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TITLE PAGE

“A model for the country”: Letters from Florence Nightingale to the architect, Thomas Worthington on hospitals and other matters 1865 -1868	title
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ABSTRACT

Between 1865 and 1868 the Manchester architect, Thomas Worthington and Florence Nightingale corresponded about hospital design. Worthington was involved in building hospitals for two Poor Law Unions in Manchester. The designs of both hospitals were based on the 'pavilion' principle of which Nightingale became a vocal, national champion. Through five letters written by Nightingale to Worthington the paper explores Nightingale's views focussing on her admiration for the designs and examines the importance of these commissions for Worthington's career as a hospital architect.

Introduction

Ensuring that capital investment in hospitals is both clinically effective and affordable is not a new consideration. A series of letters written in the mid 1860s by Florence Nightingale to the Manchester architect Thomas Worthington reveals the importance of cost in the national debates that surrounded hospital design during a pivotal period of public investment in health care.(1) Worthington had been commissioned to design hospitals for two Manchester Poor Law Unions, Chorlton-on-Medlock and Prestwich. Nightingale was by then championing reforms at a national level focussing on hospital design, administration and nursing. She had returned home from the war in the Crimea in 1856 a national heroine and from then on had pressed for changes first to the organization of army medical services and later to health care more broadly.(2,3) Five of the letters Nightingale sent to Worthington are preserved in the Special Collections of the John Rylands Library, University of Manchester. The first is dated 25 July 1865 and the last, 7 November 1868. They were acquired in 1950 from Lewis Orford a prominent Manchester solicitor who was probably acting as an intermediary for the Worthington family.

That Thomas Worthington and Nightingale corresponded is well known to scholars.(4-7) Indeed these letters were recorded by the Florence Nightingale International Foundation in the 1940s before the John Rylands Library acquired them.(8) The Foundation borrowed the letters to photograph them for the collection of Nightingale letters they were then assembling. The letters have been widely cited and extensive sections were quoted by Gerard Edwards in his privately published 1975 history of Withington Hospital and by Anthony Pass in his 1988 biography of Thomas Worthington. However, the letters were not included in Lynn MacDonald's recent magnificent multi-volume work on the Nightingale letters.(9) This paper seeks to bridge this omission setting the letters in their historical context, considering the significance of the commissions for Worthington's career as a hospital architect, and analysing the social and professional networks the letters reveal.

As far as we are aware, none of Worthington's letters to Nightingale has survived. Although the correspondence is therefore one-sided, we can infer what Worthington's letters were about from Nightingale's responses. The letters demonstrate her admiration of Worthington's Manchester hospitals and tell us a little about the influence the design exerted both in Britain and beyond.

A new hospital for Manchester

The Poor Law Guardians for the Chorlton Union in Manchester commissioned a new hospital in 1862. The Union for which medical accommodation was needed had been established thirty years previously under the 1834 Poor Law and served a catchment area to the south of Manchester. It was one of the largest Poor Law Unions in the UK. In 1840, a substantial workhouse had been built in Hulme close to the city centre. In the mid 1850s they moved out of this cramped urban site to a more spacious location at Withington some five miles or so to the south of the city. Figure 1. There was only very

modest hospital accommodation in this new workhouse and by the early 1860s there were often simply not enough beds for those requiring medical treatment. By then, applications for relief were increasing sharply with the standstill in the Manchester cotton industry caused by shortages of raw cotton resulting from the American Civil War. Many applicants were poor because they were sick and poverty in turn exacerbated ill-health. The Guardians accepted the advice of their Medical Officer, George Greaves, that better hospital accommodation was badly needed. Greaves commended to them his friend, Thomas Worthington, as an architect who could deliver the best in modern hospital buildings at a price they could afford. (10)

Thomas Worthington had trained as an architect with William Bowman and then in the London office of William Tite, an architect involved in projects throughout the UK.(11) Worthington had established an office in Carlisle for Tite working on railway projects. In 1849, Tite could no longer keep on his young assistant for financial reasons. Worthington, then aged only 23, had set up his own practice. He had then been qualified barely two years and branching out on his own was a risky business. However, he was soon developing a reputation for social architecture with commissions for public laundries, baths and swimming pools in both Manchester and Salford. He became active in the Manchester Statistical Society, established in the 1830s to promote research on social problems and there met George Greaves, Medical Officer to the Chorlton Poor Law Union.

By the time of the Chorlton Union commission, Worthington had already worked for the Manchester Poor Law Union, designing their offices in Fountain Street. He also had previous experience of two hospital projects in the North West. He had planned an asylum for Cumberland and Westmorland and had also been involved in discussions on the condition of the Manchester Royal Infirmary (MRI) (see below). Through the MRI commission and through the Manchester Statistical Society, Worthington had been made aware of the work of the Manchester obstetrician, John Roberton, who had been President of the Statistical Society between 1843 and 1847. Worthington later paid generous tribute to Roberton's influence on the design for the Withington Hospital recalling that "the plan of the building ...has been, to a considerable extent, based on the general principles laid down in the papers he has from time to time published".(12)

Roberton, like Florence Nightingale, believed that hospital design could affect clinical outcomes and that achieving good rates of survival and recovery should be the principle aim of those commissioning new clinical facilities. Both believed that 'sanitary' hospitals could be achieved by adhering to certain design principles. Both favoured the 'pavilion' principle developed most fully in France during the first half of the nineteenth century but which owed much to earlier writings on prisons by reformers such as John Howard about the value of simple structures built of material which could be easily cleaned with windows positioned to ensure good air circulation. In the UK, this mid-nineteenth century emphasis on hospital design facilitating good clinical practice, as championed by Roberton and later Nightingale, represented a definite shift. Over the previous century many 'voluntary' hospitals had been established in developing provincial cities providing in-patient care for the sick poor and facilities in which surgeons could demonstrate their

skills both to their fellow doctors and to potential clients. These hospital buildings tended to be expressions of the charitable ideology of their founders rather than the clinical desires of doctors. Manchester Royal Infirmary's classical lines, dating from the mid-eighteenth century but later enlarged, expressed the civic confidence of its wealthy patrons rather than any utilitarian brief from its medical faculty.(13)

Robertson had published his first paper on hospital design in 1856.(14) He presented the Bordeaux Hospital, which he had visited in 1855, as an exemplar. In France, 'pavilion' hospitals had been pioneered from the late eighteenth century with the re-building of the Hôtel Dieu in Paris.(15) At Bordeaux, wards were based in pavilions, simple rectangular blocks in which beds were arranged in two rows. Generous windows, arranged opposite each other in the long narrow wards, ensured cross-ventilation. The ward blocks were separated by attractive gardens allowing air to flow freely removing the smell of disease produced by the breath and excretions of patients. Robertson believed, like Nightingale, that this foul-smelling air, or 'miasma', could cause disease to spread if allowed to flow directly into other wards. The semi-rural site of the Chorlton Union Workhouse lent itself to this 'pavilion-style' design and Worthington was keen to translate Robertson's ideas into bricks and mortar. At Withington, there was plenty of space to position the blocks of wards sufficiently far apart to allow 'nature' to remove the harmful disease-causing air and for purer country air to assist in the healing process.

Florence Nightingale was also a great admirer of Robertson whose views had been publicised by George Godwin, campaigning editor of *The Builder*, the influential weekly journal for architects. She and Robertson had corresponded in 1858 about hospital design, Nightingale regarding Robertson as Britain's "greatest Hospital authority".(14) Her own campaign had begun on her return from the Crimea in 1856. As a result of her criticisms of army medical services a government commission had been set up. As the debates developed, Nightingale's views on medical care broadened to encompass civilian as well as military hospitals. In 1859 two of her papers on hospital reform that had been read at National Association for the Promotion of Social Science in Liverpool were published as her celebrated *Notes on Hospitals*.(16) Three articles from *The Builder* were included as an appendix to provide full details of the 'principles' which, like Robertson's emphasised the importance of light and air. Within a month of publication 15,000 copies of *Notes* had been sold. By then two pavilion hospitals were already underway- Blackburn Infirmary and the Royal Marine Barracks Hospital, Woolwich.

In Manchester in 1860 a year after the publication of Nightingale's *Notes*, Robertson had publicly criticized the Manchester Royal Infirmary, the town's premier voluntary hospital, arguing that its high mortality rates could be lowered by moving the hospital out of the city centre to a more airy and healthy location, thus providing a more sanitary environment for patients. The trustees responded by asking Worthington to prepare a report on the existing hospital building. Nothing much happened. However, the project provided very useful background preparation for Worthington's next hospital commission received only months later from the Chorlton-on-Medlock Guardians.

Building work at the Withington site began in Spring 1864. Twelve months or so later, George Godwin reported on progress in *The Builder*, publishing plans and a description of the 500 bed hospital.(17) Figure 2. He was fulsome in his praise for the design. The following month, probably prompted by this publicity for the project, Worthington wrote to Florence Nightingale, enclosing plans of the hospital and promising a copy of Godwin's article.

Florence Nightingale's Letters to Thomas Worthington

Letter One:

July 25 65
34 South Street
Park Lane W London

Thos Worthington Esq [*at foot of first page*]

Sir

I am sorry to have been prevented by illness & business from answering your kind note of July 14 before.

I am deeply interested in 'Workhouse Hospitals' And I am sure that it is a question which will come very largely before the public next year, in relation to London Workhouses. Your hospital plan is a very good one: when completed it will be one of the best, if not the best in the country. It might be improved in some small matters of detail, eg cutting off more completely the WCs & Baths from the Wards. Still it is capital, as it is.

You must provide for the ventilation of the wards by Sherringham's ventilator in each window pier close to the ceiling-& also by shafts in the angles of the wards. Unless this is efficiently done, the three fireplaces will smoke.

I shall watch for the progress & completion of your building with the utmost anxiety. Your estimate is extraordinarily low-even without the administration block. If you succeed in completing the buildings for anything like the money, with due regard to the simple sanitary requirements of so great a building you will have inaugurated a new era in Hospitals buildings- And we shall hasten to imitate you- for you will have set us [*crossed through*] a model to the whole country.

I have not received the No. of the "Builder" you kindly promised me But I had already seen it.

Believe me, Sir,
Your faithful servt
Florence Nightingale

The following year, in a letter to her brother-in-law, the politician Sir Harry Verney Nightingale claimed Worthington had sent plans to her for her correction.(18) However, by July 1865, construction was well advanced and there is no evidence that the designs

were changed in anything except detail. In the same letter to Verney, she emphasized her admiration for the inexpensive nature of the design.

News of the new hospital at Withington was also picked up by the editor of *The Lancet* who, like Nightingale, was campaigning for improvements to hospital provision in metropolitan workhouses.(19) Nightingale was certainly prophetic in her comment that the state of London hospitals would become prominent within twelve months. In February 1866, the Association for Improving London Workhouse Infirmaries began its successful campaign resulting in the Metropolitan Poor Law Amendment Act of 1867.

The Chorlton Union Hospital was completed in summer 1866. In January 1867 Worthington presented a paper to the Manchester Statistical Society describing the building in some detail.(12) Figure 3. He explained that by keeping different categories of patients apart from each other in pavilions joined only by an administrative corridor, the ‘infected air’ of each set of wards would be contained thus preventing disease spreading within the hospital. Worthington acknowledged that Florence Nightingale’s publications on hospitals had provided “information of the utmost value” with many “practical suggestions”. Worthington’s hospital had five pavilions each three stories in height, providing accommodation for 480 beds. After many arguments, the Guardians had decided on a density of one patient to every 1350 cubic foot of air. The pavilions were arranged 100 feet apart. The design had taken account not only of space but also of air movement. Worthington described how the numerous openings for large sash windows, together with the flues located along the walls and grids close to the ceilings would keep air moving within the wards. Most importantly, he reported that the pavilions together with the joining corridor had cost only £23,000 and that taking into account the cost of the land and an administrative block (which was never built), a cost of around £60 per bed had been achieved. In contrast, the cost of each bed in the new St Thomas’ Hospital located along the banks of the Thames and completed only five years after Withington came to £650, more than ten times the cost of Worthington’s modest hospital.(20)

Worthington’s paper was published with a general plan showing the layouts of the ward-blocks and an elevation, together with a more detailed floor plan of one ward. The paper was published in *The Transactions of the Manchester Statistical Society* and, in July, Worthington sent an off-print to Florence Nightingale. Nightingale acknowledged the paper with a warm letter full of praise for his achievement.

Letter Two:

April 13/ 67
35 South Street
Park Lane
London. W.

Thomas Worthington Esq [at foot of first page]

Dear Sir

I cannot thank you enough for sending me your excellent Pamphlet, (with plans,) on the Chorlton Union Hospital.

It is of the greatest use to us, as giving details of the best & cheapest Hospital [Hospital is repeated at the top of the second page] that has yet been built.

And, in these days when so much attention wise & unwise is being directed to Workhouse Infirmaries (and so little is being really done) the world's gratitude is due to those who have solved a problem in a way which must be a model to the country.

For the good & cheap must prevail over the dear & bad- tho' it is by no means so certain that good & dear will.

I shall make use of your invaluable example everywhere I can-

Pray believe me ever your faithful servt
Florence Nightingale

In her comments on Worthington's design, Nightingale makes no mention of the height of the ward blocks which were three stories in contrast to the two stories recommended by her in *Notes on Hospitals*. However, this was not the first time she had ignored this principle. In 1862 Nightingale when establishing a midwifery training school at Kings College Hospital had allowed a third floor ward to be used as a lying-in ward. (2) In the preface to *Introductory Notes on Lying-in Institutions* published in 1871 she outlined the high death rate at King's between 1862 and 1867 but made no link with the height of the ward block.(21) Nightingale, notoriously strong-minded, perhaps did not want to contemplate whether the height of the ward blocks had contributed to the incidence of puerperal fever since she had sanctioned the ward design herself. When she made her comments on the Chorlton Union plans the decision to close the midwifery wards at Kings College Hospital had yet to be taken .

Eleven days after sending this second letter, she wrote to Worthington again, asking for more copies of his paper.

Letter Three:

April 24 67
35 South Street
Park Lane
London. W.

Sir

Might I take advantage of your great kindness as far as to ask you whether you would be so good as to send me (by return of post if possible) a copy of the Account of your Chorlton Union Infirmary*

*read before the Manchester Statistical Society [*written at foot of first page*]

-for a young Swedish lady whom we have been training as Hospital Superintendent for Upsala in Sweden, & who returns thither on Friday.

If I had 20 copies I could place them well -abroad & at home. The objection constantly made to me against Pavilion Hospitals is :- the construction is so expensive. To which I answer:- look at the Chorlton Union Hospital

.....
[signature has been cut out]

Worthington sent several copies which Nightingale thanked him for in a letter three months later. She had sent them to correspondents both at home and abroad. Again, Nightingale emphasized Worthington's achievements in creating an inexpensive building.

Letter Four:

July 9/ 67
35 South Street
Park Lane
London W.

Sir

I have felt that you must have thought me most ungrateful in not thanking you sooner for so kindly sending me copies of your invaluable pamphlet on the Chorlton Union Infirmary-which must become a model for the whole country.

I have however made that use of them-which would I know, please you best-in sending them wherever, not only in this country and in Scotland but in the Colonies & even in the United States, I think it possible that people can be stirred up to imitate your example. For, up to your time, the plea put forward for shirking the Pavilion principle has always been – that it was too expensive.

I have sent a copy of your pamphlet to Sydney in New South Wales, where they are building or rather enlarging a Hospital- to which we send out, at their desire a Trained Superintendant & staff of Trained Nurses. But I am sorry to say that their construction will not be nearly so good as yours. And I fear it will be too late to alter.

When I bring out another Edition of my “Notes on Hospitals”, I shall make large use of your example- please God to prolong my precarious life so long.....[the bottom part of this page has been cut off]

...by me by desire [top part of page torn]...Law Board & presented to the Hs of Commons (attached to a Report, of which I need only say that your building puts its authors to shame). I wish I had had your pamphlet before I wrote my paper.

I regret to see that the Chorlton Union does not put its whole female management under one female Head, the Head of the Nursing- under whom the Matron or Housekeeper should always be, I conceive.

Pray believe me.....

[signature has been cut out]

Nightingale had been advising the government of New South Wales since 1866 on the organization of hospital services in Sydney.(22) In 1868, the Nightingale Fund Council sent out five nurses under the care and authority of Lady Superintendent, Lucy Osburn, to the Sydney Infirmary and Dispensary (later Sydney Hospital). They took with them Worthington's example of a model hospital building.

Before even the hospital at Withington had been finished, Worthington was commissioned to design similar accommodation for the Prestwich Poor Law Union to the north of Manchester.(5) Like the Withington project, Prestwich Hospital took four years to design and build. By November 1868, when construction was already underway, he sent copies of the plans to Nightingale.

Letter Five:

35 South Street
Park Lane
London W

7 Nov /68

Thomas Worthington Esq *[at foot of first page]*

My dear Sir

I beg to thank you very heartily for your kind letter & for the plans of the Prestwich Union New Workhouse.

They appear to me admirable.

And if I ask a few questions, it is only for my own information.

Looking at the depth of the projection in comparison with the shortness of the ward, would it not be a safe arrangement to place the Baths & W.C.s beyond the end wall & behind the fireplace-a separate ventilated & lighted lobby between Baths, W.C.s etc and Ward- all drain pipes going down along outer wall-?

If the wards were longer, the present arrangement of W.C.s etc would be, of course, the best.

I am so glad to see the arrangement of one bed to each window gaining force under your authority. In that case I suppose a large the *[scored through]* End window is unnecessary. Do not the small corner fireplaces rather trench on the beds?

Will the Scullery be sufficient accommodation for a nurse to sleep in, if necessary?

I shall hail with great expectation your experiment of a Liverpool Convalescent building. So is time that this country solved the question of what to do with its Convalescents.

Pray believe me
Ever your faithful servt.

[signature has been cut out]

Worthington's Prestwich and Liverpool Hospitals

The Prestwich Union served a less densely populated area than that under the care of the Chorlton Guardians and the hospital Worthington was commissioned to provide was correspondingly smaller. Eight wards were linked at ground level by an open arcade. The final cost per bed of this scheme came in at £121 including land and furniture. Although more expensive than the Chorlton Union Hospital, the cost was still well below that experienced elsewhere.

Worthington was also by this time working on a convalescent hospital in Liverpool. Funds had been raised by public appeal for relief during the cotton famine. Around £40,500 still remained in 1867 when the last of the claims were settled. The Liverpool executive committee was given permission to use this to provide a convalescent hospital for the city. William Rathbone, a leading Liverpool merchant and philanthropist, led the project.(23) He had introduced a system of trained nurses led by a Lady Superintendent for the Liverpool Workhouse Infirmary in the early 1860s taking advice from Florence Nightingale. Rathbone and Nightingale had remained close and it was therefore unsurprising that she took such interest in Worthington's Woolton commission.(24) Indeed it is highly probable that Rathbone became aware of Worthington's work through Nightingale. The Woolton Hospital opened in 1873. The budget for this project was generous compared to Worthington's other hospital commissions and this is reflected in the Gothic decoration the building incorporated.

Conclusions

This modest collection of five Nightingale letters reveals much about the debates over hospital design in the 1860s. Florence Nightingale had achieved wide recognition for her work during the Crimean War and had stamped her authority on military medical care. She was fêted for her evangelism of hospital cleanliness and efficiency. Her subsequent advocacy for pavilion-style hospitals should have been enough to win arguments over design styles. However, the size of site required for a pavilion hospital significantly increased costs, particularly in London. Nightingale has made clear in these letters that the major attraction to her in Worthington's design for the hospital at Withington was its astonishingly low cost. The letters place Worthington as influencing Nightingale, completing a triangle begun with the Manchester obstetrician, John Roberton whose writing so impressed both Nightingale and Worthington. Nightingale was well aware of the extent of Manchester's social problems through the work of the novelist Elizabeth Gaskell (1810-65) with whom she corresponded.(25) For Nightingale, Worthington's hospital at Withington provided an exemplar of the principles expounded by her in *Notes on Hospitals*. The letters make clear that she became an active advocate of Worthington's work, sending his Statistical Society pamphlet both to Sweden and to Australia.

We have seen that these letters also link Worthington with another of Nightingale's important correspondents and collaborators, the philanthropist, politician and social reformer, William Rathbone of Liverpool.

From 1880, Thomas Worthington made his chief assistant John Elgood a partner and together they continued to win a significant number of hospital commissions following his work for the two Manchester Unions.(26) In 1891 Worthington's son, Percy Scott Worthington was made partner and following the death of Elgood in 1893 the firm became Thomas Worthington & Son. Worthington senior largely withdrew from the practice in 1895 and his connection was formally dissolved in 1906.

Hospital Commissions Undertake by Thomas Worthington and his architectural practice 1853-1906

Date opened	Hospital	Town	Notes
1853	Cumberland and Westmoreland Asylum	Carlisle	
1866	Chorlton Union Workhouse Infirmary	Manchester	Pavilion design
1870	Prestwich Union Workhouse Infirmary	Manchester	
1873	Woolton Convalescent Hospital	Liverpool	Pavilion design but gothic decoration
1873	Royal Albert Edward Infirmary	Wigan	Pavilion design
1884	Extension to Wigan Infirmary	Wigan	
1889	Royal Bath Hospital and Rawson Convalescent Home	Harrogate	
1891	Ancoats Hospital	Manchester	
1894	Victoria Accident Hospital	Blackpool	Simple villa-like design
1896	Halifax Royal Infirmary	Halifax	
1903	Manchester and Salford Skin Hospital	Manchester	

Few, if any, of these buildings remain in use as hospitals. The Chorlton Union Hospital or Withington Hospital as it became under the National Health Service was sold around 2004 and the ward blocks demolished to make way for a residential development.

In the 1870s Worthington also continued his earlier work with the Manchester Royal Infirmary. In 1875 he became involved in debates about how to improve the quality of the hospital by adapting the existing building on the Piccadilly site. Three architects were invited to make suggestions. The trustees accepted none of the three sets of

recommendations. They did, however, implement some of Worthington's scheme several years later when a new dispensary and out-patient clinic were built. Although not all Worthington's hospital designs were rooted in the pavilion principles espoused so vigorously by Nightingale, all nevertheless aimed to provide the best possible infrastructure for modern clinical practice and all were informed by concerns for appropriate ventilation and cleanliness.

Worthington and his practice were highly regarded for their hospital work. However, unlike others such as Saxon Snell, Worthington published nothing further about hospital architecture after his article in the *Transactions of the Manchester Statistical Society*. His practice does not figure in the list of architects who secured lucrative commissions for new workhouse infirmaries in London in the 1870s and 1880s.(27) His practice also failed to secure the most coveted local commission for the re-building of the Manchester Royal Infirmary which eventually took place in the 1900s. Significantly perhaps, the Infirmary trustees selected E.T.Hall and John Brooke, a London practice which had been successful in securing commissions throughout the UK.

Worthington nevertheless did achieve a national reputation rising within the ranks of Royal Institute of British Architects to the post of Vice President in 1885. However, that reputation rested as much on his contribution to public architecture as on his role as an innovative hospital or 'health care' specialist. He produced several outstanding examples of high Victorian Gothic in central Manchester including the building housing the memorial statue to Prince Albert (1862) in what became Manchester's prime civic space, and his fine memorial hall, now the Square Albert Public House. His police and magistrates' courts (1868-1872), now Minshull Street Crown Courts are justly regarded as "a masterpiece of urban design".(11)

Acknowledgements

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Figure Legends

1. Hayley and Sons, Engraving of Chorlton Union Workhouse, 1856, University of Manchester Medical Archives, 2003/02. Reproduced by courtesy of the University Librarian and Director, The John Rylands Library, The University of Manchester.
2. The pavilion-style layout of the wards was clear in the plans published in George Godwin's article in the *The Builder*, 1865 (ref 17). Reproduced by courtesy of the University Librarian and Director, The John Rylands Library, The University of Manchester.
3. Line drawing showing the interior of a ward published with Worthington's article for the Manchester Statistical Society (ref 12). Reproduced by courtesy of the University Librarian and Director, The John Rylands Library, The University of Manchester.