus would be to address the housing crisis, build more fever hospitals, and provide greater relief to the poor to aid in sanitary efforts.

1.2 The Early Actions Taken Against Typhus Between 1818 and 1848

Although the physicians argued for action on behalf of their patients, little was done to address typhus epidemics between 1818 and 1848. This is because of several systemic factors based in Glasgow's political and socio-economic structure. Firstly, physicians in Glasgow lacked the power to initiate social reform because historically medicine had been confined to a private practice between the patient and the physician.[178] Instead, members of the legal profession and church which had both been involved in shaping municipal affairs since the mediaeval period oversaw social policies in Glasgow.[179] Therefore, physicians were forced to advocate for the complex medical needs of the community to committees of politicians that contained no medical expertise nor any practical knowledge of the gravity of the epidemiological landscape.[180]

Another factor in the reluctance to respond to typhus had to do with Glasgow's system of public funding. The public fever hospitals in the city were largely reliant on public subscriptions to maintain the grounds, provide care to the patients and erect emergency structures to accommodate patient overflow during typhus epidemics.[181] This required a certain amount of cooperation from upper-class citizens, who needed institutions like the Glasgow Royal Infirmary to act as a safeguard during typhus epidemics, as the foci remained largely concentrated within lower-class neighbourhoods.[182] Working-class patients could be isolated and treated before returning to work, lowering the risk of cross-class infections.[183] However, little interest was shown in allocating the money necessary to improve the hospitals unless there was a direct threat that typhus would cross the invisible territorial lines which segregated the classes in Glasgow. Russell reflected in his *The Evolution and Function of Public Health Administration* (1895) that 'sanitation is primarily the outcome of selfishness, a simple effort on the part of the community or the

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178 Hamlin, *Public Health and Social Reform in the Age of Chadwick*, p. 50
179 Ibid.
180 Millar, *Clinical Lectures on the Contagious Typhus Epidemic in Glasgow,* pp. 140-141.
181 Russell, *Evolution and Function of Public Health Administration,* p. 26. See Table 3.4 for the evolution of hospital accommodation in Glasgow during the late-eighteenth and nineteenth centuries.
182 Millar, *Statements Relative to the Present Prevalence of Epidemic Fever*, p. 10.
183 Ibid.

thinking government part of it at self-protection'.[184] The lack of funding hindered the physicians' ability to care for patients not only during epidemics but also generally throughout the nineteenth century.

Another reason why the physicians' pleas went unheeded was Reverend Dr Thomas Chalmers' (1780-1847) influence in Glasgow. As the head of the Scottish Free Church Chalmers exerted considerable influence in public life and politics in Glasgow. Unlike the physicians in Glasgow, who believed external forces were responsible for their patients' afflictions, Chalmers proposed a sanitary scheme which centred around the idea that poverty and illness were caused by immoral habits.[185] He believed that Scotland should not adopt a centralized government system for relief because the provision of necessities would provide too much stability and comfort to the poor. In Chalmers' opinion this would have led to a dependency culture and enabled the continuance of unscrupulous behaviours such as spending relief funds on alcohol or intentionally remaining unemployed.[186] Instead, he believed that the moral and spiritual regeneration of the working class came through individual self-help, and that the cooperation of classes would instil the framework of a 'Godly commonwealth' in which illness and other social evils would be greatly reduced.[187] Additionally, whereas physicians in Glasgow wanted relief funds to be provided by a central government authority, Chalmers believed that poor relief should be generated by charitable donations of the parish as a purely local endeavour.[188] Chalmers offered an alternative, Malthusian theoretical framework which appealed to the local leaders in Glasgow who were already predisposed to supporting laissez-faire policies.[189]

Indications that the physicians would receive no aid from local authorities arose during the first typhus epidemic in 1818. In the first few months of the epidemic, Millar, who was treating typhus patients in the Glasgow Royal Infirmary wrote a letter to the Lord Provost of Glasgow, Kirkman Finlay, warning him of the gravity of the situation. He urged the Lord Provost to see 'the formidable extent of the Epidemic Fever at present raging among us. The picture has been neither softened, nor-overcharged; it is one that speaks for itself,

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184 Russell, *The Evolution and Function of Public Health Administration*, p. 52.
185 James J. Smyth, 'Formal and Informal Relief in Scotland, Or the Continuing Influence of the Reverend Dr Thomas Chalmers', *Oxford Brookes University* (2008), 1-9 (p. 3).
186 Ibid.
187 Lauren M. E. Goodlad, '"Making the Working Man like Me": Charity, Pastorship, and Middle-Class Identity in Nineteenth Century Britain; Thomas Chalmers and Dr. James Phillips Kay', *Victorian Studies* 43.4. (2001), 591-617 (p. 598).
188 Ibid.
189 Ibid.

and I apprehend it will not be surveyed with indifference, either by you, or the public'.[190] To corroborate his statement, Millar reminded Finlay of the growing fear upper-class Glaswegians shared that typhus would transgress over the invisible territorial lines which segregated the socio-economic classes through contact with their 'servants, porters, [and] washer-women'.[191] This fear of a 'universal pollution' was not unfounded, Millar warned Finlay, because according to the physician's calculations, if cases continued to rise the Glasgow Royal Infirmary would be forced to send more patients with active infections back into the community than it already was.[192]

Towards the end of his letter Millar reminded Finlay of a report he had been asked to draw up together with the district surgeons in November 1817 regarding the rise in typhus cases in Glasgow. The report, which was read in front of the governors and directors of the Town's Hospital, had outlined a plan for the legislators which emphasized two points, firstly, that a house of reception be erected to isolate typhus patients and secondly, that the homes of the typhus patients be fumigated, their furniture and bedding stripped and cleaned and the walls white-washed.[193] Following the reading a committee to enact the recommendations was hastily elected, and a sum of money agreed upon and set aside.[194]

The committee, however, soon had other ideas and retracted their commitment to fulfil the original plans proposed by Millar and the district surgeons.[195] Millar lamented in his letter that 'an opportunity was thus lost, not only of affording so much relief to the sick, but of setting up …no inconsiderable barrier against the further spread of contagion'.[196] With the failure of those in power to enact the necessary precautionary measures, the hospitals were overwhelmed with seemingly 'indefinite or practically unlimited admissions of cases'.[197]

Under the massive influx of typhus patients, the Glasgow Royal Infirmary was forced to expand its capacity beyond its 230 hospital beds by retrofitting residential apartments in the hospital into fever wards.[198] Although the Infirmary managed to treat approximately 6,036 typhus patients between 1817 and 1819, many patients were sent away for a want of

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190 Millar, *Statements Relative to the Present Prevalence of Epidemic*, p. 10.
191 Ibid.
192 Ibid., p. 8.
193 Ibid., p. 12.
194 Ibid., p. 13.
195 Ibid.
196 Ibid.
197 A.K. Chalmers, *Public Health Administration in Glasgow: A Memorial Volume of Writings of James Burn Russell* (Glasgow: James Maclehose and Sons, 1905), p. 28.
198 Cowan, p. 8.

space.[199] To reduce the Infirmary's caseload, a temporary fever hospital was built in 1818 at Spring Gardens to hold an additional 200 patients.[200] According to Cowan this was still not enough, causing 'numerous applicants for admission [to] have been thrown back upon their own resources, left to spread the contagion of typhus around their miserable dwellings, thereby augmenting the sum of human misery already existing in its most appalling forms'.[201]

Relief would come in the last months of 1819, when typhus cases decreased to manageable numbers. However, a sense of embarrassment remained amongst the directors of the Glasgow Royal Infirmary at their unpreparedness during the epidemic.[202] A report written in 1827 conveyed these regrets. 'In this large city Typhus fever must be at all times liable to occur... To avoid this calamity … [i]t becomes necessary to have a spare Hospital or Lazaretto at all times in readiness, not only to receive the sufferers but to allow instant purification of their abodes so as to cut up the infection by the roots'.[203] Unfortunately, this realization came too late, as Glasgow again found itself engulfed by typhus in 1827. A fever hospital, or 'typhus lazaretto', had been started behind the Royal Infirmary in 1825 to act as a safeguard during typhus epidemics by accommodating additional patients until local leaders could construct temporary fever facilities.[204] However, the construction did not start soon enough, and a temporary fever shed made of wood was hastily erected in July of 1828 to house the sick and dying typhus patients.[205]

Four years after the 1827-1828 typhus epidemic had concluded the Infirmary's fever hospital was completed with the capacity for 220 patients.[206] Years went by without a typhus epidemic, however, and the original purpose of the fever hospital was neglected. Slowly, the hospital was repurposed into wards for ordinary surgical and medical patients, a dwellinghouse for the matron, dormitories for the nurses, a dining parlour for the clerks and so forth.[207] Hence, when the next typhus epidemic occurred in 1837, resulting in thousands of cases and 2,180 deaths in Glasgow, the directors of the hospital had to scramble to accommodate the vast quantity of sick patients seeking care.[208]

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199 Ibid.
200 Ibid., pp. 7-8.
201 Ibid., p. 8.
202 Buchanan, *History of the Glasgow Royal Infirmary,* p. 17.
203 Ibid.
204 Millar, *Clinical Lectures on the Contagious Typhus Epidemic in Glasgow,* p. 138.
205 Buchanan, *History of the Glasgow Royal Infirmary,* p. 17.
206 Ibid., p. 8.
207 Millar, *Clinical Lectures on the Contagious Typhus Epidemic in Glasgow,* p. 138.
208 Russell, *The Evolution of the Function of Public Health Administration,* p. 10.

In addition to the work that was occurring in the hospitals, Glasgow's authorities began to pass local sanitary legislation in the 1840s to reduce typhus and other diseases. These measures took place in the form of Police Acts, as large burghs in Scotland in the nineteenth century were governed by police commissions – 'a uniquely Scottish institution'– which oversaw the development and application of sanitary measures dealing with water, cleansing and drainage.[209] The term police in nineteenth century Scotland carried a different connotation than it would in the twentieth century. In the late eighteenth and early nineteenth centuries the growing urban municipalities of Scotland began to require additional oversight for sanitary matters and law enforcement, beyond what the burgh councils could provide.[210] This served as the impetus for the creation of police commissions consisting of respectable, elected members of the urban populations.[211] These newly appointed police authorities were responsible for many aspects of governance including maintaining and creating infrastructure and providing services such as water supplies and cleansing.[212] In Glasgow, the police commissioners demonstrated a very limited degree of control over the sanitary state of the city until the passage of the Sixth Police Act in 1843. The act sanctioned the appointment of an Inspector of Cleansing and contained powers to cleanse the city's streets, licence lodging-houses to reduce overcrowding, and report fever cases to prevent further spread.[213] While this might appear to have been an improvement in Glasgow's sanitary reform, implementation was slow. In fact, according to Glaswegian physician Scott Orr (d. 1886), it was not until 1847 when epidemics of typhus and cholera were fully upon the city that there was any attempt utilize the powers to disinfect housing or wash clothing.[214]

This chronic reluctance to allocate the legislative and medical resources necessary to reduce the prevalence of typhus characterized public health in Glasgow during the first half of the nineteenth century. From 1818 until 1849 only one fever hospital had been built to ease Glasgow's hospital accommodation crisis and the sanitary measures that had been

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209 Deborah Brunton, 'Policy, Powers and Practice: The Public Response to Public Health in the Scottish City', in *Medicine, Health and the Public Sphere in Britain, 1600-2000,* edited by Steve Sturdy (London: Routledge, 2002), p. 173.

210 The burgh councils were medieval institutions designed to provide oversight in the promotion of trade within Scotland. (Deborah Brunton, 'Regulating Filth: Cleansing in Scottish Towns and Cities, 1840-1880', *Urban History* 42.3 (2015), 424-439 (p. 426).)

211 Ibid., p. 427.

212 Ibid.

213 Russell, *The Evolution of the Function of Public Health Administration,* pp. 24-25.

214 Ibid., p. 25.

passed were mostly ignored. Consequentially, Glasgow was left defenceless against the inevitable typhus epidemics which were to follow in the second half of the century.

1.3 The Scottish Physicians Debate the English Poor Law Commissioners in the 1840s

One of the most astute observers and ardent critics of this failure of the Scottish public health system was William Pulteney Alison (1790-1859), the Chair of Medicine at Edinburgh University and leader of Scottish medicine concerning medical philosophy and sanitary reform.[215] Alison was a well-respected physician in Scotland having first studied philosophy under the tutelage of Dugald Stewart in 1802 at the age of twelve before transitioning to medicine at the University of Edinburgh in 1807. There he attended classes such as Anatomy and Surgery under the tutelage of Alexander Monro, secondus and tertius, and Andrew Duncan Sr. among other eminent physicians, graduating with an M.D. in 1811.[216] Martin emphasized the significance of Alison's time in university, noting the influence Stewart's philosophical teaching had on his beliefs regarding social medicine and poor law reform in Scotland. Throughout his life Alison emphasized the importance of preventative medicine in reducing epidemic disease and the responsibility of the state in intervening in matters of public health and poverty. This echoed the teachings of Stewart who had taken a keen interest in the developments in public medicine in continental Europe during the Enlightenment, particularly the advent of a medical police force who looked wholistically at how environment and health interacted.[217]

Notably, the approach Alison took regarding sanitary reform differed from the English teachings, which focused on 'environment sanitary improvements alone'.[218] This difference in curricula indicates that the divergence in opinion seen between the Scottish medical professionals and English sanitarians in the 1840s may be partially attributed to their educational systems. To date there has been little research conducted into this aspect of the debate between the two nations' sanitary reformers and although it remains outside the scope of this thesis, it should be explored in greater detail in the future.

Following his graduation, Alison began working at Edinburgh's New Town Dispensary in 1815, where he was able to observe the connection between deprivation and diseases like

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215 Hamlin, 'William Pulteney Alison', p. 144.
216 Martin, p. 12.
217 Ibid.
218 Ibid., p. 42.

typhus.[219] In 1840, he published his findings in his *Observations on the Management of the Poor in Scotland and its Effects on the Health of Great Towns,* which contained an eloquent dissection of the Scottish Poor Laws which, unlike the English Poor Laws,[220] did not permit relief to be given to abled-bodied poor.[221] These laws were also ill-defined which often led to relief being withheld until impoverished, disabled individuals were practically starving.[222] Later in *Observations*, Alison established that the prevalence of fever and high mortality rates in large towns in Scotland were more than twice that of England's due to the ineffectiveness of Scotland's poor laws.[223] Throughout the 1840s Alison became increasingly vocal regarding sanitary reform in Scotland, arguing that poor relief should not only be given to the ill but to widows, orphans and the abled-bodied poor which would act as a preventive measure against acute suffering and the diffusion of diseases such as typhus.[224]

Alison was also critical of the idea of a cohesive Scottish parish system, which, in his opinion, had become increasingly unrealistic to the point of practical extinction in industrial Scotland.[225] There was little to no oversight or provision of funding from the state, and as the population in industrial cities like Glasgow increased, the distribution of wealth became drastically disproportional. This inequity of monetary assets put an enormous strain on charitable institutions, especially medical institutions, which were funded by a small number of wealthy donors in the city.[226] Even so, donations from

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219 Royal College of Physicians of Edinburgh, 'William Pulteney Alison', (2023), <https://www.rcpe.ac.uk/heritage/college-history/william-pulteney-alison> [accessed 10 March 2023] (paras. 1,3 of 8) and Archives Hub, 'Record of the Royal Public Dispensary of Edinburgh: Scope and Content', n.d. <https://archiveshub.jisc.ac.uk/search/archives/689702bf-6c5a-30ca-b4d9-272eb62b2f2b> [accessed 10 March 2023] (para. 5 of 5).

220 The English and Scottish poor laws were two separate and distinct systems of relief. The English poor laws were created in 1601 by Queen Elizabeth I to alleviate the effects of a severe economic depression. (J.E. Hansan, 'English Poor Laws: Historical Precedents of Tax-Supported Relief for the Poor', *Social Welfare History Project* (2011) <https://socialwelfare.library.vcu.edu/programs/poor-laws/> [accessed 17 November 2024].) These laws allowed for the raising and allotment of taxes to aid the aged, infirm and handicapped. The English poor laws remained essentially unchanged for 250 years until a commission was appointed in 1832, resulting in their reform in 1834. (Pooja Mary Vaishali, Nisha Boopathy, 'Edwin Chadwick: A Pioneer of Public Health Reform and His Role in Sanitary Awakening', *Cureus* 16.9 (September 2024), 1-6 (p. 3).) The Scottish poor laws were created in 1424 and were far more restrictive than their English counterparts. A critical difference was the exclusion of able-bodied poor from receiving any form of relief under the Scottish poor laws. Instead, many people needing aid were totally reliant on support from local parishes. Furthermore, even those eligible to receive help under the poor laws only collected 'a few pence per week and some coal' if it were available. (Hamlin, *Public Health and Social Justice,* p. 78.)

221 Hamlin, 'William Pulteney Alison', p. 163.

222 Ibid., pp. 163-164.

223 Ibid., p. 163.

224 I. Milne, 'William Pulteney Alison (1790-1859), A Scottish Social Reformer', *J Epidemiological Community Health* 58 (2004), 887 (p. 887).

225 Hamlin, 'William Pulteney Alison', p. 156.

226 Ibid., pp. 156-157.

wealthy Glaswegians only constituted a small portion of the money used to support the public hospitals, as most of the funds came from the medical students' compulsory contributions.[227] To rectify this, Alison advocated for a unified system in which the workhouses and fever hospitals would be controlled by one central authority in the state.[228] To fund this endeavour, he proposed compulsory taxation, which would alleviate the burden on contributors and establish a reliable way of funding Scotland's public health initiatives.[229]

In addition to his advocacy for poor law reform, Alison was a well-known proponent of contagion theory. Importantly, this theoretical framework aligned him with other Scottish physicians such as Cowan and Perry. Evidence of this cohesion amongst Scottish physicians can be found in Alison's writing. The work of Cowan and Perry is referenced Alison's pamphlets such as *Observations on the Epidemic Fever of MDCCCXLIII in Scotland, and its Connection with the Destitute Condition of the Poor* (1844).[230] Additionally, Cowan and Andrew Buchanan, another influential physician in Glasgow, actively campaigned alongside Alison to pressure the Whig Government to revise the role of the General Assembly of the Church of Scotland to review the existing parish-based poor law provisions to better serve the sick poor in Scotland.[231] This unified medical field in Scotland conflicted with the miasmic ideologies being propagated in England which worried Edwin Chadwick, the head of the 1838 Poor Law Commission enquiring about the sanitary state of the great towns in Britain and leader of the sanitarians in England.

Chadwick acknowledged that his biggest threat to the enactment of his narrow, miasmic sanitary reform would be the Scottish physicians, led by Alison. If they were successful in convincing the parliament that his miasmic ideas on public health were erroneous, he would not only risk losing his power in the sanitary commission but also in the poor law commission. This is because if Alison's theory on the correlation between disease, especially typhus, and poverty were correct, it would follow that there was an inadequacy in the poor laws both in England and Scotland which contributed to the high numbers of disease and death.[232] As Chadwick was largely responsible for reforming the poor laws in

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227 Martin, pp.151-152.
228 Milne, p. 887.
229 Ibid.
230 Alison, *Observations on the Epidemic Fever of MDCCCXLIII* pp. 13-14, 59, 66-67, 70, 73.
231 Hamlin, 'William Pulteney Alison', p.157. This information also reveals a stronger connection between Glasgow's medical professionals and the negative vote towards the Public Health (Scotland) Bill of 1849 than has been previously considered.
232 Ibid., p. 146.

England, finding that they contained fallacies that were contributing to the high prevalence of disease which cost the government *more* money than it was saving would have been a stain on his career.[233]

Chadwick decided to refute Alison's claims that poverty created a living environment conducive to the spread of typhus and other industrial diseases by including a comparative analysis of the chances of life in different localities in England drawn from class-based death data in his *Report on the Sanitary Conditions of The Labouring Population of Great Britain* (1842).[234] He argued that if poverty was a determinant in whether a population was more prone to contracting typhus or other diseases, then inhabitants in cities, who theoretically received higher wages, should have longer lifespans than people residing in rural counties.[235] Using the data points, which were divided into the average age of death for three socio-economic groups: labourers, tradesmen and farmers, and gentry and professional men, Chadwick demonstrated that the opposite was true.[236] For example, the data revealed that in Manchester, an industrial city, the average life expectancy for the labouring class was only seventeen years, whereas in Rutlandshire, a rural county, the average life expectancy was thirty-eight years for members of the same socio-economic group.[237] To this end, Chadwick elaborated that these statistics on life expectancy were true even though wages in Manchester were higher on aggregate than those in Rutlandshire.[238] These statistics drastically undermined Alison's theory and gave the impression that the chances of inhabitants contracting disease had less to do with poverty and more to do with locality.[239]

After Chadwick's report was published in 1842, Alison issued a rebuttal in his *Observations on the Epidemic Fever of MDCCCXLIII in Scotland, and its Connection with the Destitute Condition of the Poor* (1844). In it, Alison addressed the limitations in Chadwick's study, namely, his failure to address the contradictory conclusions of physicians who had observed far more typhus cases than the former barrister and public

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233 Christopher Hamlin, 'Edwin Chadwick: "Mutton Medicine," and the Fever Question', *Bulletin of the History of Medicine*, 70.2 (1996), 233-265 (p. 238).
234 James Hanley, 'Edwin Chadwick and the Poverty of Statistics', *Medical History* 46 (2002), 21-40 (p. 23).
235 Ibid., p. 27.
236 Ibid., p. 25.
237 Chadwick, pp. 181-182.
238 Ibid., p. 182.
239 Ibid.

servant ever could have.[240] Alison also argued that because Chadwick had drawn chiefly on statistics from England when creating his final report, he missed statistics in Scotland and Ireland which would have provided 'striking proof that where an effective provision against destitution exists, the influence of this cause [poverty] on such epidemics … becomes nearly imperceptible'.[241]

Later in the pamphlet, Alison questioned Chadwick's attempt to disprove the relationship between poverty and illnesses like typhus in establishing his theory that locality and poor ventilation perpetuated disease. Using the testimonies of Scottish physicians Dr Sym of Ayr, Dr Cowan of Glasgow, as well as his own observations, Alison argued that poor inhabitants who were forced to live in the highest stories of the highest accommodations in districts contracted diseases at the same rate as those who were forced to live closer to the squalor of the streets in the lowest stories of the lowest houses.[242] If Chadwick's miasmic theory had been correct, those living furthest away from the waste on the streets in the highest apartments should have had significantly lower rates of illness. Instead, the Scottish physicians found that the best indicator of susceptibility to disease was not where patients lived, but rather how impoverished they were and how crowded their abodes happened to be upon inspection.[243] Alison substantiated this argument by including a statement from Mr. Watt of Glasgow, who found that there had been an unusually high mortality rate among the poorer population in 1843 from typhus fever, indicated by the large number of burial expenses paid for by public funds.[244]

Despite putting forth such clear and concise arguments in *Observations on the Epidemic Fever of MDCCCXLIII in Scotland* against miasma theory and the sanitation methods Chadwick proposed, Alison's work was largely overlooked in England. Ultimately, he could not persuade the government to consider altering Chadwickian public health to include more humane poor law reforms to enable the provision of necessities such as nutritious food, fuel, and clean clothing. Similarly, when Cowan proposed that proactively allotting funds for these measures would decrease the government's expenditures by

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240 Alison, *Observations on the Epidemic Fever of MDCCCXLIII in Scotland,* p. 2 and William Pulteney Alison, *Observations on the Generation of Fever*, (H.M. Stationary Office, 1840), p. 1.
241 Alison, *Observations on the Epidemic Fever of MDCCCXLIII in Scotland*, p. 3.
242 Ibid., p. 13.
243 Ibid., pp. 13-14.
244 Ibid., pp. 10-11.

preventing epidemics, legislators rejected his idea as being too costly, a trend which would persist into the mid-nineteenth century.[245]

Even with the historical significance of Alison's contribution in the rejection of the Public Health (Scotland) Bill in 1849, his name has largely faded into the annals of history. This is partly because although Alison generated much controversy during his lifetime, there is a consensus amongst medical historians today that his contagionist and deprivation theories would not have offered a feasible solution for the sanitary reform Britain needed at the time.[246] Although Alison had the correct ideas on what factors contributed to diseases like typhus, his theories preceded the public health resources available. Even if his suggestions were adopted, the only defence against infectious disease in the early nineteenth century was quarantines, which would not have worked in the overcrowded tenements of Glasgow or other major cities.[247] Chadwick's version of sanitary reform, though founded on the erroneous belief that disease was spread through vapours arising from waste, offered an achievable solution through the construction of sewers and cleansing of available water resources. His sanitary revolution was effective against waterborne diseases such as typhoid and cholera, however, there was an irresolution in terms of typhus and other diseases of deprivation which needed more comprehensive public health measures than were offered by Chadwick. If Alison's idea of governmental intervention on behalf of the poor had been included in the 1849 Public Health (Scotland) Bill, the prevalence of typhus in Glasgow may have been reduced far sooner, saving thousands of people.

With the Scottish physicians' opinions discarded in England, Chadwick's theories on sanitation continued to exert a great deal of influence in parliament, which had begun to

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245 Russell would later comment on Glasgow's legislators' tendency to favour short-term, less costly measures over investing in more permanent solutions. He observed,

> Looking back over the history of successive epidemics which have passed over the community wave-like, with intervals of remission, we find that each wave has been met by expedients extemporised in the midst of its onset. The money expended has been drawn from the public purse by different channels. Whether in the form of Parochial or Police Assessment, or of voluntary contributions to the funds of the Royal Infirmary, still the funds have been derived from one purse. Two evident disadvantages attend this pro re nata method. Large sums of money have been spent on perishable erections, and on the administration of those erections. The immediate crisis being passed, those temporary hospitals have been dismantled and their officials dispersed, leaving the City, after all, with nothing to represent the past outlay. Not only so, but valuable time is lost in hesitation, tampering with a disease which, being grappled with at once, might have been 'stamped out,' or greatly mitigated… (Russell, *The Evolution and Function of Public Health Administration,* p. 52.)

246 Christopher Hamlin, 'Predisposing Causes and Public Health in Early Nineteenth-Century Medical Thought', *The Society for the Social History of Medicine,* 5.1 (1992), 43-70 (p. 45).

247 Ibid.

draft public health legislation in 1847 in response to his report.[248] The drafting of the Bill was conducted rather hastily, as Britain was engulfed in two contemporaneous epidemics of typhus and cholera, which caused thousands of deaths across the nation. Glasgow alone lost approximately 4,346 people to typhus in 1847.[249] This emergency in Britain did not goad the members of parliament into *passing* the Bill, however. Despite Chadwick and his commissioners' best efforts, the legislation was met with a great deal of opposition from members of parliament who were still in support of the Malthusian idea that individuals were responsible for seeking care themselves and that funding should be left to districts to source.[250] They did not wish to see the centralization of public health and worried that even the more inexpensive solutions proposed by Chadwick would be too large an economic burden on the government to be viably sustainable long term.[251] Furthermore, Chadwick had also lost the support of some members of parliament who had taken offense when brutally honest descriptions of the poor sanitary conditions of their municipalities came out in his report.[252]

Despite these initial hesitations, Britain's pressing public health needs led to the passage of the legislation, called the Public Health Act (1848), after six months of deliberation. The Act was significant for being the first piece of legislation to formalize the government's responsibility for protecting the health of its constituents.[253] Under the provisions of the act, a Central Board of Health was created to supervise the compulsory creation of local boards of health in districts where the death rate was an average of twenty-three deaths per 1000 inhabitants over a period of seven years and in areas where ten percent of taxpayers petitioned for the appointment of a sanitary authority.[254] However, the Act took a narrow, miasmatical approach to public health and focused solely on cleansing water sources and constructing sewage systems to rid the city of the waste which allegedly produced a myriad of diseases such as typhus through noxious gases.[255]

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248 James Jamieson, 'Public Health in Southampton, 1848-1894', *University of Southampton Department of History* (1989), p. 8 <https://eprints.soton.ac.uk/461727/1/361383.pdf> [accessed 10 May 2023].
249 Russell, *The Evolution and Function of Public Health Administration*, p. 10.
250 Jamieson, p. 8.
251 Ibid.
252 Ibid., p. 9.
253 The Health Foundation 'Public Health Act 1848 and the General Board of Health', (2023), <https://navigator.health.org.uk/theme/public-health-act-1848-and-general-board-health#:~:text=The%20Public%20Health%20Act%201848%20established%20the%20General%20Board%20of,a%20provisional%205%20year%20period> [accessed 30 April 2023], (para. 7 of 12).
254 Ibid., para. 4 of 12.
255 United Kingdom Parliament, 'The 1848 Public Health Act', paras. 1, 4 of 7.

When a similar Bill intended for Scotland was introduced to parliament in 1849, the Scots found its contents virtually identical to the 1848 Act, with its emphasis on the removal of waste and increased access to clean water sources. Medical opinion rejected this legislation on the premise that the tenets of the Bill failed to adopt the comprehensive measures needed to address communicable diseases. Furthermore, the Scots were also reticent to relinquish their long-established tradition of parochial involvement in dealing with public health in individual districts.[256] By adopting the Bill, they would be subjected to parliamentary regulations which remained largely under English control.[257] Finally, because Scottish system of public record keeping regarding mortality statistics were behind England's it would have been nearly impossible to retroactively calculate which districts surpassed the numerical threshold of twenty-three deaths per 1,000 necessary to instate local health boards.[258]

When the Bill was brought before the House of Commons it proved to be highly unpopular with several Scottish members of Parliament, who made their rejections very clear throughout 1849. Archibald Hastie representing Paisley on 16 May 1849 marked the first recorded rejection, followed by Mr. Duncan representing Dundee on 17 May 1849, Sir George Clerk and Mr. Gibson Craig of Edinburgh, who voted no on 31 May and 1 June 1849 respectively and Sir D. Dundas who voted against the Bill on behalf of Kirkwall on 27 July 1849.[259] The rationale behind the reticence to adopt the Bill can be seen in the rhetoric of Mr. George Cowan of Edinburgh, who 'hoped the Government would not think it necessary to proceed with the Public Health (Scotland) Bill', because he believed the Police and Improvement (Scotland) Bill 'would carry out sanitary measures very efficiently, and would generally be acceptable to the country'.[260] Ultimately, the proposed sanitary legislation was rejected, and Scotland maintained its decentralized system of public health. This allowed Scotland's municipal authorities to quickly respond to the needs of its citizens during public health crises. In Glasgow, this meant that the system of passing emergency measures and police acts to address epidemics of typhus and other diseases remained in place into the next half of the century.

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256 Hamlin, 'William Pulteney Alison', p. 144.
257 Ibid.
258 Russell, *The Evolution and Function of Public Health Administration*, p. 3.
259 Hansard, House of Commons, debated Wednesday 16 May 1849, Vol 105. Hansard, House of Commons, debated Thursday 17 May 1849, Vol 105. Hansard, House of Commons, debated Thursday 31 May 1849, Vol 105. Hansard, House of Commons, debated Friday 1 June 1849, Vol 105. Hansard, House of Commons, debated Friday 27 July 1849, Vol 107.
260 Hansard, Police and Improvement (Scotland) Bill debated Thursday 9 May 1850, Vol 110.

Chapter 2: The Interim Years, 1849 to 1867

The period between the rejection of the 1849 Public Health (Scotland) Bill and the adoption of the 1867 Public Health (Scotland) Act, was a time of great sanitary revolution in Glasgow, yet it receives little attention from medical historians. Instead, the historiographical focus has centred on the implementation of the centralized Chadwickian sanitary reform in England and its effects on waterborne diseases such as cholera. While this is an important and impressive period in British public health reform, it is only one facet of the multiplicitous developments that were occurring in the second half of the nineteenth century. In Scotland, public health laws remained devolved, causing sanitary reform to develop in an uneven manner. While most rural districts in Scotland remained largely unchanged in their sanitary habits, cities such as Glasgow were forced to consistently develop legislation to contend with epidemics of typhus and cholera. Thus, Scottish cities, especially Glasgow, maintained a linear growth in their public health sector alongside England and Wales, occasionally surpassing their legislative prowess, as was the case in Glasgow when it enacted a unique ticketing scheme to combat overcrowding and typhus.

While England addressed its public health system in a more uniform manner, Glasgow and other Scottish districts responded organically to the changing needs of their community, as can be observed in the flurry of legislative action after each typhus epidemic. In this way the history of typhus and public health reform are indelibly intertwined in Glasgow. The research in this chapter will serve to illuminate this period of Glasgow's history that has largely been kept in the shadow of English sanitary reform.

As the first half of the nineteenth century drew to a close, marking the end of the first chapter of public health in Glasgow, the perception of continuity persisted. This can largely be attributed to the rejection of the Public Health (Scotland) Bill in 1849, which meant that the traditional system of local legislation, enacted by civic leaders and implemented by police commissioners remained firmly in place. Chronic health problems that had plagued the city in the first half of the century such as unsanitary conditions and unclean water sources also continued in Glasgow, causing 'a huge backlog of problems' which required 'curative rather than preventative effort[s]' on the part of local leaders.[263]

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263 Gibb, p. 60.

Contributing to these issues was the ongoing housing crisis. According to the 1861 census, 100,000 people lived in one-roomed houses, with the most abysmal conditions being concentrated on High Street, the Saltmarket and other neighbourhoods in Glasgow's city centre.[264] Moreover, typhus and other diseases continued to consume Glasgow's economic and medical resources and contribute to the city's high mortality rates which remained as high as thirty deaths per thousand inhabitants between 1855 and 1864.[265]

As in the first half of the century, taming typhus remained a priority of physicians.[266] Typhus continued to affect the same demographic: working-class people in their prime, who could not afford to be treated privately at home and who overwhelmed Glasgow's hospitals during epidemics. Furthermore, typhus posed a threat to the physicians themselves, who often succumbed to typhus while treating patients. In fact, treating typhus patients was considered such a dangerous career in the 1860s, physicians would be given higher life insurance premiums. For example, when a Glaswegian physician was looking to get married, he applied for life insurance and was examined by another physician named Harry Rainy. Upon learning that his patient was engaged in practice in the Anderston district, which was notorious for typhus, Rainy advised him to get a substantial life premium because he had not yet contracted typhus.[267]

Despite the constancy in the housing crisis and the threat of typhus, the period between 1849 and 1867 was a time of remarkable metamorphosis in Glasgow's public health sector. Significantly, during this period Glaswegian legislators began to take more interest in public health initiatives, leading to an increased respect for the medical profession. The result of this expanded contact and cooperation between the medical and political professionals was the early development of a cohesive sanitary administration designed to act as a unified front against infectious disease. Importantly, leaders in the medical field also began to emphasize the importance of implementing a centralized approach in Glasgow for mitigating epidemics and preventing the diffusion of diseases such as typhus. This line of thinking was abundantly clear in Russell's 'The Policy and Practice of Glasgow in the Management of Epidemic Diseases' (1883), where he outlined his belief

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264 Cage, 'Health in Glasgow', pp. 62-63 and James Burn Russell, 'Analysis of Three Hundred Cases of Typhus', *Glasgow Medical Journal,* 12.46 (1864), 142-174 (p. 142).

265 Ibid., p. 29.

266 Although the bacterial cause of typhus was unknown in the nineteenth century, it is worth noting that there were no mutations in the bacteria *Rickettsia prowazekii* making it more or less virulent. Thus, it remained a problem in the city both endemically and epidemically in the second half of the nineteenth century.

267 Freeland Fergus, 'Early Reminiscences', *Glasgow Medical Journal* 98.1 (1895), 21-35 (p. 26).

that it was only through a unified response that control over epidemics –especially typhus– could be wrested.[268] In a passage he articulated this further, stating,

> Not only is epidemic disease always and in all places at the centre of sanitary activities of all kinds but of all objects of sanitary activities of all kinds but of all the objects of sanitary administration, the control and repression of epidemic disease depends most for a successful issue upon proper differentiation of function. But there must be not conflicts of interests, no diversity of dealing with classes in the community into separate jurisdictions, or distribution of sanitary function through independent departments, otherwise failure is the inevitable result.[269]

This assertion by Russell indicates more confidence in the medical department's ability to act as a vessel of change, a divergence from the past physicians who had deferred to a non-medical authority, such as the Lord Provost, to enact sanitary reform. In part, this confidence can be traced back to the fact that physicians had been granted more power following the passage of the Medical Act (1858) which created the General Medical Council and tightened the regulations surrounding the qualifications of practitioners in Ireland, Scotland, and England.[270] The Medical Act allowed for more cohesion to occur within the medical field and legitimized the profession in society with the general push to hire qualified, educated medical practitioners to positions of power, such as medical police forces and medical officers of health following its passage.[271] It was also during this period that physicians would meet their biggest advocate in social reform: John Ure (1824-1901), a philanthropist and social reformer sympathetic to the physicians' cause. Ure's election to the Glasgow Town Council in 1856 ushered in a new age of unity in public health policy between Glasgow's legislators and physicians. For this reason, Ure is a pivotal figure in the fight against typhus and other infectious disease in Glasgow.

The first section of this chapter will focus on Ure's career, as some of the most effective public health legislation in Glasgow's history of combatting typhus was passed under his leadership between the years 1856 and 1866, including the Public Nuisance Removal (Scotland) Act (1856), the creation of the Nuisance Committee in 1857, and the 1862 and 1866 Police Acts. Part two of this chapter will analyse the period following the appointment of William Tennant Gairdner (1824-1907), as Glasgow's first medical officer of health in 1863 under the provisions of the 1862 Police Act. Under Gairdner, who was

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268 James Burn Russell, 'The Policy and Practice of Glasgow in the Management of Epidemic Diseases, with Results', *Transactions. Epidemiological Society of London,*1 (1883), 68-95 (p. 69).
269 Ibid.
270 M.J.D. Roberts, 'The Politics of Professionalization: MPs, Medical Men, and the 1858 Medical Act', *Medical History,* 53.1, (January 2009), 37-56 (p. 55).
271 Thomas Ferguson, *The Dawn of Scottish Social Welfare: A Survey from the Medieval Times to 1863,* (London: Thomas Nelson and Sons, 1948), p. 253.

hailed as one of the 'most outstanding men of his time',[272] the sanitary map of Glasgow changed significantly, making his time in office a pivotal point in the city's history. The following period will analyse the effects of the 1864-1865 typhus epidemic on Glasgow's legislation leading up to the passage of the 1867 Public Health (Scotland) Act.

2.1 Local Sanitary Reform Begins to Occur in Glasgow

John Ure remains one of the most important figures in sanitary reform in Glasgow. Although medical men like Gairdner and James Burn Russell (1837-1904) are often given the deserved credit for initiating sanitary reform in the second half of the century, without Ure's advocacy on their behalf, one could argue that they would not have been able to accomplish as much as they did.[273] Under Ure's leadership in the 1850s and 1860s a cohesive sanitary administration began to form and the living conditions in Glasgow's slums began to improve significantly.

The only son of a distinguished family in the incorporated baking trade, Ure showed an interest in philanthropic work from a young age. After inheriting his father's business, he chose to consolidate his manufacturing work allowing him to spend more time traversing the poorer districts of Glasgow.[274] There he examined the housing conditions and poor health outcomes of young children as compared to the wealthier areas where he had always lived. Notably, Ure's kind and unassuming manner made him welcome in the homes of the working class, which allowed for genuine conversations to occur regarding the lived experience of the impoverished citizens.[275]

Ure entered politics in 1856 as the youngest member of Glasgow's Town Council.[276] This was an impressive feat for the young social reformer, as the Town Council remained entrenched within the conservative mindset of the landlord class which dominated it.[277]

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272 Fergus, 'Early Reminiscences', p. 27.

273 Although Ure's name is often mentioned briefly by historians such as Dingwall and Olive Checkland in connection with the passage of the amended Nuisance Removal Act in Scotland, the enormity of the impact his election had in changing the politics of the traditionally wealthy Town Council is often overlooked. Ure's tireless advocacy on behalf of the working class and dedication to raising the living and sanitary standards in Glasgow allowed for the work of notable medical professionals such as Gairdner and Russell, who are traditionally credited in secondary literature for the public health advancements that occurred in the mid-to-late nineteenth century.

274 Nathan Dunlop, 'The Early Days of Public Health Reform in Glasgow', *Public Health* (1911), 65-70 (p. 65).

275 Ibid.

276 Barr and James Brown, The Lord Provosts of Glasgow (Glasgow: John Tweed, 1883), p. 346.

277 Dunlop, p. 65.

With his interest in sanitation and determination to aid the poor, Ure's appointment would signify a break in the aloof nature of the Town Council, initiating a new era of legislative reform. In the early years of his career Ure faced a great deal of scepticism from his colleagues, who were concerned that his sanitary plans would not ensure improvements in the working-class neighbourhoods while also draining Glasgow's fiscal budget.[278] He was unfazed, however, and eagerly began working towards reforming the sanitary measures in Glasgow.

He was aided in these efforts by the passage of the Scottish Registration Act, which came into force on 1 January 1855.[279] The act ended the practice of ecclesiastic reporting of Scottish births and deaths and established a governmental system for accurately tracking the population.[280] Ure utilized the mortality rates from disease combined with data from the third cholera epidemic in 1854 to convince the members of the Town Council of the need to improve the sanitary conditions of the working-class neighbourhoods.[281] His efforts were successful, and in 1856 the amended Nuisance Removal (Scotland) Act was passed. Under the provisions of the act, a Committee of Nuisances was formed in the Town Council in 1857.[282] Ure was elected to the committee as a regular member in 1857 but the Lord Provost, Peter Clouston, saw his potential and nominated him for the chair position.[283] Although his colleagues had reservations about Ure's bold schemes for combating the deprivation and disease which prevailed in the slums of Glasgow he was unanimously chosen as the chair of the committee in 1858.[284]

His first accomplishment as chair was the submission of a scheme for the sanitary improvement of Glasgow. The plans included a resolution which saw the absorption of the existing Smoke Committee into the Sanitary Committee, forming a unified sanitary authority in Glasgow.[285] According to Ure, this newly established committee was to regulate the supply of conveniences, hold the lodging houses under surveillance and

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278 Ibid.

279 National Records of Scotland, 'The Statutory Registers of Births, Deaths and Marriages', in *Jock Tamson's Bairns: A History of the Records of the General Register Office for Scotland* by Cecil Sinclair (Edinburgh, 2000), p. 4.

280 'Scotland's Five Waves of Public Health', *Public Health Reform Scotland*, n.d., p. 1 <https://publichealthreform.scot/media/1630/phs-timeline.pdf> [accessed 4 July 2023].

281 Dunlop, p. 65.

282 George Alexander Gibson, *Life of Sir William Tennant Gairdner, K.C.B., M.D. L.L.D., F.R.S., Regius Professor of Medicine in the University of Glasgow*, (Glasgow: James Maclehose and Sons, 1912), p. 92.

283 Dunlop, p. 65.

284 Ibid.

285 Gibson, *Life of Sir William Tennant Gairdner,* p. 91.

regulate their occupancies and procure the abatement of nuisances arising from works.[286] Importantly, he designated this new sanitary committee as an independent entity which would cooperate with other public departments.[287] In doing so he effectively divided the responsibility of overseeing Glasgow's public health system, which until that point had rested solely upon the police.[288]

With this authority established, Ure set out to expand his efforts of sanitary reform in Glasgow. To accomplish this, he requested the formation of a deputation to observe how public health measures for the abatement of disease were being carried out in other cities in the United Kingdom.[289] The Master of Works, John Carrick, the chief constable James Smart, and James Moir, a Town Councillor were selected to accompany Ure in his journeys.[290] The group travelled to major metropolises like London, Manchester, Paris and Dublin to investigate how each city addressed epidemics of typhus and cholera through preventive as well as remedial measures.[291] After gathering sufficient evidence the deputation returned to Glasgow, where Carrick, Moir and Smart drafted a report on the sanitary state of other cities compared to Glasgow.[292] Ure was disappointed with the original draft of the report because it showed a divergence in opinion on what changes should be made in Glasgow.[293] He asked Carrick, Moir and Smart to perambulate through the slums of Glasgow so they could understand his disagreement before he made extensive edits to their report.[294]

After the three men returned from the Glaswegian slums, they were in absolute agreement with Ure on the necessary sanitary changes to be implemented.[295] Once Ure had made the corrections, the report was released on 25 October 1859 with the signatures of every member of the commission.[296] Ure, Carrick, Moir and Smart's disapproval of the sanitary condition of Glasgow is steeped in the lines of the report, with quips like 'as bad as is the condition of the older districts of the city, a worse state of matters was disclosed by an

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286 Dunlop, p. 66.
287 Ibid.
288 Brunton, 'Policy, Powers and Practice', pp. 173-174.
289 Bell and Paton, p. 185.
290 D-HE 1/5/1, John Ure, *Statement by Mr. Ure for the Information of The Board of Police on the Sanitary Scheme and the Duties of the Medical Officers of Health* (Glasgow: Robert Anderson, 1865), p. 4.
291 Bell and Paton, p. 185.
292 Ure, p. 4.
293 Ibid.
294 Gibson, *Life of Sir William Tennant Gairdner*, p. 92.
295 Ibid., p. 93.
296 John Carrick, 'Introductory Chapter on the Progress of Glasgow', in *Glasgow Past and Present* (Glasgow: David Robertson and Company, 1884), p. xxi.

inspection … of the more recently-erected houses for the working-classes. The meuse lanes of Anderston, Cowcaddens and Blythswood Holm furnish examples of the wretched character of the modern class of dwellings for the poorer order'.[297] The deputation agreed that although the sanitary conditions in Glasgow were not necessarily worse than cities in Ireland and Scotland, they were pitiful when compared to English cities.[298] Their report attributed England's success to the regulations in the construction of households and the organization of their local sanitary departments under the centralized system that was installed under the 1848 Public Health Act.[299]

These criticisms were followed by recommendations for remedial measures which could be taken in Glasgow to improve the sanitary condition of the lower-class neighbourhoods and reduce the prevalence of diseases like typhus.[300] This advice largely centred around the replacement of properties deemed insanitary with new housing constructed with humane dimensions and access to fresh air and light.[301] Ure and the rest of the delegation also suggested increasing access to adequate water supplies in Glasgow to allow for the cleansing of residencies, clothing and persons.[302] Moreover, they prompted Glasgow's authorities limit the number of occupants allowed in buildings to eradicate overcrowding.[303] To oversee these developments, the delegation proposed that a 'competent medical officer and staff of nuisance inspectors should be appointed in Glasgow'.[304]

After Ure's report was released, a committee was created to enact the suggestions of the deputation into a new Police Act which received the sanction of Parliament in 1862.[305] The act was significant for several reasons. Namely, it was the first Act to give powers to Glaswegian legislators to enact ticketing measures to address overcrowding and appoint a medical officer of health to enforce proper sanitary regulations.[306] Nonetheless, flaws in the construction of the legislation and its clauses weakened its effectiveness. Any powers to address epidemics of typhus and other diseases were provisional, meaning an epidemic

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297 Ibid., pp. xxi-xxii.
298 Ibid., pp. xxii-xxiii.
299 Bell and Paton, p. 186.
300 Carrick, pp. xxii-x.
301 Ibid., p. xxiii.
302 Ibid., pp. xxiii-xxiv.
303 Ibid.
304 Ure, p. 5.
305 Carrick., pp. xxiv-xxv.
306 *An Act to Consolidate and Amend the Acts Relating to the Police (1862*), pp. 109, 160.

had to be declared before action could be taken against it.[307] Furthermore, the Act was vague in its assignment of sanitary responsibilities and only loosely defined the function of the sanitary office.[308] Regardless of their weak nature, the clauses were considered so exceptional that the act was assigned a five-year enactment period, after which time it would be put up for another vote in 1866.[309]

2.2 William Gairdner Initiates Change in Glasgow, The Battle Against Typhus

Immediately following the passing of the 1862 Police Act, Ure set about hiring a medical officer of health. As the medical department would be the first of its kind, Ure and his colleagues thought it important to select a competent chief medical officer. Finding the ideal candidate was no easy task as it was essential that the medical officer was a well-respected physician with extensive knowledge of 'sanitary science,' and familiarity with the leading phenomena of diseases of a 'zymotic'[310] class and their origins, methods of diffusion, mitigation, prevention and treatment.[311] According to Ure, Glasgow's chief medical officer would be responsible for overseeing the newly formed medical staff and act as the liaison between the medical office and the older Sanitary Committee.[312] The medical officer would also educate 'the people – more especially the humbler classes– as to their [sanitary] duties'.[313] Although the expectations for the man assigned to the job appeared to be great upon first glance, Ure purposefully designated the job as only being part-time, so he would 'be at liberty to follow his profession while also discharging public duties'.[314] He eventually decided upon William Gairdner, a well-respected physician and newly appointed professor of medicine at the University of Glasgow.

Gairdner had an impressive resume, having studied medicine under William Pulteney Alison at the University of Edinburgh before joining the Edinburgh Royal Infirmary in 1846 as a resident assistant.[315] His time working with typhus patients at the Royal Infirmary would shape the trajectory of his career, as it was noted by his friends and colleagues that the reason he took such an intense interest in public health and sanitary

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307 Chalmers, p. 84.
308 *An Act to Consolidate and Amend the Acts Relating to the Police (1862),* pp. 111-114.
309 Ibid., p. 173.
310 Zymotic is a term used in the nineteenth century for acutely infectious diseases.
311 Ure, p. 7.
312 Ibid., p. 8.
313 Ibid.
314 Ibid., p. 9.
315 'Obituary: Sir William Tennant Gairdner', *The British Medical Journal,* 2 (1907), 53-55 (p. 53).

reform was because of the terrible scenes he witnessed there.[316] In 1863, Gairdner became the first medical officer of health in Glasgow, collaborating with the legislators to improve the sanitary state of the city.

As Gairdner was only working part time, Ure also ensured that five district surgeons of police (Drs MacGill, Dunlop, Renfrew, Young and Johnston) were hired to help him perform his sanitary duties.[317] The medical staff was assigned to provide supervision as to the general sanitary state of Glasgow, with each district surgeon inspecting the condition of their own district to monitor the streets and tenements for threats of disease.[318] The district surgeons would then report their findings to Gairdner who would analyse the data and inform the Sanitary Committee what actions should be taken to address the health issues occurring at the local level.

Almost immediately after Gairdner and his staff were appointed, typhus cases began to rise rapidly in Glasgow. Echoing the struggles of his predecessors, Gairdner found himself scrambling to assemble a response to the epidemic to convey some semblance of competency as an organization to the public. Russell, Gairdner's protégé, likened him to a commander-in-chief 'newly appointed with an active enemy swarming over the land, to hold every strategetical [sic] point, well-found and well-equipped, while he possessed nothing but his commission'.[319] He was forced 'to recruit and drill his army, …subsidize mercenaries, … bear a brave front, and make the most of his meagre resources'.[320] As the medical office had just been formed, there was no precedence for Gairdner to fall back upon, therefore every sanitary plan had to be developed as a new entity.

Gairdner, ever an astute sanitarian, decided that he had to utilize the powers given in the 1862 Police Act to his advantage, however limited they were. Fortunately, one of these powers was the regulation of occupancy in common lodging-houses.[321] The regulations in this clause fixed a minimum size of house which might be inhabited, leading to the closure

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316 'Obituary: Sir William Tennant Gairdner', *The British Medical Journal*, p. 53 and 'Obituary: Sir William Tennant Gairdner', 68.2 (1907), 113-118 (p. 113) <https://pdfs.semanticscholar.org/c158/007d9723760fde4e8a1cde85369c80fc4ca4.pdf> [accessed 1 June 2023].

317 Russell, *The Evolution and Function of Public Health Administration,* p. 31.

318 Ure, p. 8.

319 Russell, *The Evolution and Function of Public Health Administration,* p. 31.

320 Ibid.

321 Maver, p. 171.

of hundreds of undersized houses.[322] Gairdner found this law to be of great use when combating typhus, observing that,

> [f]or the first time in the history of the City, the authorities have acquired power to signify to the proprietors the limits within which the population of small dwelling houses of one, two, and three apartments must be restricted; and also, in certain extreme cases to insist upon structural alterations… The Clauses of the Act here referred to have been framed after very careful consideration... and considerate application …to buildings, the state of which is demonstrably injurious to the public health… will be productive of great good.[323]

Gairdner utilitzed this power to halt the spread of typhus in two notorious areas, the first being "Binnie's Court" on 285 Argyle Street and the second 23 Drygate which were both consumed by typhus infections in spring of 1863.[324] Each building that was three rooms or less and contained fewer than 2,000 cubic feet of space was fixed with a metal ticket listing the number of residents the facility could contain, with the total being calculated at 300 cubic feet per person over age eight.[325] He justified the use of these powers in his *Special Report on the Application of Clauses*, writing:

> The strong convictions I entertain on this subject and the very decided support afforded to these convictions by the facts of the present epidemic, have induced me to recommend a more stringent application than heretofore of the new powers conferred by the Glasgow Police Act in two of the most notorious fever localities... I am, therefore, well content that these two cases should be fully and clearly before the public as a basis for future action; and I hope that, by securing in advance the influence of free discussion and the support of public opinion to the measures proposed, they will be rendered both more safe and more efficient for the purpose in view – the gradual reformation, and in some cases reconstruction, of the houses of the poorer classes, in accordance with those conditions which can alone deprive epidemic disease of its most dangerous peculiarities.[326]

The initial efforts in these two areas were then expanded to all lodging-houses and small buildings in Glasgow.[327] In doing so, Gairdner identified certain neighbourhoods in the central district in Glasgow where the threat of typhus transmissions could be arrested. According to his 1863 report, areas of particular concern were the Bridgegate, the Saltmarket, the western portion of Gallowgate, and isolated localities on High Street and Argyle Street.[328] Gairdner noted his frustration that the powers to address these localities were only provisionally granted because of the typhus epidemic and argued that it would

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322 Russell, *The Evolution and Function of Public Health Administration*, pp. 64-65.
323 Chalmers, p. 30.
324 Russell, *The Evolution and Function of Public Health Administration*, p. 65.
325 *An Act to Consolidate and Amend the Acts Relating to the Police (1862*), p. 160.
326 Chalmers, pp. 29-30.
327 John Butt, 'Housing', in *The Working Class in Glasgow 1750-1914* edited by R. A. Cage (London: Croom Helm, 1987), p. 46.
328 D-HE 1/1/1, William Tennant Gairdner, *Report by the Medical Officer of Health for the City of Glasgow to the Board of Police, October 1863* (Glasgow: Robert Anderson, 1863), p. 4.

be more prudent to create 'more general measures of sanitary regulation' which would extend beyond the confines of present health problems.[329]

Despite the early ticketing scheme, by January 1864 Gairdner and his medical commissioners found themselves overwhelmed and unprepared to take on the flood of typhus cases which inundated the hospitals.[330] To aid Gairdner with special sanitary duties, three non-medical officers were selected from the police force to join the sanitary committee under emergency powers.[331] Typhus cases continued to rise, with 2,397 fever patients being admitted into the Glasgow Royal Infirmary alone.[332] By early winter the bedspace in the Infirmary had been exhausted and emergency conferences were held between the Managers of the Infirmary, the Parochial Boards, and the Police Board, with Gairdner attending in his capacity as the medical officer, to find a solution to the accommodation problems.[333] Gairdner was under great pressure to announce the presence of an epidemic during these meetings because the powers of the 1862 Act could only be invoked and renewed every six months after it was determined that there was an active epidemic.[334] Russell described the internal conflict Gairdner must have felt in these instances, writing,

> Dr. Gairdner had, in the first place, to choose between the risk of crying "fire" and incurring the ridicule of the public who turned out to see a good blaze and could perceive nothing but smoke (not to speak of the anger of the proprietor, whose property had been unnecessarily made notorious), and recriminations of the same public if, by misjudged delay, half the city had been wrapped in flames.[335]

Under Gairdner's guidance, Glasgow's leaders decided to invoke the power to erect a temporary fever hospital. When they began making offers to buy existing buildings, however, they were surprised to find themselves facing concerned residents, who were worried about the risk of having fever patients near their dwellings.[336] With every option exhausted and winter weather descending upon Glasgow, the group had no choice but to build a fever hospital. Land was purchased in the St. Rollox district and the first municipal hospital in the city's history, named the Parliamentary Road Hospital, was erected over the

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329 Ibid., p. 8.
330 D-HE/1/1/2, William Tennant Gairdner, *Report, 1 August 1864,* pp. 4-5.
331 Russell, *The Evolution and Function of Public Health Administration,* p. 83.
332 Robert Perry, *Observations on the Present Epidemic of Typhus* (Glasgow: William Mackenzie, 1866), p. 7.
333 Russell, *The Evolution and Function of Public Health Administration,* p. 83.
334 William Tennant Gairdner, *Special Report by Dr. Gairdner to the Magistrates Committee, On the Proposed Temporary Fever Hospital in Nassau Court, Anderston* (Glasgow: Robert Anderson, 1865), p. 5.
335 Russell, *The Evolution and Function of Public Health Administration,* p. 83.
336 Gairdner, *Special Report by Dr. Gairdner to the Magistrates Committee,* pp. 9-10.

winter and furnished in the spring.[337] The new structure featured a protective wall surrounding the perimeter, designed to protect the surrounding community from infection, and 136 much needed beds for typhus patients.[338] Although the bedspace was welcomed, Gairdner disapproved of the gate, stating that there was never a case of typhus fever being passed between detached buildings unless 'through the medium of persons or articles of clothing carried from one to the other'.[339] Objections aside, the new hospital opened on the 25 April 1865 relieving the pressure placed on the Glasgow Royal Infirmary, which had long borne the brunt of treating Glasgow's typhus cases.[340]

Figure 2.1 Parliamentary Road Hospital, Shown on a Map in 1892-1893. Source: The National Library of Scotland in 'Historic Hospitals: Glasgow', <https://historic-hospitals.com/gazetteer/glasgow/> [accessed 11 August 2023].

As it was built under the 1862 Act, the Parliamentary Road Hospital could only be considered a temporary structure created under emergency powers.[341] Ergo the hospital continually faced legal battles but was permitted to remain standing because the typhus epidemic remained for over a year, enabling the city's authorities to apply for numerous

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337 Maver, p. 171.

338 Russell, *The Evolution and Function of Public Health Administration*, p. 55 and John Fergus, 'The Medical Institutions of Glasgow', in *British Medical Association The 90th Annual Meeting, Glasgow, July, 1922: Book of Glasgow* (Glasgow: Alex Macdougall, 1922), p. 127.

339 Gairdner, *Special Report by Dr. Gairdner to the Magistrates Committee,* p. 10.

340 The Glasgow Royal Infirmary was also an unusual case, as voluntary hospitals elsewhere did not admit fever patients because they limited the number of chronic (non-infectious) and surgical patients that could be treated. (Marguerite W. Dupree, 'Family Care and Hospital Care: The "Sick Poor" in Nineteenth-Century Glasgow', *The Society for the Social History of Medicine* 6.2 (1993), 195-211 (pp. 198, 200) and Fergus, 'The Medical Institutions of Glasgow', p. 127.)

341 D-HE 1/5/1, James Burn Russell, *Report from the City of Glasgow Fever Hospital, From 25th April 1865 to 30th April 1866* (Glasgow, Robert Anderson, 1866), p. 7.

six-month extensions of the emergency powers.[342] The structure became permanent following corrective edits in the Ninth Police Act (1866), increasing Glasgow's ability to handle future influxes of typhus patients.[343] Despite the additional bedspace and medical staff, 1,138 typhus patients perished in 1864 with 1,177 additional losses the following year.[344]

Outside the walls of the new fever hospital, confusion had descended upon the local council, sanitary commission and the medical office following an 'Order of the Council', which had granted the Magistrate's Committee with house-to-house visitation powers.[345] This committee then assumed they also had the right to proclaim which districts had active epidemics or threatened new outbreaks of typhus, a task traditionally assigned to the medical office.[346] This confusion amongst Glasgow's authorities coupled with the legal difficulties in maintaining the Parliamentary Road Hospital during the 1864-1865 typhus epidemic brought to light the defects in the provisions of the 1862 Police Act.

2.3 Sanitary Legislation Begins to Formalize, 1866-1867

With the typhus epidemic and failures of the 1862 Act fresh in the legislators' minds when they reconvened in 1866, Glasgow's sanitary legislation underwent significant revisions. In the subsequent Police Act, sanitary powers were no longer contingent on the city being engulfed in an epidemic and all hospitals constructed under emergency powers were to be considered permanent structures. This allowed centralizing Glasgow's treatment centres for typhus patients, enabling small parish poorhouse fever wards to close.[347] Also included in the Act was a firm delegation of local committees' responsibilities, to avoid the corruption of authority that occurred during the 1864-1865 typhus epidemic.[348] For example, the Act mandated that local authorities were duty bound to maintain and erect fever hospitals within the city.[349] The provisions in the 1866 Police Act also reflected the legislators' realization of the need for prophylactic measures. For example, the Act

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342 Russell, *The Evolution and Function of Public Health Administration*, p. 55.
343 Ibid., p. 56.
344 Ibid., pp. 29, 33.
345 Ibid., p. 34.
346 Ibid.
347 Ibid.
348 *An Act to Regulate the Police and Statute Labour of the City of Glasgow; And for Other Purposes* (23 July 1866), p. 3922 <https://vlex.co.uk/vid/glasgow-police-act-1866-808273745> [accessed 10 June 2023].
349 Alistair Lindsay Goldsmith, 'The Development of the City of Glasgow Police, c. 1800-1939', *University of Strathclyde* (2002), p. 45 <https://stax.strath.ac.uk/concern/theses/ws859f64s> [accessed 1 June 2023].

contained a clause mandating sanitary inspectors to remove all fever cases they discovered to hospitals to prevent further communal spread.[350]

Gairdner, like many other Glaswegian physicians, championed these isolation methods by pointing out that the contagion responsible for the spread of typhus appeared to be 'susceptible of *almost certain extinction,* [or eradication]… where the sick are carefully and systematically separated from close communication with the healthy'.[351] He also added that,

> It is no uncommon thing for fever cases to run a course of a week, or even a fortnight, before they are discovered in the houses of the poor; nay, it is to be feared that some are never discovered at all, and that medical assistance is only sought when two or three of a family have taken ill, and when, in all probability, contagion has been at work for weeks in the infected locality. From inquiries I am quite satisfied that many fever cases, even in the worst possible sanitary circumstances, in the most overcrowded houses, …are not, and some of these cannot be, removed from the Infirmary.[352]

However, difficulties with these inspections became clear when the physicians and inspectors found that there was a class-based language barrier because immigrants from the Highlands and Ireland tended to settle together.[353] As many of these new arrivals only spoke Gaelic, there were large sections of Glasgow's slums unfamiliar with the English language.[354] Thus, physicians and inspectors, hoping to gain any information on fever cases and the inhabitants' symptoms, had to rely on interpreters and visual guides to determine whether the person had typhus.[355] Confirmed typhus cases were then referred to the Glasgow Royal Infirmary or Parliamentary Road Hospital.

Aiding in Gairdner's efforts to reduce typhus, was the ticketing system which had been implemented in 1863, as it helped the inspectors to distinguish which dwellings were most at risk for overcrowding.[356] Gairdner also began supervising night-time inspections of ticketed houses to catch homeowners exceeding the capacity limits or hiding typhus cases. Those who were caught were liable for statutory penalties and their lodgers given a fine 'not exceeding five shillings per day' of their stay.[357] Gairdner agreed with the strict

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350 Bell and Paton, p. 187.
351 Gairdner, *Report by the Medical Officer of Health for the City of Glasgow to the Board of Police, October 1863,* p. 5.
352 Chalmers, p. 29.
353 Fergus, 'Early Reminiscences', p. 23.
354 Ibid.
355 Ibid.
356 Butt, 'Housing', p. 46.
357 Gairdner, *Report, 1 August 1864,* p. 12.

enforcement of the fines as a deterrent against 'flagrant violations of the act'.[358] Still, he insisted that the cooperation and support of the owners and inhabitants of the buildings was the desired result.[359] From the proprietors' perspective, however, compliance meant a loss of revenue and many sought ways to avoid being caught during inspections. Some of the more elaborate evading schemes included buying property that had higher ceilings which technically permitted more inhabitants under the 300 cubic foot rule.[360]

This reticence to comply with ticketing laws was part of a larger resistance by private developers and landowners working within the feudal system to preserve the practice of maximizing profit margins by offsetting the high cost of buying land in the municipal boundaries of Glasgow by hoarding lots, building small tenements and passing the additional costs of fueing and maintenance down to their tenants.[361] Changing predatory leasing and building practices through legislation was exceedingly difficult as private investors, fueled by self-interests, continuously resisted any change to the taxation scheme, fueing or poor relief.[362] Regardless of the proprietors who took advantage of loopholes in the ticketing system, Gairdner and his sanitary inspectors followed the tickets and typhus through the worst areas of overcrowding in Glasgow, slowly eroding the grip typhus had long had on the labouring class of the city.

As Glasgow's public health system began to formalize, Scotland as a nation was facing a reckoning. Without a national public health system, there was no consensus amongst local laws on how to address sanitary issues; therefore, discrepancies on public health rules and regulations became increasingly frequent in Scottish courts, and lawyers began pressuring for comprehensive public health legislation which would provide a structure to build applicable legal arguments.[363] Adding to the pressure on Scottish parliamentary members

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358 Ibid.

359 William Tennant Gairdner, 'Observations on the Fever-Dens of Glasgow', *British Medical Journal,* 2.355 (1867), 332-335 (p. 334).

360 Butt, 'Housing', p. 46.

361 Thomas Martin Devine, *Glasgow, Volume II: 1830 to 1912* (Manchester: Manchester University Press, 1996), p. 13. It should be noted that attempts to raise the funds to improve the living standards in Glasgow were also initially stymied. What was viewed as excess taxation by an already financially strained population proved unpopular politically with the defeat of Lord Provost Blackie in the following election following the passage of the City Improvement Act (1866). This will be explored in greater detail in the following chapter. His successor, Lord Provost Lumsden, continued to pursue the provisions of the City Improvement Act, however, the lack of incentive to build affordable, quality working-class housing meant that the housing problem in Glasgow would persist into the late twentieth century. (Fiona Crawford, Sheila Beck, Phil Hanlon, 'Will Glasgow Flourish? Regeneration and Health in Glasgow: Learning From the Past, Analysing the Present and Planning for the Future', *Glasgow Centre for Population Health* (2007), 1-134 (p. 44).)

362 Ibid.

363 I.S. MacDonald, 'The Society of Medical Officers of Health: A Scottish Centenary', *Public Health*, 106.5 (1992), 335-342 (p. 336).

was the fact that legislation had begun to be passed in parliament that applied to both England and Scotland. The new, British-wide sanitary legislation was designed under the English legal system and thus, could not be enacted in Scotland because of the difference in legal procedures, necessitating a revision of Scotland's sanitary scheme.[364]

The recognition that there needed to be a consolidation of the numerous public health laws in Scotland into one national public health system overseen by a central authority would later lead to the creation of the 1867 Public Health (Scotland) Act.[365] This Act would effectively end the almost twenty-year delay in enacting nationally recognized public health legislation. However, the Scots had a long history of preferring to handle affairs on a municipal level, which was especially true of large cities, which did not want to relinquish any power to a central authority. Complications implementing the 1867 Act meant that it was not necessarily an improvement on the local legislation which had been passed in Glasgow during the interim period.

Despite the slow start at the beginning of the second half of the century, Glasgow experienced remarkable growth in its public health sector between 1849 and 1867. Russell provided an eloquent synopsis of the history of the developments of public health made in Glasgow during the interim period.

> When we look back upon the history of municipal administration as regards the public health, we find that, speaking generally, the first ten of those forty years represents the period of awakening and groping for an instrument and a method, the remaining thirty, the period of resolute endeavour, working through a developing organization, and becoming year by year more precise in direction, so that every ten years represents a stage in administrative progress.[366]

The election of Ure to Town Council signified an abolishment of the gap between medical authorities and local leaders in Glasgow making it a pivotal event in the city's sanitary history. Additionally, during this period of sanitary reform, the passage of the 1862 Police Act and the appointment Gairdner, one of the most esteemed physicians in Scotland, meant that Glasgow was in an increasingly better position to address typhus epidemics. When flaws in the 1862 Act were revealed, the municipal leaders were able to quickly draft and sponsor another police act in Parliament, which was passed into law in 1866 to rectify the problems. The 1866 Police Act was a masterfully crafted piece of legislation,

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364 Walter Cook Spens, The Sanitary System of Scotland: Its Defects and Proposed Remedies (Edinburgh: Edmonston and Douglas, 1876), p. 5.

365 Royal Sanitary Commission, *Second Report of the Royal Sanitary Commission, Part 1: Minutes of Evidence from November 1869 to June 1870* (London: George Edward Eyre and William Spottiswoode, 1871), III, p. 138.

366 Russell, *The Evolution and Function of Public Health Administration*, p. 3.

built on the lessons learned from the typhus epidemic of 1864-1865. In continually strengthening its public health legislation to adapt to the extensive and growing needs of its population, Glasgow surpassed the development of public health reform in many Scottish cities and began to ease the inequalities in mortality rates between Glasgow and other cities in England and Wales.

Chapter 3: National Health Laws are Created and Glasgow's Cityscape is Revised

By the late 1860s medical and sanitary knowledge had advanced to the extent that physicians in both England and Scotland could begin to achieve a form of compromise if not consensus. Both recognized the need for sweeping sanitary reform to reduce the prevalence of diseases such as cholera and typhus. This reform often concerned ventilation and sewage in the Chadwickian sense, and the destruction of overcrowded conditions in impoverished neighbourhoods Alison had supported. The increased cohesion in medical thought between Scottish and English sanitarians highlighted the glaring incompatibility between the two nations' public health systems. England had retained the central public health authority, created under the 1848 Public Health Act, while Scotland's public health laws remained de-centralized –a system fiercely protected by the large burghs. However, during this period there was a growing movement to create Britain-wide public health legislation rather than merely Scottish or English sanitary laws, which necessitated Scotland's adoption of a centralized public health system.[367]

As Scottish members of parliament drafted a new centralized public health bill, Glasgow was discovering the effectiveness of its own local legislation against its old industrial enemy: typhus. With the enactment of the ticketing scheme and the maintenance of the Parliamentary Road Hospital under the 1862 and 1866 Police Acts, Glasgow had finally entered an era of *proactive* rather than *reactive* sanitary reform to combat the spread of typhus in the community. The effects were clear, as the number of deaths in Glasgow from typhus dropped significantly from 1,177 in 1865 to 596 in 1866, when the Police Acts went into effect.[368]

The landscape of the city also began to transform during this period. This was largely down to Gairdner who had the foresight to document the inequalities in infection and mortality rates based on location during the 1864-1865 typhus epidemic. The statistical evidence was compelling as it highlighted glaring imbalances in the rates of infection and mortality between upper-class districts like Kelvinhaugh and Blythswood and lower-class neighbourhoods in areas like the Trongate and the Drygate.[369] For example, while the rate

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367 *Second Report of the Royal Sanitary Commission,* p. 143.
368 Russell, *The Evolution and Function of Public Health Administration*, p. 33.
369 D-HE 1/5/1, William Tennant Gairdner, *Memorandum of the Medical Officer for the City of Glasgow on the Public Health Scotland Act as Compared With the Sanitary Clauses of the Glasgow Police Act, 1866* (Glasgow: Robert Anderson, 1868), p. 7.

of typhus infection in Blythswood was 1.8 cases per 1,000 residents, the rate of typhus spread in the Drygate was 26.5 cases per 1,000 inhabitants.[370] As typhus is unique in its tendency to remain concentrated within a tight foci, Gairdner stated that these statistics were ideal evidence of the deleterious effects the working-class housing had on infection control.[371] For example, where the epidemic rate exceeded more than ten cases of typhus per 1,000 residents in a district, Gairdner concluded that '*there must have been serious, and probably quite remediable defects in the domestic arrangements of the population affected*'.[372] Gairdner's work underpinned Lord Provost John Blackie's reconstruction scheme, which was passed in 1866, expanding Glasgow's public health crusade against typhus into a two-front war. [373]

Figure 3.1 1843 Map Drawn by Robert Perry of the Typhus Foci in Glasgow.[374] Source: Glasgow University Library Special Collections Department, 'Robert Perry: Facts and Observations on the Sanitary State of Glasgow'.

370 Ibid., pp. 5, 8.
371 Ibid., p. 4.
372 Ibid., p. 9.
373 Ibid., pp. 9-10.
374 Figure 3.1 shows a map drawn by Perry in 1843 to highlight the distribution of typhus in the different districts of Glasgow. It can also be used to find the affected areas like the Trongate Gairdner referenced in 1865.

Figure 3.2 1843 Map of Typhus Foci in Glasgow Drawn by Robert Perry.[375] Source: Glasgow University Library Special Collections Department, 'Robert Perry: Facts and Observations on the Sanitary State of Glasgow'.

Largely thanks to forward-thinking leaders like Blackie, Ure and Gairdner, Glasgow was the first city in Scotland to embark on a large-scale revision to address the systemic overcrowding which caused typhus.[376] Developments which increased the availability of clean water into Glasgow such as the Loch Katrine scheme, completed in 1859 when Queen Victoria opened the aqueduct, and the opening of several public washhouses which were free for city residents to utilize also contributed to the improved sanitary conditions and reduction in cases of typhus and other infectious diseases such as typhoid and cholera.[377] During this time, Glasgow also redefined the sanitary responsibilities of local authorities in Scotland by committing to maintaining a permanent fever hospital even when there was no immediate threat of typhus.[378] These developments in Glasgow generated a great deal of interest, prompting parliament to send a delegation led by Octavia Hill to observe how the city was executing its plans.[379] Through these advancements Glasgow began to reverse its almost century long reputation for being the

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375 The image shown in Figure 3.2 highlights three districts, the Bridgegate, the Trongate and the Saltmarket which were badly affected by typhus in both 1843 and 1864-1865.

376 C.M. Allan, 'The Genesis of British Urban Redevelopment with Special Reference to Glasgow', *The Economic History Review,* 18.3 (1965), 598-613 (p. 604).

377 'The Water Enterprise of Some of Our Large Towns', *British Medical Journal* 28.1 (1899): 219-221 (p. 220). Russell, *Evolution and Function of Public Health Administration*, pp. 41-42.

378 James Burn Russell, 'City of Glasgow Fever and Small-Pox Hospitals, Belvidere', *Glasgow Medical Journal* 30.1 (1888), 20-31 (p. 22).

379 'The Glasgow City Improvement Trust and the Transformation of the Victorian City', *Glasgow City Heritage Trust* (2022) <https://www.glasgowheritage.org.uk/doors-open-days-online-talk-the-glasgow-city-improvement-trust-and-the-transformation-of-the-victorian-city/> [accessed 10 June 2023 (para. 4 of 5).

most unclean and diseased city in Britain and established itself as a model municipality in public health reform.

While Glasgow began to formalize its sanitation scheme by 1867; Scotland's representatives began facing the repercussions of their rejection of the 1849 Public Health (Scotland) Bill as the British government began to enact joint public health initiatives meant to improve the state of sanitation in both England and Scotland. The first was the Sewage Utilization Act (1865) which conferred powers to a central sewage authority to construct sewage systems and hold the responsibility of maintaining and repairing the existing sewage systems.[380] The second was the Sanitary Act, passed the following year, which was designed to amend and remove perceived defects in the existing public health laws in Britain.[381] Both Acts were written under the provisions of the public health legislation in England, which had been steadily progressing under a centralized authority since the passage of the Public Health Act in 1848.[382] While the Sewage Utilization and Sanitary Acts could function effectively in England when enforced by its central authority, Scotland, with its decentralized public health system and no central committee to delegate sanitary responsibilities, found both Acts unworkable.[383]

To remedy this incompatibility in the two national legal systems, David Monro, the Sheriff of Linlithgow together with the Lord Advocate of Scotland, Edward Gordon, hastily worked to develop legislation for national public health system for Scotland.[384] As they were drafting the legislation, history began to repeat itself. Scotland's members of parliament again attacked the notion of a national public health system under a centralized authority.[385] This was especially true among representatives of large burghs with populations over 10,000 citizens, such as Glasgow and Edinburgh.[386] Gordon later testified in front of the 1869 Royal Sanitary Commission that he and Monro were obliged to limit the central authority's power because the larger conurbations displayed remarkable 'jealousy' of the actions of this central authority.[387] Monro and Gordon's enfeebled draft

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380 'Sewage Utilization Act 1865', *Vlex Justice* (1865) <https://vlex.co.uk/vid/sewage-utilization-act-1865-861259464> [accessed 1 July 2023], (para. 5 of 9).

381 'An Act to Amend the Law Relating to the Public Health', *United Kingdom Parliament* (1866), 805-826 (pp. 805, 809, 816, 822) <https://www.legislation.gov.uk/ukpga/1866/90/pdfs/ukpga_18660090_en.pdf> [accessed 1 July 2023].

382 Spens, *The Sanitary System of Scotland,* p. 5.

383 Ibid.

384 *Second Report of the Royal Sanitary Commission*, p. 137 and Macdonald, pp. 335-336.

385 *Second Report of the Royal Sanitary Commission*, p. 137.

386 Ibid.

387 Ibid., p. 139.

legislation was submitted to parliament in early 1867, and, unlike its 1849 predecessor, the new Public Health (Scotland) Act was passed into law on 15 August 1867.[388]

Glasgow remained largely unaffected by the new national legislation because Gordon and Monro had been forced to alter the original draft so that it specifically exempted large burghs from many of the provisions under the power of the central authority.[389] However Gordon, sternly impressed upon cities like Glasgow that they were still obliged to enact certain laws such as the destruction of housing, factories or businesses found to be injurious to the health of the civilians.[390] So began a new multifaceted era of public health in Glasgow, where the local acts extensively prevailed but were qualified through new privileges included in the national laws.

The first section of this chapter will examine the legislative contents of the 1867 Public Health (Scotland) Act, and how sanitary leaders in Glasgow reacted to the new laws as they pertained to the city. The reticence on their part to accept even minor alterations to Glasgow's Police or Nuisance Acts is indicative of the 'jealousy' Gordon referred to in his testimony. The second segment of this chapter will analyse the first epidemiological test of this new legislative fusion which came during the city's final typhus epidemic in 1869. It was during this last major encounter with typhus that Glasgow began to utilize the power of erecting permanent fever hospitals to isolate sufferers alongside the new national laws allowing sanitary inspectors to disinfect and destroy the belongings of the infected individuals, effectively ending the prolongation and ferocity of typhus epidemics. The third portion of this chapter will examine the expansion of public health initiatives in Glasgow in 1866 to eradicate housing known to propagate typhus. The changing landscape of the city offers evidence of the magnitude of the impact typhus had on Glasgow. By finally acknowledging that typhus would never be vanquished without first addressing the systematic overcrowding in the city, the medical and political leaders of Glasgow finally began to turn the tide on the city's nearly century-long battle with its invisible enemy. It was during the final third of the nineteenth century that typhus began its definitive decline towards extinction, driven by the advances in public health and the improved housing in Glasgow.

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388 Gairdner, *Memorandum of the Medical Officer for the City of Glasgow on the Public Health Scotland Act*, p. 3.
389 *Second Report of the Royal Sanitary Commission*, p. 138.
390 Ibid.

3.1 A New Era of Public Health Dawns in Glasgow

The 1860s were a time of great upheaval in Scotland regarding public health. Although the decentralized system had worked well for large cities like Glasgow, which had qualified medical authorities to supervise the sanitary state of the cities; the sanitary laws in rural districts left much to be desired.[391] The inequalities between health outcomes in urban and rural districts became indisputable with the introduction of the Scottish Registration Act in 1855 which allowed for more reliable statistical evidence of mortality rates within different populations in Scotland. The first report, which gave the statistics for the years 1855 to 1864, subdivided the country into three groups: The Insular group, which consisted of Orkney, Shetland and Bute and included the districts of Ross and Cromarty, Inverness and Argyle.[392] The Town Districts, which embodied all towns with populations above 10,000 inhabitants, to include the districts of Govan and Barony, and the Coatbridge district of Old Monkland.[393] Mainland-Rural Districts constituted the third district and embraced the remainder of the mainland districts of Scotland not included in the Town Districts.[394]

Districts	Mean Population	Deaths in Ten Years	Percentage of Population
Insular	161,308	25,904	1.60
Mainland-Rural	1,758,089	319,188	1.78
Town	1,125,541	305,045	2.71

Table 3.1 Scottish Registrar General's Report 1855-1864 of Mortality Rates per District. Source: James Stark, *The General Statistics Obtained from Contributions to Vital Statistics: Part I. On the General Mortality of the Town and Rural Districts of Scotland* (August 1869), 481- 487 (p. 482) <https://pmc.ncbi.nlm.nih.gov/articles/PMC5332720/pdf/edinbmedj73957-0001.pdf> [accessed 10 September 2024].

This report released by the Registrar General showed that the mortality rate in the first ten years of record keeping was significantly higher in the towns. While these statistics follow the expected trajectory, with higher populations corresponding with higher rates of death,

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391 Walter Cook Spens, 'On the Necessity of a General Measure of Legislation with Regard to Public Health', in *The Proceedings of the Philosophical Society of Glasgow, 1877-1879* (Glasgow: John Smith and Son, 1879), XI, 129-143 (p. 132).

392 James Burn Russell, 'On the Comparative Prevalence of Filth Diseases in Town and Country', in *The Proceedings of the Philosophical Society of Glasgow 1877-1879* (Glasgow: John Smith and Son, 1879), 8-33 (p. 12).

393 Ibid.

394 Ibid., pp. 12-13.

the second part of the report, which provided an overview of the incidences of death from infectious diseases revealed that death rates from communicable diseases were approximately equal between the districts.[395] James Stark (1811-1890), a Scottish statistician and miasma theorist, drew a comparative analysis between the rural and town populations of Edinburgh and Lanark in his 1869 article 'Contribution to Vital Statistics: Part II. Are Any Deaths Preventable?'. Although Stark used the results to further an argument against sanitary reformers "bold assertions" that deaths from fever were preventable, the numbers he provided regarding the deaths from typhus and other fevers[396] reveal that typhus was more fatal in the rural districts of Edinburgh and Lanark in the latter half of the nineteenth century.[397]

Interestingly, waterborne diseases such as diarrhoea, dysentery and cholera showed similar statistical trends. In the town population of Edinburgh the percentage of deaths from waterborne disease was 2.51 compared to 3.65 percent in the rural district and in the town district of Lanark the mortality rate was 3.99 percent whereas the rural district recorded a death rate of 4.33 percent.[398] The overall percentages of deaths resulting from the 'contagious class of diseases' was almost identical in both Edinburgh and Lanark, with 22.62 percent reported in towns compared to 22.44 percent in rural districts and 26.97 percent in towns and 26.19 in rural areas respectively.[399]

Disease	Edinburgh		Lanark	
	Towns	Rural	Towns	Rural
Typhus, etc. fevers. Percentage of deaths per population	3.35	4.40	4.49	5.52

Table 3.2 Percentage of Deaths per Scottish Population from Typhus Between 1855-1863. Source: James Stark, 'Contribution to Vital Statistics: Part II Are Any Deaths Preventable? If so, Are They Caused by Any Particular Class of Diseases? Is There Any Probability of the Mortality of the Towns Being Reduced to that of the Rural Districts?' *Edinburgh Medical Journal* (August 1869): 593-605 (p. 596).

Russell later wrote of the first report released by the Scottish Registrar General in a pamphlet entitled *On the Comparative Prevalence of Filth Diseases in Town and Country*

395 Stark, 'Contribution to Vital Statistics: Part II Are Any Deaths Preventable?', pp. 596-597.
396 The additional fevers under which it was tabulated include enteric fever, relapsing fever, simple continued fevers, and infantile fevers.
397 Ibid.
398 Ibid., p. 596.
399 Ibid.

(1877), noting the contrast in the adoption of preventative sanitary advancements regarding infectious diseases between the rural districts of the Insular group and the urban districts in the Town group. According to Russell, everything in the rural countryside was 'left to chance', whereas in cities such as Glasgow, the catastrophic effects of epidemic diseases such as typhus had on the population mandated both the funding and strict enforcement of preventative sanitary measures.[400] He remarked that between the permanent expenditure on general supervision of sanitation in the Town districts and the control over the channels of conveyance infectious diseases typically travelled through, 'a citizen of Glasgow runs much less risk of dying of these diseases than an inhabitant of Caithness or Aberdeenshire, or almost any other rural district of Scotland [one] choose[s] to name!'[401]

With the stagnation of rural sanitary reform and the growing efficacy of urban public health laws, Monro expressed his hope in the preface of the 1867 Public Health (Scotland) Act that the legislation would help 'lead to a material improvement in the sanitary condition of Scotland, since it not merely renders the law more easily accessible to the general public, but introduced a number of new and important powers'.[402] The Act that was passed in 1867 contained many similarities to the 1848 Public Health Act, supporting Gordon's claim that the legislation was designed to better align Scotland's public health laws to those in England.[403] Like the 1848 Act it established a central authority which was confined to recommendary powers of enforcing and enacting public health policies, but in Scotland the central authority could make an appeal in court and receive a mandate commanding a local authority to take action.[404] Additionally, the Act of 1867 conferred powers to the central authority to supervise local authorities' appointments of medical officers of health and initiate inquiries into the sanitary conditions of different districts in Scotland, similar to the responsibilities of sanitary oversight given to the Central Board of Health in England.[405]

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400 Russell, *On the Comparative Prevalence of Filth Diseases in Town and Country, p. 18*

401 Ibid.

402 Spens, *The Sanitary System of Scotland*, p. 5.

403 *Second Report of the Royal Sanitary Commission*, p. 138.

404 *Second Report of the Royal Sanitary Commission*, p. 139 and Geoffrey Best, 'The Scottish Victorian City', *Victorian Studies,* 11.3 (1968), 329-358 (p. 334).

405 J. Eaton Dykes and Dudley Stuart, *The Law Relating to Public Health: Being the Public Health (Scotland) Act, 1867, and Amending Acts of 1871, 1875, and 1882: Annotated with Special Reference to the Changes Introduced by the Local Government (Scotland) Act 1889, with Numerous Decisions, Scotch and English, A Copious Index and Appendices Containing Practical Forms and Relative Statues,* (Edinburgh: Bell & Bradfute, 1890), pp. 8-9.

Although the powers in the English and Scottish public health acts were similar, Monro and Gordon principally designed the 1867 Act to fit the existing legal system in Scotland. For example, they decided to assign the responsibility of central authority to the Board of Supervision, which had been established in 1845 to oversee the administration of the Scottish Poor Laws by the parishes, which had, in turn, served as the local authorities on matters of public health.[406] The Board of Supervision was given this power despite the acknowledged defects that had already been revealed during the 1866 cholera epidemic; when the Board was obliged to apply to the Lord Advocate for greater powers to be given to both the local boards and the Board of Supervision itself under the provisions of the Nuisance Removal Acts of 1846, 1848 and 1856.[407]

The Board of Supervision itself consisted of Chairman W.S. Walker, two unpaid members chosen by the Crown, the Lord Provosts of Edinburgh and Glasgow, the Solicitor General for Scotland, and the Sheriffs of Perth, Renfrew, and Ross and Cromarty.[408] While this appears to be a well-rounded panel of Scottish authorities, the functioning Board only consisted of a handful of these members. Walker was bound to attend meetings as the chairman who received a salary of £1,200 but the members chosen by the crown, the Lord Provosts and the Solicitor General of Scotland, received no monetary incentive to perform the extensive duties of the Board and infrequently attended the meetings.[409] The only other consistent members of the Board were the three sheriffs who each received a salary of £100 for enforcing the Poor Laws.[410] As the duties required under the Public Health Act were not believed to be especially onerous, the sheriffs' salaries were increased by a meagre £50 for performing the additional sanitary tasks.[411] Gordon expressed his disapproval to the 1869 Royal Sanitary Commission, calling the salaries inadequate for the duties performed, however, he was forced to compromise on the lower wages to enable the legislation to pass in parliament.[412]

Notably, Gordon and Monro did not include a clause mandating that a medical professional be added to the Board of Supervision to advise on matters of public health.[413] Similar to the Glasgow Fever Committee formed in 1818 to address the typhus epidemic,

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406 Spens, *The Sanitary System of Scotland*, p. 14.
407 *Second Report of the Royal Sanitary Commission*, p. 137.
408 Spens, *The Sanitary System of Scotland,* pp. 13-14.
409 *Second Report of the Royal Sanitary Commission*, p. 137 and Spens, *The Sanitary System of Scotland*, p. 14.
410 *Second Report of the Royal Sanitary Commission*, p. 137.
411 Dykes and Stuart, p. 13.
412 *Second Report of the Royal Sanitary Commission*, p. 137.
413 Macdonald, p. 336.

the Board was charged with modernizing public health in approximately 1,000 different districts in Scotland with no medical guidance.[414] Like the crew of a ship without a captain, they were forced to navigate through the unknown entity that was national health reform while combatting the hostility of local authorities, who either wanted to retain power over their large burghs or were responsible for a minute population and had no incentive to engage in sanitary reform.[415]

It should come as no surprise, then, that very little was accomplished under this new central authority during the first five years of its existence. By 1872 there were only two medical officers of health in Scotland, Henry Littlejohn of Edinburgh, and James Burn Russell, who had succeeded Gairdner as Glasgow's medical officer of health in 1872.[416] No other medical officers were appointed in the Scottish districts to supervise the sanitary officers that were being hired by the local authorities, creating a sense of confusion as to who the Board should converse with regarding public health matters.[417] Compounding these issues of authority was the fact that many of these sanitary officers were not qualified to carry out the duties of a sanitarian.[418] In part this was the consequence of the low salary attached to the role: many sanitary officers in Scotland received an annual salary of only £5 for performing numerous sanitary responsibilities within the districts.[419] Qualified medical professionals were deterred by the low wages, leaving the office open to average citizens who neglected to carry out effectual sanitary reform. This destroyed the confidence of the inhabitants in these districts and created a sense of suspicion and dislike towards sanitary officers.[420]

Although the failures on the part of the Board of Supervision were caused by the poor construction of the 1867 Public Health (Scotland) Act, this did not exempt the members from receiving criticisms about the unfavourable outcomes. One particularly vocal critic

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414 Ibid.
415 Ibid.
416 Fiona Watson, Andrew Jackson, Jo Peattie, Robin Urquhart, 'Medical Officers of Health', *The Scottish Archive Network Ltd.* (2000) <https://www.scan.org.uk/knowledgebase/topics/medicalofficer_topic.htm#:~:text=The%20Public%20Health%20(Scotland)%20Act,rates%20for%20public%20health%20purposes.> [accessed 10 June 2023] (para. 1 of 5).
417 Spens, 'On the Necessity of a General Measure of Legislation with Regard to Public Health,' pp. 136-137.
418 Ibid., 140.
419 Compare this to England, where medical officers of health were allotted to each large district and received an annual salary of £800 to £1,000 with additional funds given for offices. (Spens, 'On the Necessity of a General Measure of Legislation with Regard to Public Health,' p. 140.)
420 Ibid., p. 136.

of the Board and the Act more generally was the Sheriff-Substitute of Lanarkshire, Walter Cook Spens. During a speech in 1876, Spens levelled a direct attack on the Board, stating,

> Now, although I always am prepared to stand up for my profession, I certainly am not prepared to hold that the supervision of public health matters in Scotland should be entrusted to a committee of advocates. I don't think that it can be said that that is a body which possesses the qualifications entitling it to deal with public health matters.[421]

Spens was not alone in these sentiments. Almost immediately after the passage of the Act in 1867 attempts to enact remedial legislation began. These initiatives repeatedly failed, however, because of a shortage of parliamentary time and a lack of interest from the Lord Advocates of Scotland.[422] Because of this, local leaders in Scotland had to adopt the inept national laws, while also sponsoring effective local legislation that would benefit their communities.

Glasgow, with its consistent revision of its public health laws to better address epidemics of typhus and other diseases, had already established a functioning public health system and was largely immune to this chaos. As news of the new national sanitary legislation began to break in 1867, the city was just starting work to implement the City Improvement and Police Acts passed the year prior. As a large burgh, Glasgow was not obliged to comply with many of these new national laws. Consequently, Gairdner simply had to retrofit the existing laws in Glasgow to accommodate the national ones. He later wrote of these endeavours in a report entitled, *Memorandum of the Medical Officer for the City of Glasgow on the Public Health Scotland Act as Compared with the Sanitary Clauses of the Glasgow Police Act, 1866* (1868). The report reveals Gairdner's unimpressed attitude, as he characterized the 1867 Act as being merely an extension of the Nuisance Removal Acts.[423] He went on to dismiss many of the clauses as being so similar to the powers conferred in the 1862 and 1866 Police Acts that they did not elicit any particular notice.[424]

Gairdner did write about the 1867 Act with some excitement, however, when describing the powers contained in its sixty-sixth and forty-fourth clauses. The sixty-sixth clause gave the local sanitary authorities the power to disinfect or destroy the clothes and furniture of infected individuals.[425] This power went beyond those conferred in the 1866

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421 Spens, 'On the Necessity of a General Measure of Legislation with Regard to Public Health', p. 131.
422 Best, p. 334.
423 Gairdner, *Memorandum of the Medical Officer for the City of Glasgow on the Public Health Scotland Act,* p. 4.
424 Ibid.
425 Ibid., p. 8.

Police Act, which only allowed the sanitary inspectors to disinfect typhus victims' belongings.[426] This was an important advancement in public health, namely because the spread of typhus in the early to mid-nineteenth century was greatly exacerbated by the rise and subsequent popularity of second-hand markets. There was a unique correlation between typhus, with its long period of convalescence, and second-hand market unseen in other forms of communicable disease.[428] The time spent away from work caused individuals already in financial distress to sink lower into crisis, often compelling them to sell various articles of clothing and furniture containing infected body lice, further disseminating typhus into the working-class community.[429] With this provision, the inspectors could prevent the victims' lice infested clothes and furniture from being sold in second-hand markets like Paddy's Market on Shipbank Lane in Glasgow's city centre, reducing further infections.[430]

The forty-fourth clause of the Public Health (Scotland) Act (1867) created a distinction between standard lodging-houses and single-family homes letting rooms, which had not been included in the 1862 or 1866 Police Acts.[431] In Gairdner's opinion, the new law held the potential to better address the smaller tenements known for their overcrowding and generation of typhus cases, that were commonly overlooked during the ticketing process.[432] With that slight adjustment in wording made to the local laws already in effect in Glasgow, the city's public health system retained its autonomy and the municipal laws prevailed.

3.2 Typhus Strains Glasgow's Resources in 1869 and the New Laws are Tested

While these systematic changes regarding public health laws were occurring in Glasgow, typhus smouldered in the narrow wynds of the city's slums, silently carrying off 497 people in 1867 and 367 in 1868.[433] The following year, typhus cases began to grow rapidly, initiating another epidemic. This typhus epidemic marked the first time the provisions in the new national laws would be tested in Glasgow, and Gairdner and his

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426 Ibid.
428 Millar, *Statements Relative to the Present Prevalence of Epidemic Fever among the Poorer Classes of Glasgow,* p. 20.
429 Ibid.
430 Rod Purcell, 'Community Development and Everyday Life', *Community Development Journal*, 47. 2 (2012), 266–281 (pp. 276-277).
431 Gairdner, *Memorandum of the Medical Officer for the City of Glasgow on the Public Health Scotland Act,* pp. 10-12.
432 Ibid., p. 13.
433 Russell, *The Evolution and Function of Public Health Administration*, p. 33.

medical office quickly prepared for another barrage of typhus patients. The additional bedspace in the Glasgow Royal Infirmary fever wards and Parliamentary Road Hospital provided a safeguard against overcrowding during the initial influx of typhus patients seeking treatment, which allowed Gairdner and the Town Council to properly assess the needs of both typhus patients and the hospitals. Russell, who served as the physician-superintendent of the Parliamentary Road Hospital, wrote to Ure[434] and the Glasgow Fever Committee updating them on the state of the institution. He admitted that accommodation problems had arisen in the hospital because of typhus, 'the disease which always predominates'.[435] In 1869, the bedspace was quickly exhausted because of the numerous typhus patients and the increased number of medical staff required to care for them.[436] The original plans for the hospital staff dormitories only included fifteen beds, however, during the 1869 epidemic the number of nurses alone increased to over sixteen without including the cook, scrubbers and residents.[437]

As the hospital wards reached capacity in the early stages of the epidemic, two of the wards had to be diverted to staff sleeping quarters resulting in the hospital losing eight valuable patient beds.[438] Even with this mitigation plan in effect, Russell found the hospital short of an additional thirteen beds for staff members.[439] His exasperation with the inadequacies were revealed when he levelled a criticism that the extra wards were lost by the Fever Committee's hesitations to allot the funds necessary to address typhus epidemics. He wrote that, 'One winter's epidemic seizing upon the community will absorb the entire savings of years in which fever has been comparatively absent. One generation is economical, but only at the expense of the other'.[440]

The directors of the Glasgow Royal Infirmary attempted to help Russell in mid-1869 by taking on additional typhus patients in their wards, but the numbers remained too high for even this compromise.[441] Under immense pressure, Town Council was forced to extending

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434 By 1869 Ure had been elected to the position of Lord Provost of Glasgow. As such, he was not only a member of the Glasgow Fever Committee, but also the Board of Supervision. His commitment to attend the meetings of the Glasgow Fever Committee but not the infrequent gatherings of the Board of Supervision, highlights the reticence of the leaders of the large burghs to relinquish their power to a central authority.

435 D-HE 1/5/1, James Burn Russell, *Report of the City of Glasgow Fever Hospital, From 1st May 1868 to 30th April, 1869* (Glasgow: Robert Anderson, 1869), p. 5.

436 Ibid., p. 5.

437 Ibid., p. 7.

438 Ibid.

439 Ibid., p. 10.

440 Ibid.

441 D-HE 1/5/1, James Burn Russell, *Report of the City of Glasgow Fever Hospital, From 1st May 1869 to 30th April 1870* (Glasgow: Robert Anderson, 1870), p. 6.

the capacity of the Parliamentary Road Hospital to 250 beds to better accommodate the typhus patients and the medical staff hired to attend to them.[442] This allowed the hospital to treat typhus patients during their convalescence of approximately 21.25 days, which was prolonged from the original healing period because the physicians withheld their discharge until they were deemed to be no longer infectious.[443]

Russell also addressed the Fever Committee's negligence in maintaining a fully functioning staff of qualified medical professionals and nurses.[444] He noted that the hospital had experienced great difficulty in generating a large enough staff of qualified nurses to tend to the increased volume of typhus patients in 1869.[445] The challenge arose because many of the young women who were considered 'respectable' enough to engage in nursing lived away from the typhus infested slums and had never caught the disease.[446] This was important, because typhus confers immunity to survivors, allowing them to pass 'untouched and unharmed' through subsequent infections.[447] As virtually none of the nursing staff had been exposed to the disease, many fell ill with typhus, depleting Russell's staff.[448] Additionally, prior to the educational reform of nurses which took place in the 1870s at Belvidere hospital under the auspices of Nursing Matron Amelia Sinclair (d.1927) the majority of applicants for nursing positions were described by Russell as being 'slatternly widows, runaway wives, and women bankrupt of fame or fortune [who] fall back on hospital nursing'.[449] The lack of qualified nursing candidates greatly affected the care patients received and led to high attrition in the nursing workforce.

By 1 May 1869 only fourteen of the original twenty-six nurses on Russell's medical team remained to care for the ill, increasing the burden on the remaining staff left to treat the delirious typhus patients.[450] This partly explains several patients taking what Russell

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442 'The Fever Hospital', *The Glasgow Herald,* (October 12, 1869) <link-gale-com.ezproxy.lib.gla.ac.uk/apps/doc/BC3203594189/BNCN?u=glasuni&sid=bookmark-BNCN&xid=844a91d8> [accessed 3 August 2023].

443 Russell, *Report of the City of Glasgow Fever Hospital, From 1st May 1869 to 30th April 1870*, p. 15.

444 The shortage of nurses in Glasgow was apparently a chronic issue as evidenced in an advertisement for women willing to be 'temporary nurses' included in the *Glasgow Herald* in September 1866. ('Saturday Morning, September 15', *Glasgow Herald* (1866) <link-gale-com.ezproxy.lib.gla.ac.uk/apps/doc/BC3203564177/BNCN?u=glasuni&sid=bookmark-BNCN&xid=c3bcd982.> [accessed 10 August 2023].) Historian Margaret R. Currie noted that the emphasis leaders in Glasgow placed on 'shutting away the infected' detracted from the quality of nursing staff they were able to attract to care for the ill. (Margaret R. Currie, *Fever Hospitals and Fever Nurses: A British Social History of Fever Nursing: A National Service,* (Abingdon, Routledge, 2005), p.22.)

445 Russell, *Report of the City of Glasgow Fever Hospital, From 1st May to 30th April 1869,* p. 11.

446 Ibid.

447 Millar*, Clinical Lectures on the Contagious Typhus Epidemic in Glasgow*, p. 8.

448 Ibid.

449 Currie, pp. 10-22

450 Millar*, Clinical Lectures on the Contagious Typhus Epidemic in Glasgow*, p. 12.

termed a 'French leave': escaping the hospital grounds by scaling the wall surrounding the fever hospital.[451] In the throes of typhus fever, the escapees posed a risk to both the healthy community members and themselves. As such, it was imperative that the nurses remained vigilant over their helpless charges. Russell, struggling to maintain order as the epidemic dragged on, strongly suggested to the Fever Committee that it would be more economical to invest in a permanent staff who had proven immunity to typhus.[452]

By the end of 1869 typhus had caused an additional 970 premature deaths in Glasgow alongside thousands of pounds in additional expenditures.[453] As the city began to slowly recover from its encounter with typhus, patients with relapsing fever[454] began to enter the hospital in rapidly increasing numbers.[455] With the residual typhus patients lingering during their long convalescence, the new wave of relapsing fever patients entering Glasgow's hospitals overwhelmed the medical staff and filled the newly added beds.[456] The contemporaneous epidemics, one winding down and the other just beginning, became a logistical nightmare for the Town Council and Gairdner, who were forced to confront the problem of accommodation for the ill once again.[457] When the group began the familiar task of searching for a suitable site for a new fever hospital, they encountered the same difficulties as in prior epidemics.[458] None of the available buildings were suitable for converting into fever wards and those that were, in turn, were too close to residential neighbourhoods for the residents not to raise complaints. As in 1865, after a fruitless search Gairdner and the rest of the local leaders were forced to build the fever hospital from the foundation up.

The committee eventually settled on the Belvidere estate, which contained approximately thirty-two acres to build the new fever hospital for typhus and relapsing fever patients.[459] Work began in 1870, on what was then intended to be a permanent fever hospital under the

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451 Russell, *Report of the City of Glasgow Fever Hospital, From 1st May 1869 to 30th April 1870*, p. 16.
452 Russell, *Report of the City of Glasgow Fever Hospital, From 1st May to 30th April 1869,* p. 12.
453 Russell, *The Evolution and Function of Public Health Administration*, p. 33.
454 Relapsing fever (or tick fever) is a recurring febrile disease caused by several species of the *Borrelia* spirochete and is spread by arthropods, namely lice and ticks. Symptoms of relapsing fever include high fever, muscle and joint pain, myocarditis and heart failure which improve and relapse cyclically two to ten times in each patient. (Larry M. Bush and Maria T. Vazquez-Pertejo, 'Relapsing Fever', *MSD Manual* (2022) <https://www.msdmanuals.com/en-gb/professional/infectious-diseases/spirochetes/relapsing-fever> [accessed 10 July 2023] (para. 1 of 22).)
455 Russell, *The Evolution and Function of Public Health Administration*, p. 33.
456 Russell, *Report of the City of Glasgow Fever Hospital, From 1st May 1869 to 30th April 1870*, p. 15.
457 'Police Board', *Glasgow Herald*, (9 Nov. 1869) link-gale-<com.ezproxy.lib.gla.ac.uk/apps/doc/BC3203594986/BNCN?u=glasuni&sid=bookmark-BNCN&xid=221773e5> [accessed 3 August 2023].
458 Russell, 'City of Glasgow Fever and Small-Pox Hospitals, Belvidere', p. 22.
459 Ibid.

provisions of both the 1867 Public Health (Scotland) Act and the 1866 Police Act.[460] Unfortunately, the demand for bed space was so urgent that temporary wooden pavilions were hastily erected instead.[461] These pavilions were completed in a short period of time and within the three months following its opening all 366 beds were filled with patients.[462] At the same time as the temporary fever hospital was built, the former mansion house was converted and extended into accommodation and offices for the new hospital's administration.[463]

Figure 3.3 Aerial View of Belvidere Hospital in 1952. Source: Records of Aerofilms Ltd, Aerial Photographers, Bristol, England, SC 1297664 <https://canmore.org.uk/collection/1297664 \> [accessed 10 August 2023].

Belvidere Fever Hospital was an idyllic place for healing. It was surrounded with woods and several small knolls leading to the River Clyde.[464] The stronger patients were allowed to stroll around the grounds, without any concerns of infecting the neighbours.[465] Russell noted with some sympathy that it was the first time many of the convalescents had been

460 Ibid.
461 Ibid.
462 Ibid.
463 Ibid.
464 Editors of the Lancet, '"Permanent" v. "Temporary" Hospitals for the Treatment of Infectious Diseases' *The Lancet* (1888), p. 798 <https://ia600708.us.archive.org/view_archive.php?archive=/22/items/crossref-pre-1909-scholarly-works/10.1016%252Fs0140-6736%252802%252915498-5.zip&file=10.1016%252Fs0140-6736%252802%252915973-3.pdf> [accessed 10 August 2023].
465 Ibid.

able to interact with nature.[466] The open and friendly complex of Belvidere stands in stark contrast to the walled structure of the Parliamentary Road Hospital built just five years earlier. As typhus patients attempted to abscond over walls to escape their perceived captivity at Parliamentary Road, relapsing fever patients wandered freely along the perimeters of Belvidere by the Clyde.

The year's end saw the decline of typhus and relapsing fever cases, but the fear of the imminent return of both diseases remained at the forefront of the minds of Glasgow's citizens. Thus, the wooden pavilions at Belvidere were maintained for large sums of money for years after the epidemics had subsided before eventually being replaced with brick pavilions in 1887.[467] Belvidere Hospital continued to serve as a functioning hospital for infectious diseases, growing organically around the original site of the wooden sheds based on the needs of Glasgow's citizens. In time, Belvidere became a renowned hospital where the formalization of many modern medical conceptions occurred, namely, the formal training of nurses on the hospital staff. During a year of probation, the women would attend lectures on how to care for fever patients, which culminated in a written paper and a *viva voce* examination.[468] This system of training would later be 'rolled out' to all other major public hospitals in Glasgow, raising the standard of care for all patients, not just those suffering from fever.

The final major typhus epidemic in Glasgow had allowed Gairdner and the Fever Committee to enact the powers of the 1866 Police Act and the 1867 Public Health (Scotland) Act together to employ a comprehensive, albeit delayed public health response to not just one but two different epidemics. It was the first time an intentionally permanent structure was added onto a hospital without the qualifications of emergency powers and similarly, Belvidere Hospital flourished as a permanent addition to the growing hospital system in Glasgow. Although it would never pose an epidemiological threat to Glasgow again, typhus had changed the city for the better by leaving it well equipped to grapple with future epidemics.

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466 Russell, 'City of Glasgow Fever and Small-Pox Hospitals, Belvidere', p. 24.
467 The Glasgow (Scotland) Corporation, *Municipal Glasgow: Its Evolution and Enterprises* (Glasgow: Robert Anderson, 1914), p. 216.
468 Ibid., p. 27.

Year	Number of Admissions/Treated at the Glasgow Royal Infirmary	Approximate Number of Typhus Deaths
1796	43	…
1797	83	…
1798	45	…
1799	128	…
1800	104	…
1801	63	…
1802	104	…
1803	85	…
1804	97	…
1805	99	…
1806	75	…
1807	25	…
1808	27	…
1809	76	…
1810	82	…
1811	45	…
1812	16	…
1813	35	…
1814	90	…
1815	230	…
1816	399	…
1817	714	…
1818	1,371[469]	…
1819	630	…
1820	289	…
1821	234	…
1822	229	…
1823	269	…
1824	563	…
1825	897	…
1826	926	…
1827	1,084	…
1828	1,511	…
1829	865	…
1830	729	…
1831	1,657	…
1832	2,734	…
1833	1,288	…
1834	2,003	…
1835	1,359	…
1836	3,125	…
1837	5,387	…
1838	2,047	…
1839	1,529	…
1840	…	…
1841	…	…
1842	…	…

[469] With an additional 1,929 fever patients admitted to the Spring Gardens Fever Hospital between March of 1818 and July of 1819. (Brotherston, pp. 60-64)

1843	…	…
1844	…	…
1845	…	…
1846	1,270	…
1847	4,732	…
1848	1,493	…
1849	510	…
1850	…	…
1851	…	…
1852	…	…
1853	…	…
1854	…	…
1855	…	460
1856	…	439
1857	…	549
1858	…	504
1859	…	381
1860	…	408
1861	…	475
1862	…	533
1863	…	671
1864	…	1,138
Year(s)	Treated at the Parliamentary Road Fever Hospital	…
1865	1,154	1,177
1866	384	596
1867	795	497
1868	1,023	397
1869	2,023	970
1870	495	544
1871	7	284
1872	…	284
1873	…	68
1874	…	113
1875-1876	530	58
1876-1877	350	50
1877-1878	275	37
1878-1879	238	44
1879-1880	239	34
1880-1881	251	41
1881-1882	227	33
1882-1883	211	25
1883-1884	345	31
1884-1885	111	14
1885-1886	145	14
1886-1887	87	17
1887-1888	188	20
1888-1889	81	12
1889-1890	76	14
1890-1891	112	12

1891-1892	121	25
1892-1893	37	6
1893-1894	57	8

Table 3.3 Approximate Number of Admitted Patients and Deaths from Typhus During the Years 1794 to 1894. Sources: Years 1796 to 1849, J.H.F. Brotherston, *Observations on Early Public Health Movement in Scotland* (H.K. Lewis, 1952), pp. 60-64. Years 1855 to 1894, Russell, *Evolution and Function of Public Health Administration,* pp. 29, 33, 126-128.

3.3 Public Health Expands and Typhus Indelibly Changes the Streets of Glasgow

As the medical sector was expanding to better meet the immediate needs of Glasgow's typhus patients, legislators worked to draft policies aimed to eradicate typhus by destroying its place of origination. The resulting legislation, entitled the City Improvement Act, was passed in 1866. The Act, which was drafted by the city's architect John Carrick (1819-1890), sanctioned the destruction of eighty-eight acres of the most overcrowded parts of the city centre.[470] To replace what had been lost Carrick introduced thirty-nine new streets and altered a further twelve lanes already in existence with additional funds allotted for leasing new land to generate a public park.[471] In order to finance this endeavour, Carrick included a provision in the 1866 Act which levied a tax of approximately 4*d*. for five years, which would lower to a rate of 3*d.* for another ten years and allowed the city to borrow up to £1,250,000.[472]

This tax would prove to be Lord Provost Blackie's political downfall. As the City Improvement Act took effect, the first taxes attached to the Improvement Council's scheme were levied in September of 1866.[473] The ratepayers of Glasgow, refusing to accept the new 4*d.* tax, ousted Blackie from his position as Lord Provost.[474] Blackie's replacement in office was James Lumsden, who recognized the necessity of the initiative in reducing typhus and chose to proceed with the project as Blackie had intended, despite the fear of further retaliation from Glasgow's ratepayers.[475] He allowed the City Improvement Trust to proceed with its work in 1867 and the Glaswegians were forced to submit to the 4*d.* improvement tax.

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470 Allan, 'The Genesis of British Urban Redevelopment with Special Reference to Glasgow', p. 604.
471 Ibid.
472 Committee Appointed at the Public Meeting of Landlords, Factors and Others Interested in Heritable Property, *Taxation in Glasgow* (Glasgow: Aird & Coghill Printers, 1880), p. 6.
473 Allan, 'The Genesis of British Urban Redevelopment with Special Reference to Glasgow', p. 604.
474 Bell and Paton, p. 222 and Russell, *The Evolution and Function of Public Health Administration*, p. 39.
475 Committee Appointed at the Public Meeting of Landlords, pp. 8-9.

By 1869, the Improvement Trust had spent £565,016 on the condemned areas within the old city centre, only having to enact their powers to compel homeowners to relinquish their houses on a few occasions.[476] Very little demolition took place initially, as the Trust did not want to give up their bargaining power by raising the property value of existing city blocks which had not been purchased.[477] Thus, the main objective of the Trust in the first five years of its existence was to obtain property for as little money as possible.[478] The real demolition of Glasgow's old city centre began in 1871, which proceeded rapidly after a slow start as 15,425 families' homes were destroyed in three years.[479] While a small portion of the demolition targeted specific buildings in areas of central Glasgow, much of the work undertaken by the Trust included the liquidation of entire areas that had been notorious for breeding typhus fever.[480]

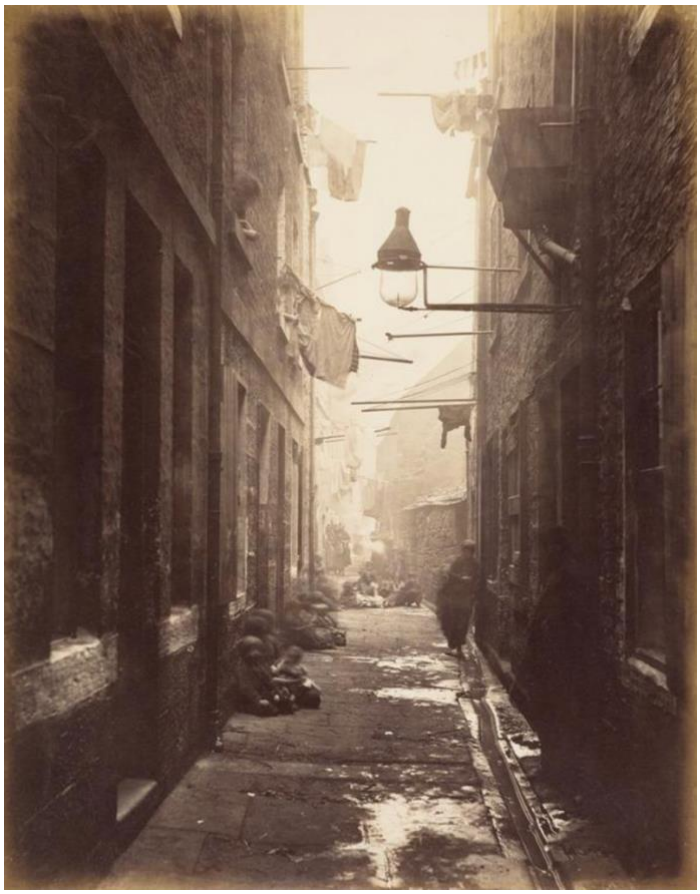

Figure 3.4 Thomas Annan, Close, No. 80 High Street, from Old Closes and Streets of Glasgow, 1868-1871. Source: National Galleries of Scotland, 'Thomas Annan', <https://www.nationalgalleries.org/art-and-artists/features/thomas-annan> [accessed 20 August 2023].

476 Allan, 'The Genesis of British Urban Redevelopment with Special Reference to Glasgow', p. 604.
477 Ibid., p. 605.
478 Ibid.
479 Bell and Paton, p. 224.
480 Allan, 'The Genesis of British Urban Redevelopment with Special Reference to Glasgow', p. 604.

Figure 3.5 High Street Photographed from Glasgow Cross Post Revisions in the 1870s and 1880s. Source: Gillian Loney, 'High Street, Then and Now -Is Glasgow's Oldest Street Going in the Right Direction?', *Glasgow Live* (2018) <https://www.glasgowlive.co.uk/news/history/high-street-now-glasgows-oldest-11640561> [accessed 20 August 2023].

Russell, acting in his capacity of Glasgow's medical officer by 1872, was highly critical of the way the Trust chose to proceed with its work. He expressed these sentiments throughout the 1870s in a series of speeches given at the annual meetings for the Philosophical Society of Glasgow addressing the operations of the Improvement Trust and the lower-class residents who had been displaced. These talks largely consisted of updates on a longitudinal public health study Russell had created to discover if the former residents had managed to settle in better lodgings after their removal.[481] Russell noted with an undertone of frustration that he had experienced a great deal of difficulty in finding families who were willing to participate in the study.[482] An explanation for this may be found in his more formal approach to surveying the impoverished population, together with his inherent negative judgement, partly due to ignorance because of his wealthy upbringing and beliefs about poor's moral judgements. This made it so that families who had already experienced the upheaval of displacement did not want to speak candidly about their experiences with him for fear of discrimination. Notably, the reticence on behalf of the working class to welcome Russell into their homes sharply contrasts with

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481 James Burn Russell, 'Further Information on the Immediate Results of the Operation of the Glasgow Improvement Trust, as Regards the Inhabitants Displaced', *Glasgow Medical Journal* 8.2 (1876), 235-246 (pp. 235-236).

482 Ibid.

the earlier experiences of Ure, highlighting how personality and pre-existing bias could shape outcomes in public health reform.[483]

Russell's ignorance of the nature of the circumstances is evident in his questioning of why impoverished families chose to pay such high rents to live in dilapidated, typhus-ridden lodging houses instead of nicer apartments closer to their work.[484] When they replied, 'Ah sir! they won't take the likes of us there'[485] Russell immediately assumed that the reason for their rejection was their habits which he described as being unclean and riotous, not prejudicial attitudes against the working class.[486] In his opinion, by remaining unchanged in their supposed habits the lodging-house residents were 'the bond slaves of their land-lords –afraid to complain–' and paying interest on both their poverty and their character.[487] From the limited sample of families Russell managed interview, he learned that many of the displaced inhabitants were forced to settle in small, cramped lodging-houses some distance away from their place of work in the industrial city centre.[488] Adding to the deleterious effects of the displacement, was the fact that many of the families were coerced into paying rents twenty percent higher than they had been paying before.[489]

Russell made it clear to his audience that the way the Trust was carrying out the demolition and construction process was not ideal for the needs of public health within Glasgow.[496] While the Trust refrained from engaging in commercial construction, something Russell approved of, they neglected the issue of creating affordable, clean housing in areas where the working-class population had shown a proclivity for settling historically.[497] He argued that if the Trust was to truly abolish the 'evil' of overcrowding, more adequate working-class lodging had to replace what had been destroyed by the Trust.[498] Russell emphasized the importance of providing abundant housing for the working class because of the Scottish tradition of subdividing or 'making down' houses to

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483 This highlights again the unique importance of Ure's involvement in sanitary reform in the mid-nineteenth century. Additionally, these interactions with Russell illustrate the importance of incorporating working-class testimonies into future studies on public health in Glasgow because they reveal how bias could affect sanitary reform, even with the Christian idea of benevolence underlying a great deal of public health policies in Glasgow.

484 James Burn Russell, *"Ticketed Houses" of Glasgow, With an Interrogation of the Facts for Guidance Towards the Amelioration of the Lives of Their Occupants* (Glasgow: Robert Anderson, 1888), p. 17.

485 Ibid.

486 Ibid.

487 Ibid., pp. 16-17.

488 Russell, 'On the Immediate Results of the Operations of the Glasgow Improvement Trust at Last May Term, (1874), p. 213.

489 Ibid.

496 Ibid., p. 220.

497 Ibid., p. 239.

498 Ibid., pp. 213, 225.

maximise profit and living space.[499] He argued that the primary reason Glasgow's authorities had been forced to destroy the old city centre was because of the chronic lack of housing which had led to overcrowding and typhus.[500] There were no regulations against subletting in the 1870s and sanitary inspectors could do little to regulate the structure of the lodging houses under the powers conferred in the 1867 Act so long as the residencies were not overcrowded. [501] Thus, the onus rested on the Trust to create adequate lodging to deter landlords from creating the same unhealthy conditions which had caused typhus outbreaks previously. [502]

Counter to Russell's advice, the members of the Trust allotted a large portion of the land purchased to construct a new railway, warehouses and shops with middle-class housing situated on the upper floors, effectively barring the working class from returning to the city centre.[503] The Trust's work continued throughout the 1870s before abruptly halting after the collapse of the City of Glasgow Bank in 1878. The economic depression which followed left the Trust's work largely paralysed for a lack of funding and economic prospects until the mid-1880s.[504]

Despite the pause in construction and the lack of working-class housing, the effectiveness of the improved structures created by the Trust could be appreciated by the early 1880s.[505] After many of the former locations notorious for breeding typhus in Glasgow were eradicated, the number of cases declined significantly. There was not one known case of typhus to ever arise out of one of the new accommodations built by the Trust, therefore the disease ceased to be endemic through community spread.[506] Russell and other sanitarians compared these new developments to the old, unsanitary lodging-houses in Blythswood and the Drygate, where typhus had simmered for nearly a century in endemic form as

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499 Russell, *"Ticketed Houses" of Glasgow,* p. 18.
500 Ibid., p. 220.
501 Russell, 'Further Information on the Immediate Results of the Operation of the Glasgow Improvement Trust, as Regards the Inhabitants Displaced (1876)', p. 239.
502 Ibid., p. 224.
503 Ibid., p. 246.
504 Bell and Paton, pp. 225-226.
505 The work of the City Improvement Trust greatly advanced the sanitary state of Glasgow, although there is generally a consensus that the Trust did not provide enough housing for the working-class both historically and amongst scholars today. For example, the emphasis the Trust placed on increasing the accessibility and number of public washing houses led to the promotion of cleanliness both 'of person and of clothing' in the 1870s according to Russell. (Russell, *Evolution and Function of Public Health Administration*, pp. 41-42.)
506 Russell, 'Further Information on the Immediate Results of the Operation of the Glasgow Improvement Trust, as Regards the Inhabitants Displaced (1876)', p. 240.

residents were forced to be 'food for fever' [507] and determined that the suppression of overcrowding by the Trust was 'the deadliest blow struck at [t]yphus in Glasgow'.[508]

The decline of typhus led to an acknowledgement of gratitude from practitioners who had worked in the areas hardest hit during epidemics. For instance, a practitioner named Ebenezeer Duncan gave a particularly poignant reflection in an article for the *Glasgow Medical Journal* on how the work of the City Improvement Trust had changed the risk of practicing medicine in Glasgow. Duncan wrote that before the Trust had conducted the revision of the city centre, the local authorities had been forced to address epidemic after epidemic because the source of typhus had never fully been destroyed.[509] Whenever there was an epidemic, medical students and physicians were forced to travel into the worst areas of city to treat patients, risking their own safety.[510] After the work of the Improvement Trust, however, it became rare for a medical professional to encounter typhus in his work.[511] For this, Duncan wrote, 'The medical profession of Glasgow owes a debt of gratitude to the labours of the men who have so completely relieved them of constant, dangerous, and unremunerative attendance upon typhus fever, that a man may now practise medicine in Glasgow for years without seeing a single case of the disease'.[512]

It is remarkable how different Duncan's optimistic sentiments about typhus are to Millar's lectures in the 1830s, when he stated that there was 'no malady of more frequent occurrence'[513] which his young students could expect to encounter in their practice. When the Trust succeeded in pulling down the worst of Glasgow's overcrowded slums, they destroyed the ease in which typhus infected lice could travel from person to person. The better working-class housing away from the formerly congested city centre, alongside the improved isolation and sanitary measures brought about by the 1866 Police and 1867 Public Health (Scotland) Acts successfully drove the number of typhus cases downwards. By 1890, typhus had declined to twenty-three deaths per *million* inhabitants in Glasgow, and when graphs were created to track the city's progress with typhus throughout the nineteenth century, the charts displayed what Russell described as 'a perfect realization of the "curve of perfection"'.[514]

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507 Ibid.
508 Russell, *The Evolution and Function of Public Health Administration*, p. 64.
509 Duncan, pp. 96-97.
510 Ibid., p. 96.
511 Ibid.
512 Ibid.
513 Millar, *Clinical Lectures on the Contagious Typhus Fever Epidemic in Glasgow*, p. 1.
514 Russell, *The Evolution and Function of Public Health Administration*, pp. 63-64.

Institution Name	Date Founded	Purpose
Town's Hospital	Established in 1733 by public subscription	Served as a general hospital for the working-class community. No provisions were given for clinical teaching.
Glasgow Royal Infirmary	Opened in 1794	The Glasgow Royal Infirmary was a general hospital built in the general proximity of the University of Glasgow on High Street. Clinical teaching was conducted here.
The Glasgow Lock Hospital	Opened in 1805	The Lock Hospital was built to treat women with sexually transmitted diseases.
The Glasgow Eye Infirmary	Founded in 1824	Served Glasgow's community as an inpatient ophthalmology centre.
Glasgow Royal Maternity Hospital (Rottenrow)	Opened in 1834	This was a maternity hospital. Despite the preference for home births in the nineteenth century, many working-class women would have given birth in a maternity hospital.
Gartnaval Royal Hospital	Opened first in Cowcaddens in 1814 and then later at Gartnavel in 1843	This was an early mental hospital or 'asylum' overseen by the Royal College of Physicians and Surgeons of Glasgow.
Parliamentary Road Hospital	Opened in 1865	Originally meant to be a temporary hospital for fever patients, Parliamentary Road Hospital was built during the 1865 typhus epidemic to enlarge the city's capacity for treating fever patients
Belvidere Fever Hospital	Opened in 1870	The Belvidere Fever Hospital was built during the waning of the typhus fever epidemic in 1869 and the start of a relapsing fever epidemic in 1870.
The Western Infirmary	Opened in 1874	The Western Infirmary was built to serve as another general hospital. It was built next the University of Glasgow's new campus on

		Gilmorehill. Clinical teaching gradually transferred here from the Glasgow Royal Infirmary.
Small-pox Hospital at Belvidere	Opened in 1877	This was an extension of the Belvidere Fever Hospital intended for the isolation and treatment of small-pox patients.
Royal Hospital for Sick Children	Opened in 1882	This was a paediatric hospital and dispensary which treated on an inpatient and outpatient basis, especially for members of the working class.

Table 3.4 Table of Main Hospitals in Glasgow in the Late-Eighteenth and Nineteenth Centuries. Sources: Comrie, *History of Scottish Medicine,* p. 131. The Royal College of Physicians and Surgeons of Glasgow, *Glasgow Lock Hospital,* <https://heritage.rcpsg.ac.uk/exhibits/show/glasgow-hospitals/glasgow-hospitals-lock> [accessed 10 September 2024] (paras. 1 and 2 of 5). The Royal College of Physicians and Surgeons of Glasgow, *Glasgow Eye Infirmary,* <https://heritage.rcpsg.ac.uk/exhibits/show/glasgow-hospitals/glasgow-hospitals-eye> [accessed 10 September 2024] (para. 1 of 5). The Royal College of Physicians and Surgeons of Glasgow, *Gartnavel Royal Hospital,* <https://heritage.rcpsg.ac.uk/exhibits/show/glasgow-hospitals/glasgow-hospitals-gartnavel> [accessed 10 September 2024] (paras 1 and 2 of 10). The Royal College of Physicians and Surgeons, *Glasgow Royal Maternity Hospital (Rottenrow),* <https://heritage.rcpsg.ac.uk/exhibits/show/glasgow-hospitals/glasgow-hospitals-rottenrow> [accessed 10 September 2024] (para. 1 of 6). The Royal College of Physicians and Surgeons of Glasgow, *Western Infirmary,* <https://heritage.rcpsg.ac.uk/exhibits/show/glasgow-hospitals/glasgow-hospitals-western> [accessed 10 September 2024] (para. 1 of 5). Andrew Kendrick, 'Caring for Children with Infectious Diseases: Children's Experiences of Fever Hospitals and Sanatoria in Scotland', *The Journal of the History of Childhood and Youth,* 16.1 (2023), 9-27 (pp.11-22). The Royal College of Physicians and Surgeons of Glasgow, *The Royal Hospital for Sick Children,* <https://heritage.rcpsg.ac.uk/exhibits/show/glasgow-hospitals/glasgow-hospitals-yorkhill> [accessed 10 September 2024] (paras. 1 and 4 of 7).

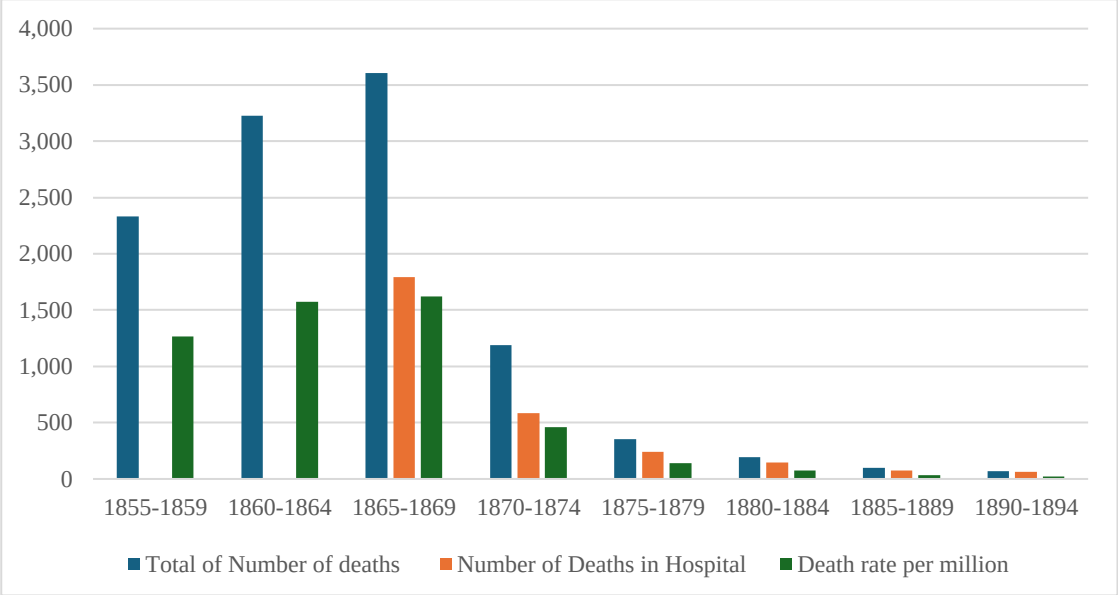

Table 3.5 Death Rates of Typhus per Million for the Years 1855 to 1894, Showing the Proportion of Deaths that Occurred in Hospitals. Source: Russell, *The Evolution and Function of Public Health Administration*, p. 63.

Period	Total Number of Deaths	No. of Deaths in Hospital	Death-rate per Million
1855-1859	2,333	…	1,265
1860-1864	3,225	…	1,576
1865-1869	3,607	1,795	1,623
1870-1874	1,191	583	492
1875-1879	352	242	140
1880-1884	194	149	75
1885-1889	97	77	36
1890-1894	70	66	23

Table 3.6 Percentage of Typhus Deaths in Glasgow's Hospitals. Source: Russell, *The Evolution and Function of Public Health Administration*, p. 63.

Despite the absence of typhus cases many physicians who had practised during the worst of the epidemics remained uneasy. In 1888, long after typhus had begun its final decline, physician James W. Allan wrote that medical professionals needed to continue teaching their students to recognize the distinct rash typhus produced as he was convinced that it would return at the slightest convenience should overcrowding return and Russell relax his vigilance.[515] He was not alone, as many seasoned physicians remained warily vigilant, insisting that their students remained prepared to treat typhus when it made its inevitable return to Glasgow. Still, the beds that were once placed in hastily erected typhus fever hospitals remained empty, waiting for the flood of typhus that would never arrive in

[515] James W. Allan, 'Remarks Introductory to a Course of Clinical Instruction in Fever, at Belvidere Hospital', *Glasgow Medical Journal* 23.6 (1885), 414-424 (p. 417).

Glasgow again. In a sense there is a cruel irony in the fact that when Glasgow stood most prepared to fight its most formidable invisible enemy, the enemy had already been long vanquished. The heroic efforts of men such as Richard Millar, Robert Cowan, William Pulteney Alison, John Ure, William Tennant Gairdner, and James Burn Russell, who tirelessly advocated for the working-class had allowed the city to emerge triumphant. Typhus no longer entered Glasgow as a roar leaving thousands of dead in its wake, but as a mere whisper, forced to carry off the occasional victim every now and then.

Conclusion

From the first epidemic in 1818 to its final decline in the 1880s, typhus indelibly changed Glasgow. Throughout the nineteenth century, typhus caused mass suffering and death amongst the citizens of Glasgow and consumed the city's medical and financial resources with a voracity unmatched by any disease of the period. However, typhus also increased Glasgow's resilience, strengthened the collaborative efforts in public health between professionals from multiple disciplines, initiated sanitary reform measures and altered the city's landscape, bettering the living standards for members of all socio-economic classes. Beyond these tangible transformations in Glasgow, careful historical analysis has also identified how typhus revealed intriguing intricacies in the development of the public health system in Scotland: namely, the paradoxical relationship between local and national sanitary laws and their ability to effectively meet the needs of the nation during health crises such as typhus epidemics.

In the early-nineteenth century, typhus played a critical role in physicians' discovery of the relationship between disease and poverty, which in turn led them to influence the outcome of the 1849 vote on the first Public Health (Scotland) Bill. In Scotland's refusal to join England and Wales's movement to adopt a centralized public health system informed by Chadwick's malarial cause, the nation retained its autonomy from the English legal system. While it may initially appear as though Scotland lost an opportunity to condense and amend its amalgamation of local sanitary laws and improve the health outcomes amongst its citizens, further research reveals that the rejection of the 1849 Bill produced beneficial outcomes. This is because of the very nature of national health laws, which have, historically, always had to pass through a vote in parliament to be enacted and enforced. While England had ample representation in parliament and was able to quickly pass amendments to address health crises such as epidemics, Scotland did not have the representation required to bring sanitary legislation addressing the nation's distinctive challenges to the forefront of the parliamentary agenda.[516] In maintaining a devolved public health system between 1849 and 1867, Scotland ensured that local authorities could continue to respond to the immediate needs of their residents without having to defer to a central authority for permission to enact reform.

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[516] Throughout the nineteenth century England had approximately 468 representatives, while Scotland only had forty-five parliamentary members in Westminster, which was increased to fifty-three members in 1832 under the provisions of the Scottish Reform Act. This imbalance in power caused many Scottish Bills to stagnate in parliament. (The Scottish Parliament, 'The Scottish Parliament: Past and Present', (2021), 1-35 (p. 18).)

The beneficial aspects of this decentralized system were evident in Glasgow's sanitary battle with typhus. As the nineteenth century progressed, typhus epidemics had increased in frequency and virulency, necessitating legislative reform to install both remedial and prophylactic measures to protect citizens and lessen the economic impact of each epidemic. Each successive typhus epidemic, in turn, revealed fundamental flaws in legislative designs, requiring further revising and redrafting of acts throughout the century. In this sense, the public health system in Glasgow was constantly evolving in reaction to and anticipation of epidemics, typhus included. Supporting this evolution was the ease in which Glasgow's authorities could create and sponsor legislation, as they did not have to delay critical sanitary bills while deferring to a central authority for approval. This period of decentralization enabled Glasgow to establish itself as a model municipality within the broader sanitary revolution that was occurring in Britain, as evidenced by the visit of the parliamentary delegation led by Octavia Hill.

Notably, the findings in this thesis are in accordance with a theory proposed by Martin in 'William Pulteney Alison: Activist, Philanthropist and Pioneer of Social Medicine' (1997). In conducting their study of Alison's influence on public health reform in Edinburgh, they discovered that by retaining the devolved system of legislation, 'Edinburgh's health provisions were in advance of other Scottish towns and cities and also of those in English cities'.[517] They qualified this statement by noting that further research would need to be conducted to substantiate this theory beyond their observations of the remarkable advancements which occurred under the devolved public health system in Edinburgh.[518] That similar trends were replicated in this study of typhus in Glasgow, with minor deviations such as the lack of cooperation between legislators and physicians in the earlier half of the nineteenth century compared to the more cohesive sanitary movement in Edinburgh, strengthens the assertion that the devolved public health system enabled sanitary revolutions to flourish in Scottish cities.

As Glasgow began to gain recognition for its sanitary reform following the passage of the Police and City Improvements Acts in 1866, comparisons began to be drawn between the formalized sanitary schemes in major Scottish cities and the poor state of public health legislation in Scotland's rural districts. While cities were forced to develop their public health laws to combat typhus and other epidemic diseases, the rural districts, which had

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517 Martin, p. 355.
518 Ibid.

smaller population sizes and less frequent outbreaks, progressed at a slower rate than the municipalities. This divergence between the urban and rural districts led to Scotland adopting a national public health system in 1867 to encourage the rural localities to bolster their sanitary schemes to match those of the urban cities. However, the implementation of national health laws in Scotland in 1867 under the Public Health (Scotland) Act failed to rectify this unequal distribution, and as seen in Glasgow, municipal sanitary laws continued to prevail in Scotland.

The superiority of these municipal public health laws together with the architectural shift in Glasgow to eliminate the overcrowded conditions where typhus had once flourished had long-term positive impacts on health outcomes in the city. A comparative study of the mortality rates between the rural and urban districts of Scotland conducted by R.S. Barclay, Kermack, and McKendrick in 1940[519] highlights the continuous improvement in life expectancy in large towns such as Glasgow from the dawn of the nineteenth century to the mid-twentieth century.[520]

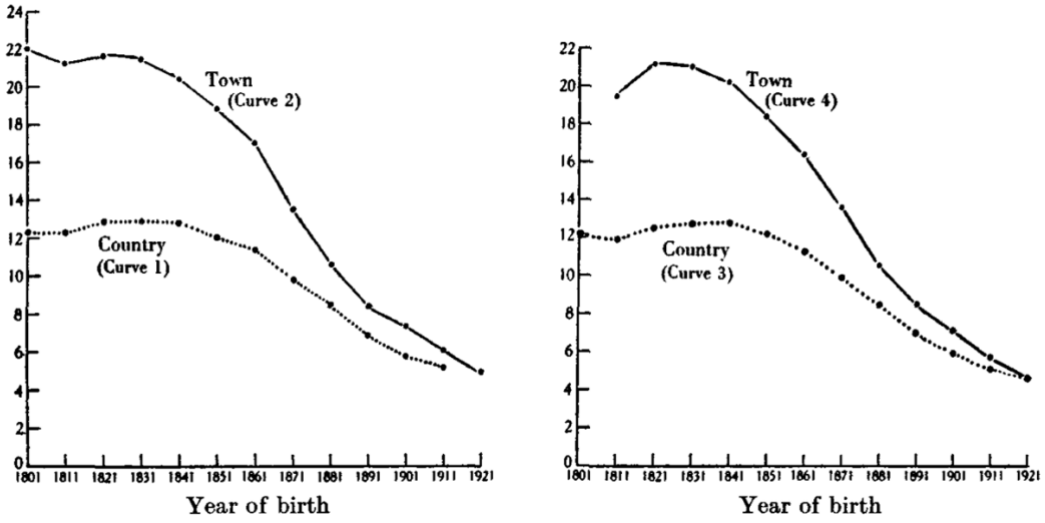

Figure 4.1 (shown on left). Where the values of α (x 1000) are derived from normalized β's: standard rate method, where α represents the date of birth and β represents the age of the group.[521] Source: Barclay, et al., p. 428. Figure 4.2 (shown on right). Where the values

519 R.S. Barclay, W.O. Kermack, A.G. McKendrick, 'Comparison of the Specific Mortality Rates in Town and Country Districts of Scotland Since 1871', *Epidemiology and Infection*. 40.4. (1940) 423-433 (p. 423).

520 Ibid.

521 The standard rate uses the years 1871-1872 to create a 'standard period' to base a series of dextro-diagonals which are approximately consistent with the mortality rates among different age (β) groups which were then utilized create the foundation to draw a larger graph of mortality in the town and country districts of Scotland using the national census and reports of the Registrar General. (Ibid. pp. 425-426.) The second method removes the standard period and uses an SIR (Susceptible-Infectious-Recovered) mathematical model of epidemiology influenced by the groundbreaking analytical methodology developed by Kermack, McKendrick and McKinlay in 1934 which compiled historic reports of death rates to mathematically chart the expected health outcomes in different nations. (W.O. Kermack, A.G. McKendrik, P.L. McKinlay, 'Death-Rates in Great Britian and Sweden: Expression of Specific Mortality Rates as Products of Two Factors and Some Consequences Thereof', *Journal of Hygiene,* 34.4 (December 1934), 433-457.)

of α (x 1000) are derived from normalized β's: second method, where α again represents the date of birth and β represents the age of the group. Source: Ibid.

As can be seen in the chart above, until approximately 1851 the relative "healthiness" of the town (urban) districts in Scotland was approximately sixty percent of that in the country (rural) areas.[522] This imbalance in health outcomes slowly equalised throughout the late nineteenth century to approximately seventy percent in the urban population compared to the rural population in 1881.[523] By about 1931 the health expectations were roughly equal between the two populations.[524] While the rural population's life expectancy improved on a modest scale, the improvements in health for the urban population followed a sharp curve, particularly between 1911 and 1931.[525] The increase in mortality shown on the town curve of the chart, driven upwards by infectious diseases like typhus followed by the significant decline in deaths directly corresponds with the implementation of effective sanitary measures. The reversal of this earlier rise in mortality highlights the importance of studying this period of Scottish medical history.

This analysis of how typhus and sanitary reform were uniquely intertwined in Glasgow during the nineteenth century has effectively re-established typhus as an important factor in the history of public health in the city. By readjusting the focus back onto the influence typhus had on public health, one can begin to understand why sanitary reform in Glasgow, and Scotland more broadly, developed gradually at first and then rapidly towards the end of the century, unlike nations like England and Wales, which did not centre their nations' sanitary revolutions around typhus. This reactive style of sanitary reform, which grew organically to meet the needs of Glasgow's citizens, allowed the city's public health sector to flourish. For nearly a century in Glasgow, typhus drove physicians and legislators to action, revealed the selflessness and selfishness that can arise in times of health crises, and tested the strength of the city, resulting in a model sanitary system which would have lasting impacts well into the future.

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[522] Note, as with all quantitative studies that include the mortality rates in the first half of the nineteenth century in Scotland there are limitations to the accuracy because of the unreliable reporting of fatalities prior to the Scottish Registration Act. Additionally, even following the standardization of statistical reporting under the Registration Act in 1855, shifts in demographic categorizations present challenges in creating an accurate graph which represents a consistent set of demographics over a set period. (Ibid., pp. 424, 431.)

[523] Ibid., p. 431.

[524] Ibid.

[525] Ibid., p. 428.

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