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THE CAMPAIGN AGAINST ODORS:  
SANITARIANS AND THE GENESIS OF PUBLIC HEALTH  
IN CHARLOTTETOWN, PRINCE EDWARD ISLAND (1855-1900)\*

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The last two or three decades of the nineteenth century have attracted disproportional interest among Canadian urban and medical historians. Early historians gushed over the continuous stream of scientific discoveries that accompanied the bacteriological revolution, and advanced them as evidence of the medical profession's progress and enlightenment. More recently, revisionist writers have concluded that self-interest was primarily responsible for these advances.<sup>1</sup> Prior to the discovery of the germ theory, civic elites perceived little or no material advantages from public health measures. Once it became clear that the city's health was no better than the well being of its sickest inhabitant, however, changes were slowly implemented.<sup>2</sup> Unfortunately, these two interpretations obscure the public health advances implemented when the miasmatic theory of disease held sway at mid century and often fail to take into account the slow acceptance of the new medical discoveries and their practical applications.<sup>3</sup> This article examines the growth of civic government involvement in public health services in Charlottetown from the city's incorporation in 1855 to the end of the century and argues that the miasmaticists' efforts on behalf of better sanitation facilities played a major role in the creation of public health services.

Charlottetown's lack of public health provisions prior to 1855 reflected the primitive nature of its existence. As in most pioneer societies at that time, financial constraints and the town's rudimentary administrative system were ill suited to provide basic health services. The public accepted accidents, disease and death as inescapable aspects of life. As Charlottetown grew to accommodate its expanding agricultural, shipbuilding and fishing hinterland, living conditions became crowded and susceptibility to disease increased. Refuse littered streets. Human excretion was dumped into holes sunk down to the water table, or soaked through the ground to contaminate the shallow wells. Poorly-drained roads, outdoor privies, bogs, cesspools, slaughterhouses and

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farm animals added to the stench and filth of the town.

The worsening environment provided a perfect breeding ground for cholera, typhoid, smallpox, diphtheria and tuberculosis. These diseases were as mysterious to Charlottetonians as they were terrifying. They arrived in the summer, spread stealthily and killed without respect for age, class or sex. The medical profession was generally helpless before this onslaught. Doctors knew nothing of viruses or bacteria; and except for interpreting such external symptoms as temperature, stools and heart beat, disease diagnosis was beyond their capabilities. At mid century, most physicians believed that disease was caused by foul air and preached that bad air -- or miasma -- arising from marshes, filth and decomposing animal or vegetable matter created epidemics that those predisposed to disease by fear and immoral or intemperate behaviour would contract.<sup>4</sup> This miasmatic theory evoked the logical conclusion that better sanitary facilities, including scavenging services, sewage disposal and pure water would provide reasonable prophylaxis against disease.

During the first half of the century the provincial government had supplied public health provisions on a piecemeal, *ad hoc* basis, just like the other governments of North America. Confronted with an impending onslaught of typhoid or cholera, the government initiated emergency measures which were later transformed into legislation. Once the peril disappeared, however, these enactments lapsed until the next contagious disease visited the Island. These temporary expedients consisted solely of quarantine measures and a board of health created by the Lieutenant-Governor whenever necessary.<sup>5</sup> As the capital and Prince Edward Island's most important port, Charlottetown was susceptible to imported contagious diseases. In addition, as the population increased from 2,500 in 1833 to 6,500 twenty years later, dangers to health from unsanitary conditions proliferated.<sup>6</sup> Unlit and poorly-watered streets, manure-soaked yards, ancient wooden gutters and contaminated wells all required attention that only municipal incorporation could provide. Although speaking *against* incorporation, provincial Assemblyman Edward Palmer admitted that the time had arrived for improvement in the management of Charlottetown's local affairs. The sanitary condition of the town in particular had ...

been so neglected that medical opinions had been given, to the effect that if the present state of things continues, the town will, in a few years, be in a most unhealthy state. . . . It is true, we have not yet been severely tried by pestilence, but that gives no reason why we should consider ourselves as exempt for all time to come.<sup>7</sup>

The 1855 Act of Incorporation empowered the city to build and regulate public reservoirs in order to provide 'wholesome' water supplies and fire protection. The following year 'A By Law for Sanitary Purposes' laid the groundwork for the care of the city's health. In place of the old system whereby the Executive Council appointed a Central Board of Health,

the city council became Charlottetown's board of health and was given authority over almost any imaginable danger to the people's health, from privies, hospitals and pigsties to overcrowded tenements, slaughterhouses and the Governor's polluted fish pond. The detailed provisions reflected the prevailing miasmatic theory of disease and copied the British Public Health Act of 1848, which had emerged from Edwin Chadwick's shocking disclosures of London's filthy condition.<sup>8</sup>

Although British physicians John Snow and William Budd had recently documented that cholera and typhoid fever were spread by polluted water, the city's physicians, councilmen and journalists concentrated their efforts on having filth removed. By 1866, however, sanitary conditions had so deteriorated that the City Council asked the local physicians to issue recommendations. Although one doctor urged the installation of a subterranean sewer system and water works, the other seven medical practitioners ascribed the real health menace to the exposure of organic matter to the sun.<sup>9</sup> As a result of their recommendations, the sanitary by-law was amended to enable Council to appoint a Medical Health Officer to supervise proper sanitary procedures. In addition, scavenging services and slaughterhouses came under the Board of Health's supervision.

At incorporation many people had suspected a link between disease and contaminated water. In 1854, for instance, *Haszard's Gazette* suggested a connection between poor water and epidemics and canvassed readers for further information on the topic.<sup>10</sup> However, not until the late 1860s did pure water become a civic issue. Charlottetown's newspapers began making frequent references to British experiments linking cholera and typhoid epidemics to the effects of sewage and polluted drinking water and had no trouble incorporating this intelligence into the existing medical lore. The *Examiner* warned:

Those who continue to breathe a vitiated atmosphere, or are compelled to drink foul water for any length of time cannot remain in a healthy condition of body. . . . In summer, when the weather is hot and dry, the exhalations from the seething masses of decaying matter must poison the air, and when rain falls the quantity of water holding in solution the most foul and health destroying matter that percolates through the porous soil into the streams that feed our wells, is absolutely sickening to think of.<sup>11</sup>

An outbreak of fevers near a contaminated well in 1868 convinced Dr J.T. Jenkins, the city's Health Officer, of the benefits of sewage facilities and pure water. During the ensuing months, the public was bombarded with editorials, letters to the editor and reprints of British newspaper articles outlining the connection between epidemic diseases and impure water.<sup>12</sup> Unfortunately, having embarked upon several vague enquiries, the city let the matter lapse. One

reason for this inaction was the attitude of several doctors who, as Dr Jenkins decried, 'with the supercilious assumption of superior knowledge, sneer at those who endeavor to trace results to their true cause.'<sup>13</sup> A decade later, city physicians were still not much better informed. As part of a report on Charlottetown's water supply, eight doctors responded to a questionnaire on the need for pure water. Question 5 read: 'Do you think the prevailing diseases such as scarlet, typhoid or other fevers which visit us annually have any connection with the use of our well water, or with effective drainage?' Three doctors replied in the affirmative, whereas four attributed the outbreak of disease to atmospheric causes and filth. The other physician cited sewage as the culprit, but not drinking water.<sup>14</sup> Since even the 'experts' were uncertain about the possible benefits of water and sewage systems, it made good sense for the city not to expend precious funds on expensive public works.<sup>15</sup>

During the 1870s, Charlottetown's pro-water works forces shifted their emphasis to the economic benefits provided by a wholesome water supply. Whether this approach was planned as a tactical ploy to counter opponents' arguments or merely reflected the underlying motives of the proponents remains unclear. The city newspapers drew extensively from examples in Toronto, Windsor, Montreal, Halifax, Saint John and several American cities to illustrate the financial savings a water system would provide. Fires could be extinguished quickly, fire insurance rates would be lowered, water carters' fees would be eliminated and housewives and servant girls would be spared the labour of having to drag pails of water from city wells.<sup>16</sup> In his 1877 year-end report, Mayor T. DesBrisay estimated that a water works system would save the city almost \$34,000 annually.<sup>17</sup>

Charlottetown's strained financial state in the late 1870s, however, militated against any expensive undertaking. From 1876 to 1880 the city's debt increased steadily until it totalled over \$110,000.<sup>18</sup> During this period the electorate chose candidates who would economize, and councillors who had supported a water system in the past discovered that if they wished to be re-elected, they had to pledge not to introduce a water works bill without the electorate's agreement. The large number of proposed schemes for procuring clean water further confused the issue.

The creation of the Prince Edward Island Board of Fire Underwriters in 1884, to standardize insurance rates for the province's nineteen fire insurance companies, initiated the next stage in the struggle for pure water facilities. The conflagration that destroyed over \$200,000 in property earlier that year probably served as the impetus for the establishment of the Board and its subsequent actions. The fire started in the Charlottetown business section and gutted the entire block before it could be confined. This, the worst conflagration since 1866, was blamed on the lack of adequate water supply and poor fire fighting equipment.<sup>19</sup> As a result of this disaster, the Board threatened to increase insurance rates by twenty per cent if nothing was done within three months to provide a more efficient water

supply.<sup>20</sup>

For four months the press, city council and several citizens meetings debated the pros and cons of a water system. The need for water for fire fighting was obvious, yet only three of ten pro-water works candidates gained election in June 1884. The *Patriot*, now opposed to pure water facilities, wrote happily that the results of the water works' election were 'still the same - rejected, despised, and abhorred by the community.'<sup>21</sup> Although Charlottetown's finances had been in the black the past two years, the proposed costs of a water works system had once again defeated the issue. Also important was the city's reluctance to be blackmailed by the Board of Insurance Underwriters.

By 1885, however, almost every important group or faction in the city favoured some sort of water works system. The need for an adequate water supply for fire fighting purposes was undeniable, and a smallpox epidemic earlier that year gave greater credence to the relationship between disease and poor water supplies. A week before the 1885 civic election, several papers read before the Caledonia Club Literary Society and the Literary and Scientific Society stressed the interrelatedness of health, impure water and poor sanitation. The *Examiner* devoted five columns on consecutive days to re-printing one such paper.<sup>22</sup> After two years of heated debates over which plan was best and whether to incorporate a private firm or have the city erect its own system, the civic government finally agreed to establish a water works. Six years later, more than 1,500 houses had been hooked up and the system was self sustaining. The poor received free service to prevent their resorting to polluted well water.

The introduction of a sewer system in 1898 paralleled the water works debate. During the 1840s, Edwin Chadwick had established a link between epidemics and inadequate sewage disposal in London. Certainly, the necessity for sewage removal was much more closely linked to the miasmatic theory of disease than was the need for pure water. In addition, Charlottetown physicians generally agreed on the benefits of a sewage system. In 1876, the City queried eight doctors about whether the city's health was more likely to be affected in hot or damp weather from exhalations from the soil or from the want of proper drainage. Four doctors replied 'Yes,' thus indicating that they favoured both choices. Two physicians maintained that they were of equal importance, and the remaining two chose drainage.<sup>23</sup> Unlike water works, however, a sewage system could not prevent fires, reduce insurance rates or protect property values.

At incorporation, Charlottetown had several open drains which either emptied into an underground reservoir or spilled into the harbour. Because the street grades were uneven, the surface run-off tended to drain into the city's three bogs or formed cesspools, emitting an intolerable stench. Householders usually emptied wastes into underground vaults or dumped their garbage down long iron tubes. In either case, sewage seeped through the porous soil, and by the late 1860s and early 1870s, the effluvium had begun to contaminate the

city's wells and underground springs.<sup>24</sup>

The sewage question soon became intertwined with the debate over water works. Since sewers were not considered paying propositions, the opponents of pure water works linked the two issues. Citing Canadian, British and American examples, the anti-water works faction argued that a water system would also necessitate the installation of an expensive sewage network or else the ground would be perpetually soaked and emit injurious 'exhalations' in hot weather. Councillor Dodd spoke for many other members of both Houses of Parliament when he stated that:

The Water Works would be very little benefit without sewers except for fire purposes; the great benefit of having water in a house is to wash away all filth through the sewers. It is necessary to have some way of getting rid of the waste water, otherwise water works would be very little good.<sup>25</sup>

Despite the numerous discussions stressing the health benefits of sewage disposal and the different types of systems, the citizens remained confused about the best course to adopt. For example, when 161 people petitioned Mayor Dawson in 1896 to conduct a plebiscite on the issue, Dawson stated in council that on the important question of sewage he could not then give an intelligent vote on the matter. He claimed to have 'had considerable experience as a citizen, as a councillor for 7 years and as Mayor, and yet he was not in a position to vote intelligently on sewage disposal and thought the greater part of our citizens were in the same position.'<sup>26</sup> It was not until 1898 that the voters authorized the city council to construct a sewage system.

The system was completed in 1900, but many families were reluctant to link up with it. Not until 1917 did the province empower the Board of Health to enforce universal installation. That year, the city Health Office reported proudly that although Charlottetown had not resorted to this power, the legislation revealed that the Board of Health was 'trying to make this a city with a minimum amount of preventable diseases and Charlottetown with its beautiful situation and splendid environment should be the last place in which a germ could flourish and cause disease.'<sup>27</sup>

In the absence of any single, compelling incident, Charlottetown's change of heart might best be attributed to the citizens' long-term exposure and revulsion to the evils of pollution. Continual debates in City Council and the provincial legislature concerning the advantages of dry-earth privies and sink wells, the prohibition of pigsties within the city limits, the regulation and inspection of slaughterhouses and tanneries, stricter enforcement of the sanitation act and the growing powers of the City Sanitary Officer not only reflected the people's increasing concern for hygiene but also served to inform them of the perils of pollution.

Important also in changing attitudes was the city's improving self image. Charlottetonians enjoyed comparing themselves favourably to other cities in the Maritime provinces. Electric lights, pure water, low crime rates, good beaches and fine parks all distinguished the capital as a progressive city. Its old, decaying gutters and sewers, 'those relics of barbarism,' tarnished the city's wholesome image and threatened to destroy the nascent tourist industry.

Much of the credit for Charlottetown's gradual conversion to preventative health measures was due to the city Health Officer, Dr Richard Johnson. His efforts had made the citizens and politicians aware of the need for hospitals, sanitation, pure water, sewers, mortality statistics and fresh food and milk. Johnson, an eclectic reader who gathered information from the *Medical Weekly*, the *New York Medical Journal*, the *Glasgow Sanitary Journal* and from board of health reports in New Brunswick, Quebec and New York City, was familiar with the recent revolutionary breakthroughs in medical knowledge that identified micro-organisms, not emanations, as the culprits. Between 1879 and 1884, for example, scientists had identified the causative organisms for typhoid, leprosy, malaria, tuberculosis, tetanus, cholera and diphtheria. With cellular pathology providing the underlying cause of epidemic diseases, chemists began analyzing blood and urine samples. Achromatic microscopic lenses aided in the identification of bacteria; percussion and auscultation, the clinical thermometer improved disease diagnosis; and anesthesia and antiseptic surgery offered hope for quicker recovery. Although these advances did not immediately improve the quality of medical treatment, they served to cloak the profession with a scientific aura that lent prestige and authority to the statements of its practitioners.

In common with many doctors at the time, Johnson had grown up under the influence of the miasmatic theory of disease. The flood of new scientific discoveries in the last quarter of the century did not appear to unsettle him nor force him to re-evaluate his medical beliefs. Rather, he assimilated recent findings into traditional concepts with no apparent concern for the inherent contradictions between the two viewpoints. A recurrent theme throughout Johnson's annual reports to city council was the important role meteorological conditions played in propagating 'infective microbes' within 'hotbeds of miasmas.' His first report in 1885, for example, included a meteorological chart for the three previous years which purported to illustrate that cool and wet summers kept mortality rates down because of their 'invigorating and purifying influences.'<sup>28</sup>

More important for the cause of efficient public health management was the Health Officer's adoption of statistical analysis. Just as British physicians Snow and Chadwick had employed statistics to connect the incidence of disease with the presence of polluted water, Johnson used the city's mortality figures to identify the sources of particular diseases. In 1890, annoyed that some physicians had not notified him of cases of infectious disease, he explained that 'the centres of origin and the causes of the spread of those diseases are



are not traceable, and as a consequence, the valuable lessons which such facts are calculated to teach are wholly lost.<sup>29</sup> The following year Johnson, now promoted to Health and Statistical Officer, used the high incidence of infant mortality to argue in favour of proper drainage and clean homes. A decade later, following a fatal outbreak of diphtheria, he presented a statistical chart that illustrated the prophylactic properties of antitoxin serum. He successfully argued with City Council that continued provision of this experimental vaccine was 'a legitimate exercise of your powers and functions, as guardians of the public health.'<sup>30</sup> As in the debate over sewage disposal, the Health Officer frequently released pertinent statistical information to arouse and apathetic citizenry to the dangers of continued neglect. Although Johnson's methodology was often questionable, the scientific facade disguising his conclusions lent greater credence to his statements.

The debate on city pigsties reveals the catalytic role Johnson played in health matters as well as the financial, political and social problems confronting successful health reform. In his annual report for 1887 the Health Officer noted the large increase in mortality figures that year and attributed it to the presence of pigsties, slaughterhouses and poor sanitation methods. At the ensuing city council meeting, a proposal to prohibit pigs within the city limits met defeat by a five-to-four margin, with the deciding votes apparently cast by two councillors who kept their own pigs.<sup>31</sup> Since a similar by-law had been rejected three years earlier, a group of 'responsible citizens' petitioned the legislature to amend Charlottetown's Public Health Act. They demanded a new board of health consisting of the mayor, the city Health Officer and the three Water Commissioners. Although the petitioners claimed that this smaller board would be more efficient, the intent was to remove the obstructing city councillors. The group further urged that pigs be banished from the town and that slaughterhouses be required to remove beyond the city limits.<sup>32</sup>

As the petition was signed by all of Charlottetown's physicians, clergymen and school board members and nearly all its teachers, lawyers and leading businessmen, it was given serious consideration.<sup>33</sup> The ensuing discussion centred almost entirely on the issue of what to do about pigsties. Other Canadian urban centres had solved this problem through zoning regulations, but in Charlottetown the poor people lived in the same districts as the wealthy classes. Since it was this latter group which had petitioned the government, some assemblymen construed the proposal as an attack by the rich on the labouring class. Pigs could be kept just as clean as horses, they argued, and 'when it is remembered that a great number of poor people are in the habit of keeping pigs, which add considerably to their yearly income, the matter assumes a different aspect.'<sup>34</sup> After a discussion on which animals were easier to keep clean, the debate turned to the beneficial role of pigs in eating table offal -- which, if left to decompose, was more dangerous than the swines' presence -- and to whether hens and cows could take their place. Several opposition members, particularly Dr Gillis of

Summerside, warned that prompt measures were necessary to maintain the city's health. 'While we should be anxious to protect the poor man's pocket,' Mr Sutherland urged, 'we should also be anxious to protect his health.'<sup>35</sup> However, the Assembly ultimately refused to honour the petition because it suspected the city of attempting to avoid its political and social responsibilities.<sup>36</sup>

Another petition that year proved more successful. The provincial government empowered Charlottetown to hire a Sanitary Officer to enforce the city by-laws and to prosecute offenders before the Stipendiary Magistrate. Within five months of his appointment, the Sanitary Officer inspected 500 buildings, found over half of them unsanitary and ordered them cleaned.<sup>37</sup> Attempts to enforce the sanitary by-laws on pigsties and slaughterhouses, however, ran into a legal road-block when the court ruled that the Sanitary Officer had no right to interfere with their operations.<sup>38</sup> This problem remained unsolved into the twentieth century.

If public health legislation is defined as the attempt to control the physical environment to prevent disease, then the nineteenth-century sanitary reformers were the first public health advocates in Charlottetown. Self interest undoubtedly played an important role in the creation of public health services, but it was the emphasis upon unsanitary conditions by the miasmaticists that defined the need for enforcement and outlined the ameliorative methods to be applied. The most tireless worker on behalf of public health was the city Health Officer. He collected statistics, wrote to the newspapers and presented annual reports on the city's health. His success in publicizing the need for water works, vaccinations and sewage systems inaugurated the long process of debate and consultation that eventually led to the universal acceptance of these essential facilities in Charlottetown.

#### NOTES

1. See S.E.D. Shortt's survey of medical history 'Antiquarians and Amateurs: Reflections on the Writing of Medical History in Canada,' *Medicine in Canadian Society: Historical Perspectives* (Montreal, 1981).
2. For example: J.C. Weaver, "'Tomorrow's Metropolis" Revisited: A Critical Assessment of Urban Reform in Canada, 1890-1920,' in G.A. Stelter, A.F.J. Artibise, eds., *The Canadian City: Essays in Urban and Social History* (Ottawa, 1984); H.A. MacDougall, 'The Genesis of Public Health Reform in Toronto, 1869-1890,' *Urban History Review* (February, 1982); A.F.J. Artibise, *Winnipeg: A Social History of Urban Growth, 1874-1914* (Montreal, 1975).
3. S.E.D. Shortt, 'Physicians, Science, and Status: Issues in the Professionalization of Anglo-American Medicine in the Nineteenth Century,' *Medical History* 27 (1983).

4. Geoffrey Bilson, *A Darkened House: Cholera in Nineteenth-Century Canada* (Toronto, 1980), 115.
5. Prince Edward Island, *Acts of the General Assembly*, 'An Act for constituting Boards of Health,' Cap. 5, 1851, 745-757.
6. Charlottetown, *Examiner*, 26 November 1855.
7. Charlottetown, *Parliamentary Reporter*, 19 March 1855, 25.
8. Public Archives of Prince Edward Island [PAPEI], City By-Laws, 7 March 1856; and A By-Law for Sanitary Purposes, 1879, 53-63.
9. *Examiner*, 26 March 1866; PAPEI, City Council Minutes, 8, 14 March 1866.
10. Charlottetown, *Haszard's Gazette*,
11. *Examiner*, 1 June 1868.
12. Charlottetown, *Islander*, 22 January 1869; *Examiner*, 1 June 1868, 25 January 1869.
13. *Examiner*, 25 January 1869.
14. Gilbert Murdoch, *Report on the Water Supply for the City of Charlottetown* (Charlottetown, 1881), 83-4.
15. The situation was similar in Ottawa. John Taylor, 'Fire, Disease and Water in Ottawa: An Introduction,' *Urban History Review* (June 1979), 19.
16. *Examiner*, 14 June, 19 July 1875, 10 August 1874; Charlottetown, *Patriot*, 24 June 1875. In Ottawa, Vancouver and Winnipeg, the demand for water works was also based on the need for fire protection and lower insurance rates. J. Taylor, *op. cit.*, 16; L.P. Cain, 'Water and Sanitation Services in Vancouver: An Historical Perspective,' *BC Studies* (Summer 1976); Alan F.J. Artibise, *op. cit.*, 208.
17. *Annual Report for the City of Charlottetown for 1877*, Mayor's Report, 24. The annual costs were \$12,690 for Spring Park Water Carters, \$310 for reservoir repairs, \$1,110 pump and well maintenance, \$9,850 fire insurance policies and \$9,850 for uninsured properties.
18. *Patriot*, 16 January 1882.
19. PAPEI, ACC. 2713, 'Prince Edward Island Board of Fire Insurance Underwriters, Minute Book,' 1884. Fire insurance premiums were only \$30,700, whereas losses for the year totalled \$81,060.
20. Board of Fire Insurance Underwriters, 3 March 1884.

21. *Patriot*, 10 June 1884.
22. *Examiner*, 10, 11 January 1885.
23. G. Murdoch, *op. cit.*, 82.
24. *Islander*, 1 January 1869; *Patriot*, 25 July 1874; *Examiner*, 26 March 1866.
25. Prince Edward Island, *Debates and Proceedings of the Legislative Council*, 1884, 178.
26. Quoted in *Patriot*, 11 February 1896.
27. *Annual Report for the City of Charlottetown for 1912, 'Health Officer's Report,'* 146.
28. *Ibid.*, 1885, 'Report of the Health Officer.'
29. *Ibid.*, 1890
30. *Ibid.*, 1894, 1901.
31. *Patriot*, 21 January 1888.
32. Charlottetown, *Parliamentary Reporter*, 1888, 114-16.
33. *Daily Patriot*, 11 April 1888.
34. *Parliamentary Reporter*, 1888, Mr Blake, 115-16.
35. *Ibid.*, 321.
36. An 1879 by-law empowered the Board of Health to inspect and regulate all pigsties and slaughterhouses and to require them to be kept clean and wholesome.
37. PAPEI, Vol. 39, Letters of the City Council, January 1888.
38. *Ibid.*, 11 June 1890; PAPEI, Board of Health Minutes, 18 June 1890.