ART504.1: TOOLS OF INTERPRETATION

MODULE ASSIGNMENT – MSc SUSTAINABLE BUILDING CONSERVATION

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Main Entrance Building (with Water Tower to rear), Whitchurch Hospital.
Source: www.flickr.com/photos/roath_park_mark/239113700

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PREFACE

Originally referred as the Cardiff City Asylum, the building has also been known as Cardiff City Mental Hospital, Welsh Metropolitan Hospital and, more recently, as Whitchurch Hospital. For the purposes of this report, the building will generally be referred to as Whitchurch Hospital (unless it is deemed appropriate to refer to one of its previous titles in the context of the text).

This report constitutes one element of a broader scheme of study and investigation concerning Whitchurch Hospital being undertaken by students on the MSc Sustainable Building Conservation masters degree at Cardiff University. This report forms one part of a group resource for 'Section 1: Analysis' of the ART 504 (Case Studies and Regional Work) module assignment and aims to contribute to a body of work to inform the second part of the module, 'Section 2: Proposals', which will explore ideas for securing and safeguarding the future of the now vacant Grade II listed Whitchurch Hospital. A summary description of the Cadw listing is provided in Appendix A.

The group resource report has been divided into a number of topics and areas of study as follows:

A. Context: The history of healthcare in Cardiff and Glamorgan.
B. Significance: Site history, both tangible and intangible.
C. Fabric 1: Site plans, photograph and survey.
D. Fabric 2: Appraisal of current condition, schedule of material and energy use.
E. Risks and Opportunities: Current risks, planning framework and funding opportunities.
F. Precedents: Critical analysis of relevant case studies, including but not limited to Hayes Point and Glenside.

This report focuses on the 'schedule of materials' element of Group D: Fabric 2 and examines the materials and construction of the main building complex at the Whitchurch Hospital site. It deliberately does not investigate the numerous other buildings on the site contemporary to the main hospital itself such as the Medical Superintendent's residence, Lodge, dwellings and cottages for key staff and married attendants, Chapel etc.

Whitchurch Hospital closed in 2016 and is now vacant. Unfortunately, there appears to have been a lack of forethought and consideration following its closure by the local health authority in that adequate protection measures (for example, perimeter fencing, boarding up of external window and door openings etc.) were not implemented immediately following the building's transition from a functioning medical facility to a non-functioning edifice. This provided a window of opportunity for vandalism and anti-social behaviour to be inflicted upon the building, resulting in the abuse and damage of the building's fabric. This has been compounded by widespread lead theft to the existing roofs throughout and an apparent absence of any routine repair and maintenance of the building. Most windows throughout the complex have broken panes of glass and vegetation has aggressively started to invade the building interiors from the unkempt and overgrown grounds and airing courtyards. In parts, the building's interior is now exposed to wind and water penetration and these elemental agents of decay have already started to have a detrimental impact on the fabric and condition of the building.

Conversely, this lack of securing the building properly provided opportunity for a number of 'urban explorers' to gain access inside the buildings and grounds of Whitchurch Hospital to record the condition of the building as it was in the period following its closure. A number of photographs from such sources are included in this report.

Eventually, perimeter fencing has been erected and a scheme of permanent manned security operates at the site. Access to the building, therefore, is now restricted. Fortunately, access to Whitchurch Hospital was organised by Cardiff University and a group visit was conducted on Thursday 24 October 2019. This consisted of an accompanied walk through the main hospital buildings taking in a broad selection of spaces ranging from the main circulation corridors, typical wards / day rooms and the main recreation hall. Access, however, was limited due to time constraints and a number of areas were inaccessible for health and safety considerations.

A visit was also arranged by Cardiff University to view an archive of original drawings prepared by the Architects, Messrs. George H. Oatley and W.S. Skinner, held at Bristol University Special Collections. This has provided a valuable original resource in respect of the design, construction and materials used to build Whitchurch Hospital and a number of extracts from these drawings are included as evidence for the methods and materials used in executing the build. Notwithstanding that, it is noted that there are limited specification notes and annotations on the drawings to fully describe the materials proposed and, in the absence of any detailed specification documentation, certain observations in this report are based on a visual cross reference of the drawings against the physical building itself. Wherever possible, the report attempts to corroborate the origin, type and specification of the materials employed from other sources but the lack of surviving records has frustrated the completeness of this examination.

CONTEXT:
A CITY AND WORLD IN CHANGE

As Morgan (2003, p. 9) noted:

> **As the worldwide demand for Welsh coal became insatiable, ships from Cardiff exported these 'black diamonds' to every corner of the globe. As a result the town transformed and grew more rapidly than anywhere in Britain during the 19th Century.**

Beckett, J and Cherry, D (1988), cited in Long (1993, pp. 4-5) seek to clarify when the Edwardian period existed, stating that:

> Strictly speaking, the Edwardian era began when Queen Victoria died in 1901 and ended when King George V took over in 1910. But to call the years 1901 to 1910 the Edwardian era is misleading, as the whole social and political scene was in a process of transformation, beginning in the 1880s and not completed until after the First World War.

This was a period of change and transition. It was a progressive period characterised by social and political change coupled with increased urbanisation and mechanisation. It grappled with a nostalgia for the past and nervous anticipation for the future. In architectural terms, no one style prevailed – the Arts and Crafts Movement still held influence and sway in the architectural and artistic consciousness (Fellows 1995, p.12 and p. 155) whilst new civic and public architecture was championed in Edwardian Baroque (Fellows 1995, pp.19-26).

A variety of factors and a multitude of influences all have a cumulative bearing on architecture and construction during this period of reflection and change – these were complex and multifaceted times. As Clarke (2014, p. ix) observes:

> The next quarter century, between 1885 and 1910, saw significant changes in the design and construction of many building types...it was a period of considerable complexity and overlap.

First of all the architectural profession itself was in a state of flux. Older, established architects had to contend with rapid technological and constructional advancements, whilst still holding on to their already tried and tested ways. Younger, emerging architects were now exposed to far wider influence and choice (Fellows 1995, p. 53). Formal architectural education (Fellows 1995, pp. 36-40) was beginning to emerge and establish itself and the availability of books and magazines (Long 1993, pp. 20-24), architectural journals (Fellows 1995, p. 40) and associated trade publications and catalogues brought the contemporary architectural world right to your doorstep. Advances in new construction techniques and practices such as the use of reinforced concrete and steel framed construction (Fellows 1995, p. 68) were providing influence and opportunity for those willing to embrace the brave new world and exerting pressure on those who held more traditional practices to their hearts. British architects were well aware of the advances and developments being made by their American counterparts (Clarke 2014, p. 72; Fellows 1995, pp. 42-44), who were all too willing to embrace these new technologies and techniques.

Similarly, as constructional and structural advancement was promoted, so too were developments in building service installations (Fellows, 1995 p.68) in respect of heating, lighting and electrical wiring.

Improvements in transportation, both nationally and internationally, allowed for a wider range of economical materials (Fellows 1995, p. 52; Long 1993, pp. 181-183; Rees 1969, p. 293) to be made available for the burgeoning construction industry. This coupled with improvements in manufacturing processes and factory mechanisation resulted in a greater choice and availability of materials with which to build to meet demands (Long 1993, p.72), "it was an age of mass production" (Yorke 2013, back cover).

As Fellows (1995, p. 87) points out:

> At the beginning of the nineteenth century, Cardiff was a modest town with a population of below 2000. Within a hundred years, this figure increased one hundred-fold. It became the world's greatest coal-exporting port, the chief city of the principality of Wales, and one of the seats of the Marquesses of Bute...

As Daunton (1977), cited in Long (1993, p. 52) acknowledges:

> Cardiff was known by the 1890s as 'the coal metropolis of the world'. The Cardiff Times of 1905 spoke of 'an impression of modernity and progressiveness, of spacious streets and buildings, of docks and ships and of great commercial activity which well merits the epithet "the Chicago of Wales".

At the time of the planning and construction of Whitchurch Hospital, the suburbs of Edwardian Cardiff were expanding with the construction of new speculative housing for the middle classes (for example, in Roath and Penylan) and growing civic, and indeed, national pride (Fellows 1995, p. 86; Hilling 2016, p. 184) was displayed in the endeavour of new projects such as the construction of Cardiff City Hall in Cathays Park.

It is within this context that the construction and materials of Whitchurch Hospital must be considered.

DOMESTIC EXPANSION IN THE SUBURBS

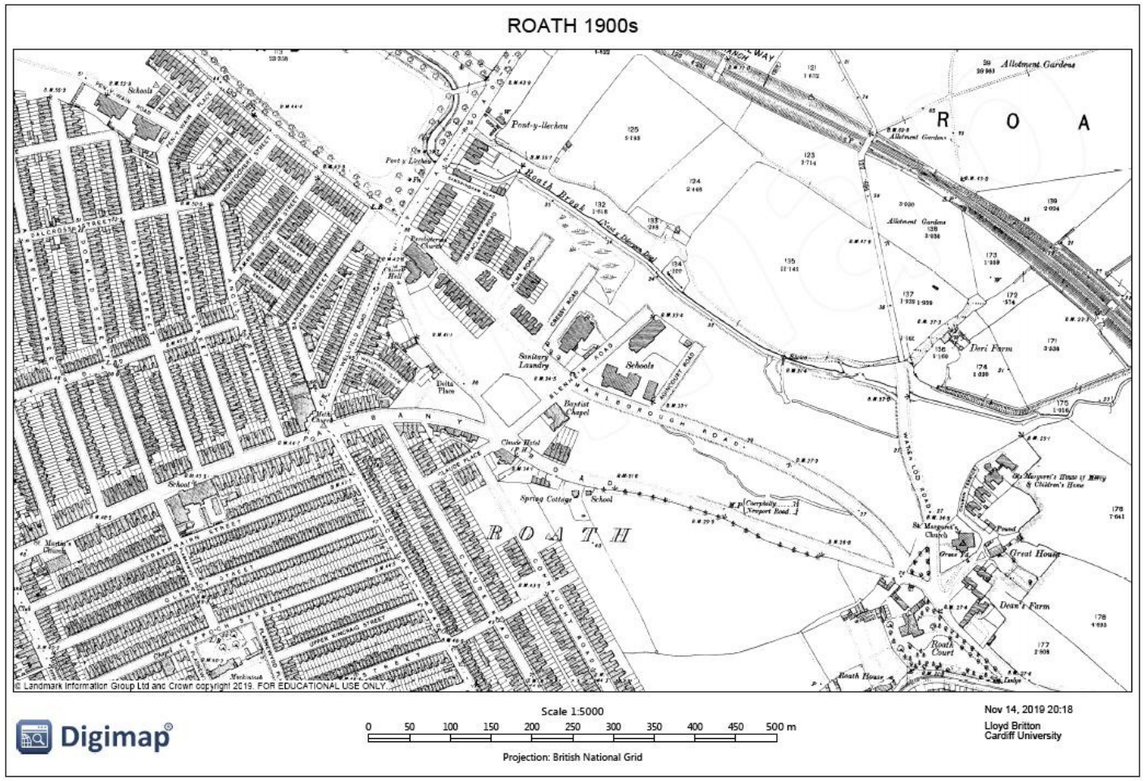


Figure 01

Figure 02

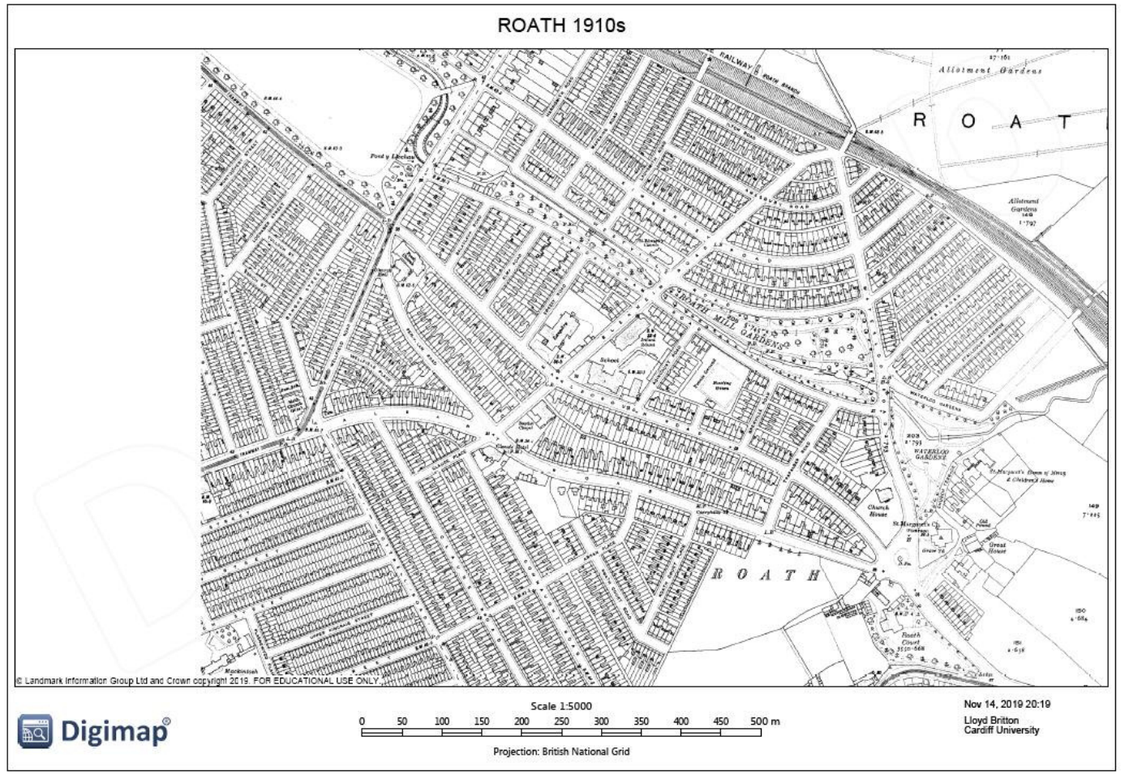


Figure 03

Figure 04

Figure 05

Figure 06

Figure 01: Map showing the Roath area of Cardiff in the 1900s. *Source:* Digimap 2019
Figure 02: Typical Edwardian Era house on Kimberley Road, Cardiff. *Source:* Google Earth
Figure 03: Map showing the Roath area of Cardiff in the 1910s. *Source:* Digimap 2019
Figures 04, 05 & 06: Typical Edwardian Era houses in Roath, Cardiff. *Source*: Google Earth

CIVIC EXPANSION IN THE CITY

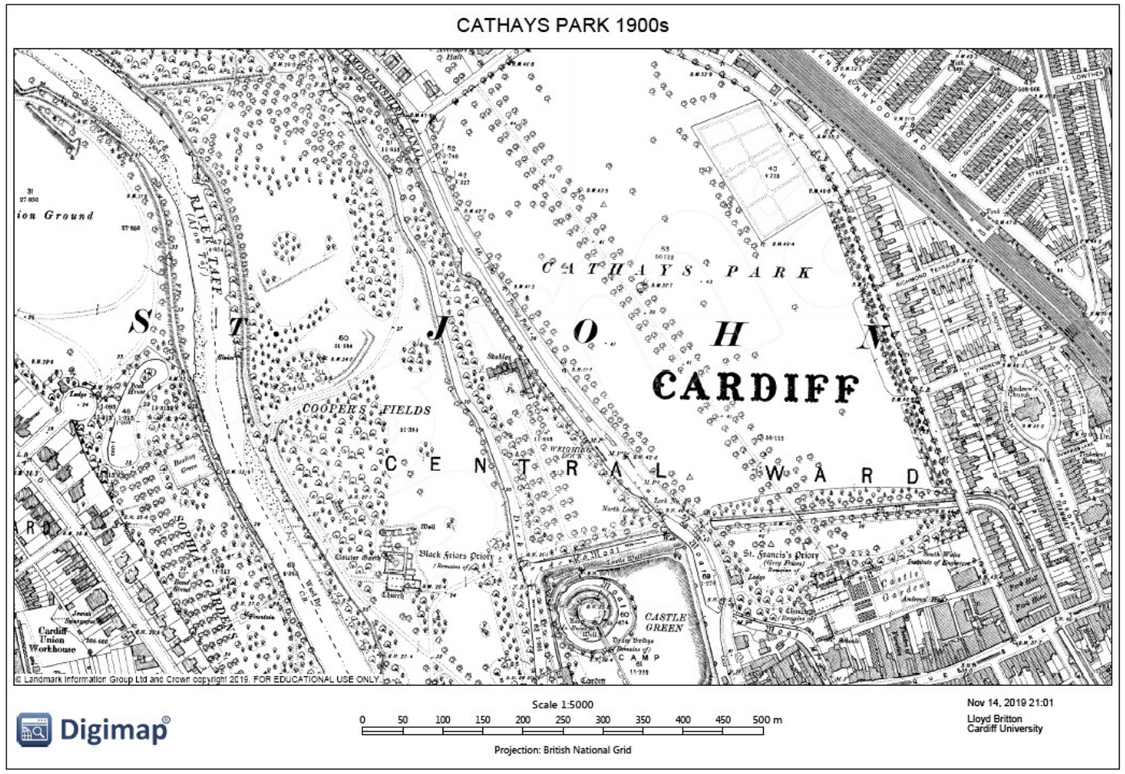


Figure 07

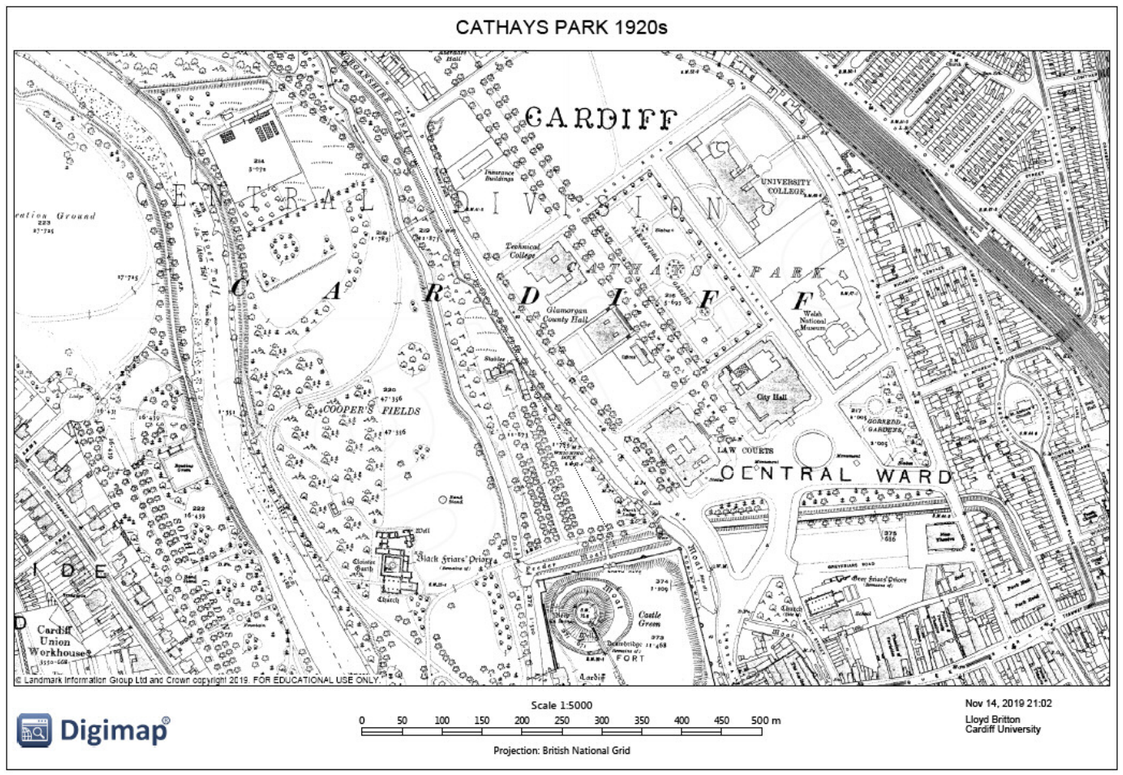


Figure 09

Figure 08

Figure 10

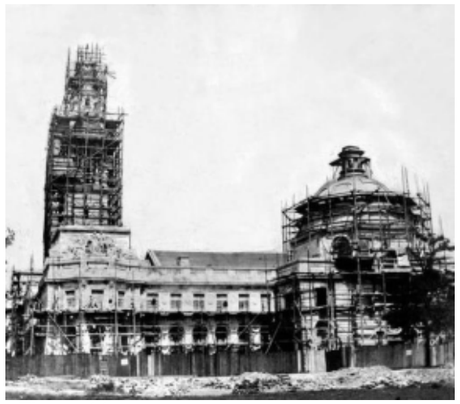


Figure 11

Figure 07: Map showing Cathays Park, Cardiff in the 1900s. *Source:* Digimap 2019
Figure 08: Front elevation of Cardiff City Hall, Cardiff. *Source:* www.allposters.com (undated)
Figure 09: Map showing Cathays Park, Cardiff in the 1920s. *Source:* Digimap 2019
Figure 10: The City Hall, Cardiff. *Source*: www.penllyncollectables.co.uk (undated)
Figure 11: Cardiff City Hall under construction dated 1902. *Source:* www.walesonline.co.uk 2016

WHITCHURCH HOSPITAL: THE BEST OF BOTH WORLDS

As noted by Thomas (1983, pp. 4-7):

> Once the site had been secured and the scheme sanctioned, the design of the proposed institution was thrown open to competition...the winning designs being those submitted by a Bristol firm of architects, Messrs. Oatley and Skinner, who had previously designed county asylums for Surrey and Lancashire. In 1902 work on the new mental hospital began with the laying of the foundations by a Cardiff contractor, D.W. Davies. Once the foundations were completed the building work was carried out by Messrs. William King and Sons of Vauxhall, London, under the immediate direction of their manager, John Childs and Clerk of Works, F. Orton.

Completed in the first quarter of 1908 and officially opened on 15 April (Thomas 1983, P. 11) of that year at a cost of nearly £350,000, the construction of the new Whitchurch Hospital was a massive undertaking in terms of construction, labour and materials in an already busy construction sector servicing the expansion of domestic and civic architecture and building across the city. To put this in context, £350,000 in 1908 represents an expenditure of £41.3 million at today's costs (based on the Bank of England's inflation calculator).

Thomas (1983, p. 7) continues to observe:

> The architects adopted a horse-shoe plan for the two-storey building which was conceived in a simple, functional style. Externally, the somewhat severe architectural lines of the main facade were relieved by banded brick, by the classical north entrance porch executed in dressed stone, and by the use of copper cupolas to cap the ventilation outlets. To observers outside the hospital the most noticeable feature of the new building was the 150 foot water tower which dominated the skyline.

In order to deliver the project, the architect would require an intimate understanding of construction and materials. On a project which was already controversial in some quarters for the sheer cost of the undertaking (Thomas 1983, pp. 9-11), the architect and contractors must have been under enormous pressure to deliver the project not only to a budget but to a suitably high quality of construction and materiality. It can be observed in the Minutes of Asylum Committee meetings of the period, that in most cases, the lowest tender was generally accepted (refer to Appendix B).

By understanding the wider context of the Whitchurch Hospital project and the construction trends and influences emerging at the time, it is possible to see in the construction and materials of Whitchurch Hospital a clear departure from the ethos of the Arts and Crafts Movement. The construction embraces instead, in the main, mass produced materials (adopting repetition, efficiency and standardisation) coupled with a willingness to use emerging construction techniques, a burgeoning supply chain and materials (for example, concrete and steel) with tried and tested domestic construction and building skills (load bearing masonry walls and traditional cut timber roof structures). In the materials used and construction techniques employed, we can see a marriage of the old and the new, the best of both worlds.

Figure 12: Main Entrance Building (with Water Tower to rear), Whitchurch Hospital.
Source: www.flickr.com/photos/roath_park_mark/239113700

WHITCHURCH HOSPITAL: MATERIALS

In order to examine the materials used in the construction of Whitchurch Hospital, this report is broken down into the following subject areas:

1. **CLAY:**
   - **Brick**
2. **CONCRETE:**
   - **Foundations / Sub-structure**
   - **Dennett's Concrete**
3. **METAL:**
   - **Structure**
   - **Copper**
   - **Windows, Rainwater Goods, Sanitary Pipes and Leadwork**
4. **STONE:**
   - **Bath stone**
   - **Portland Stone**
   - **Slate**
5. **TIMBER:**
   - **Structure**
   - **Doors**
   - **Windows**
   - **Fixtures, Fittings & Finishes**
6. **INTERIOR FINISHES**

CLAY: BRICK

"Perhaps more than any other material, brick sums up the look of the late Victorian and Edwardian speculatively built suburban house" (Long 1993, p.78).

As discussed earlier in this report, the use of red brick in the extensive new middle class housing being developed in Cardiff at the time was common place. By the Edwardian period (Long 1993, p.78; Johnson 2006, p. 45; Rollenhagen 2014) the use of brick had over taken the use of stone as the walling material of choice for domestic projects and the production of brick was big business, with the brick industry rapidly expanding to meet demand.

Whilst projects of high civic importance and status such as the construction of Cardiff City Hall used Portland stone to deliver the right visual messages in their Edwardian Baroque style, the construction of Whitchurch Hospital was to be cut from a different cloth. In their description of the project, the Architects note that "The buildings, generally, are of a plain and simple character. They are built of red brick, relieved in some instances by bands of buff bricks...The external walls are in most cases built hollow" (Oatley & Skinner 1908, Item 280 – see Appendix B). Cost and time were critical elements in delivering the project and brick was relatively cheap (Long 1993, p78) and readily available.

In reviewing available resource material, no reference was found to the make or manufacturer of the bricks used at Whitchurch Hospital. Needless-to-say, evidence of this might be revealed by the careful dismantling of an appropriate section of loose or demolished brick wall to confirm if the bricks were stamped with the manufacturer's name and origin (as was typical practice at the time). Bricks were available from a variety of different sources across the country and were characterised by the clay soils available in that location and as Muthesius (1982), cited in Long (1993, p. 80) observes "Firms in Ruabon, near Wrexham, produced the bright red and buff yellow pressed bricks used in Reading, Cardiff and Newcastle". Future investigation at the hospital might reveal the truth on this matter.

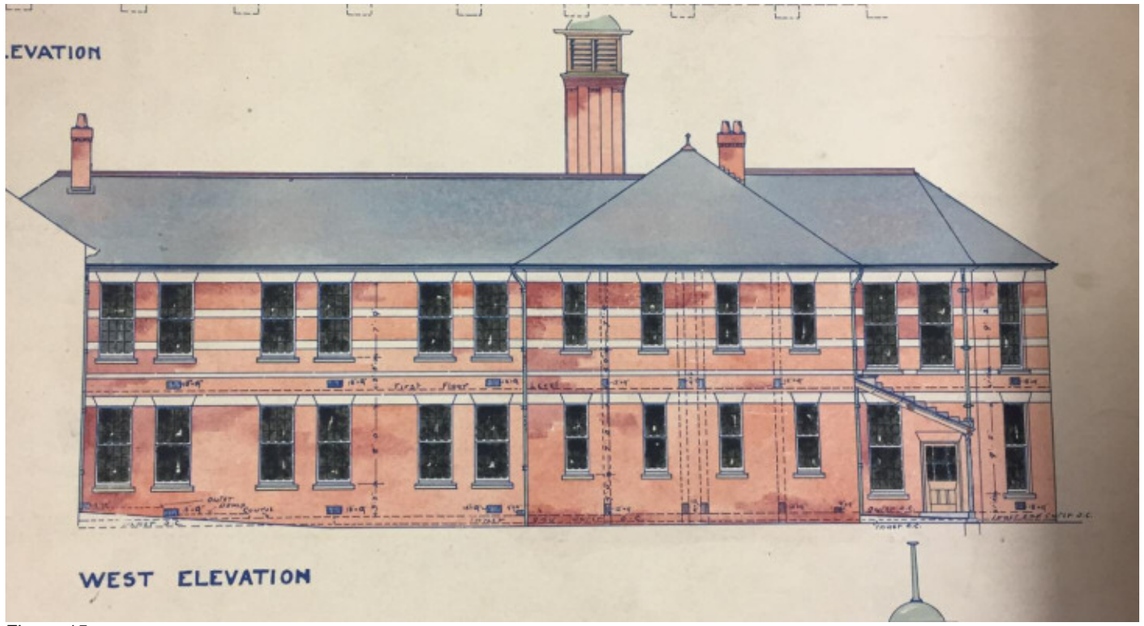


Figure 15

Figure 16

Figure 17

Figure 18

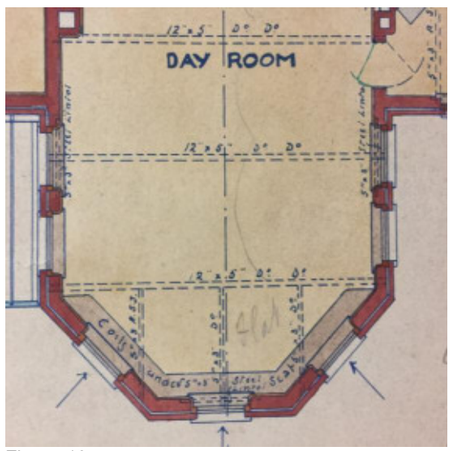


Figure 13

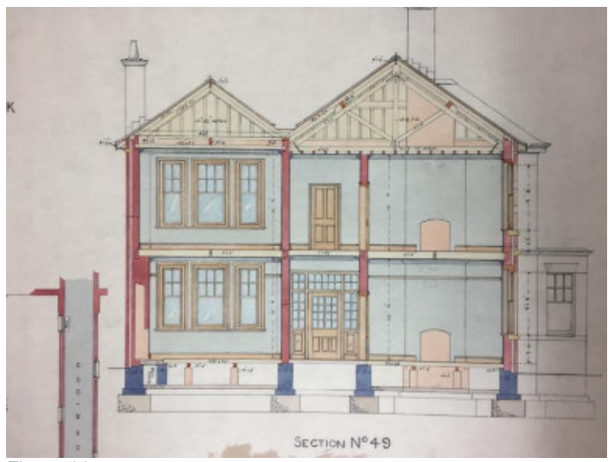


Figure 14

(Top left) Clay red brick (stretcher bond) cavity wall at Whitchurch Hospital. *Source:* Britton 2019
Figure 13: Plan of Day Room (showing cavity wall construction); Oatley & Skinner Architects. *Source*: Bristol University 2019
Figure 14: Section No. 49 (showing cavity wall construction); Oatley & Skinner Architects. *Source*: Bristol University 2019
Figure 15: West elevation of typical Ward block; Oatley & Skinner Architects. *Source*: Bristol University 2019
Figure 16: Typical Ward external brick walls. *Source*: Britton 2019
Figure 17: Brick banding in red and buff brick (with flat brick arch window head detail). *Source*: Britton 2019
Figure 18: An example of a brick stamped with manufacturer's details (not from Whitchurch Hospital). *Source*: www.brocross.com (undated)

CONCRETE: FOUNDATIONS / SUB-STRUCTURE

In a general progression from Victorian domestic masonry walls, which usually incorporated simple stepped brick footings to act as foundations, “the inclusion of concrete in foundations began to be accepted practice around 1900” (Johnson 2006, p38). In larger civic buildings of the period around the mid 19th century onward, it is suggested that earlier Victorian innovation (Fellows 1995) in the use of concrete foundations were now in common application “made with good-quality cement and mixed to a consistent specification” (Fellows 1995, p50).

This is evident in the foundations and sub-structure at Whitchurch Hospital, which combines mass concrete strip foundations with stepped brick footings built over up to the ground floor level.

The foundations and sub-structure works at Whitchurch Hospital are extensive and incorporate a labyrinth of subways for drains, services and ventilation ducts.

A variety of ground floor constructions are also employed. These include suspended timber ground-floor construction with a network of intermediate brick sleeper walls (built off a layer of oversite concrete) to support the timber floor joists over. These floors would be ventilated with air vents in the exterior masonry walls. Poured bitumous damp-proof courses were witnessed during the site visit in external brick walls. In other areas of the building, ground bearing concrete floors have been employed; for example, to stairwells, sanitary accommodation and plant-room buildings.

The construction of the foundations and sub-structure works were carried out by Messrs. D.W. Davies, of Cardiff, in advance of the main superstructure building programme – refer to minutes of the Asylum Committee meetings in Appendix B.

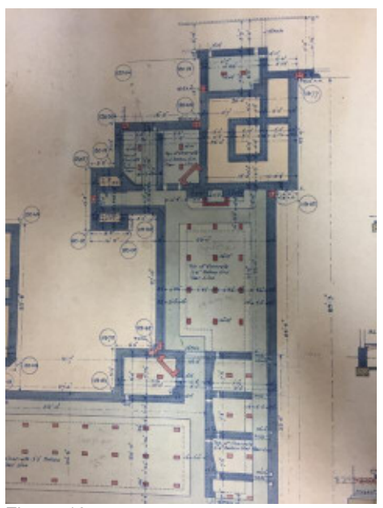
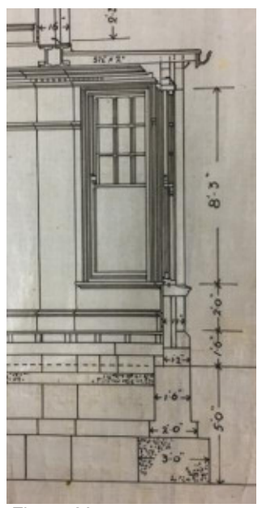


Figure 19



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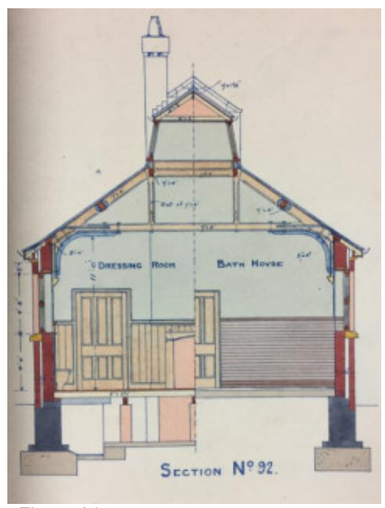


Figure 21

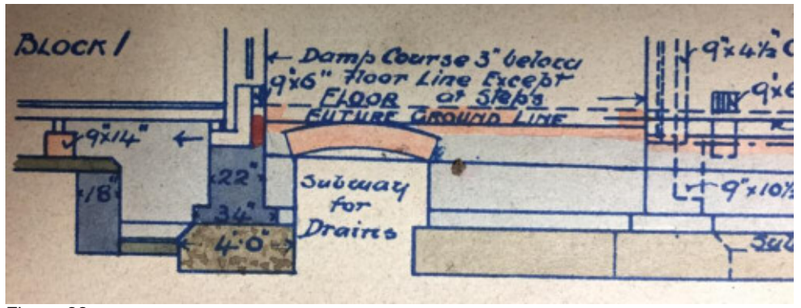


Figure 22

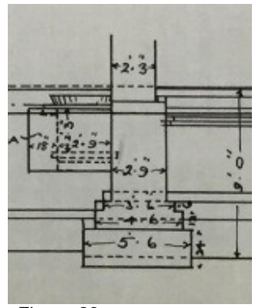


Figure 23

Figure 24

Figure 19: Typical foundation plan drawing; Oatley & Skinner Architects. *Source*: Bristol University 2019
Figure 20: Section through bay window foundation; Oatley & Skinner Architects. *Source*: Bristol University 2019
Figure 21: Section through Dressing Room / Bath House block; Oatley & Skinner Architects. *Source*: Bristol University 2019
Figure 22: Section through sub-structure incorporating subway drains; Oatley & Skinner Architects. *Source*: Bristol University 2019
Figure 23: Typical foundation / stepped brick footing detail; Oatley & Skinner Architects. *Source*: Bristol University 2019
Figure 24: Section No. 49 showing typical foundation / sub-structure; Oatley & Skinner Architects. *Source*: Bristol University 2019

CONCRETE: DENNETT'S CONCRETE

In their description of Whitchurch Hospital, the Architects noted that "the ceilings immediately underneath the roofs in the Ward Blocks are of fire-proof construction" (Oatley & Skinner 1908, Item 280 – see Appendix B). Further investigation of the original architectural drawings reveals reference to 'Dennett Concrete', being a patented fire-proof construction concrete (Rabun 2000 p.357) referred to as the Dennett's System or Dennett's Fire-proof Construction.

Rabun (2000, p. 357) writes:

> Many engineers and manufacturers produced their own patented floor systems, and these systems were used extensively in buildings during the era 1880-1920 as designers pressed for lightweight, fireproof floor systems.

The fire-proofing properties of the concrete is derived (Burn 2001, P. 176) from substituting gypsum for the ordinary lime in the concrete mix as its cementing agent.

A description of the application of the Dennett's System by Burn (2001, pp. 176-177) couldn't be more aligned with its use in the construction of Whitchurch Hospital:

> The form in which the concrete is generally applied to the construction of the floors is that of an arch, or series of arches, with small rise...for banks, offices, hospitals, and many public buildings, there is often no objection to the curved surface which the soffits of the arches present, and which are moreover, well accepted to receive coloured decoration.

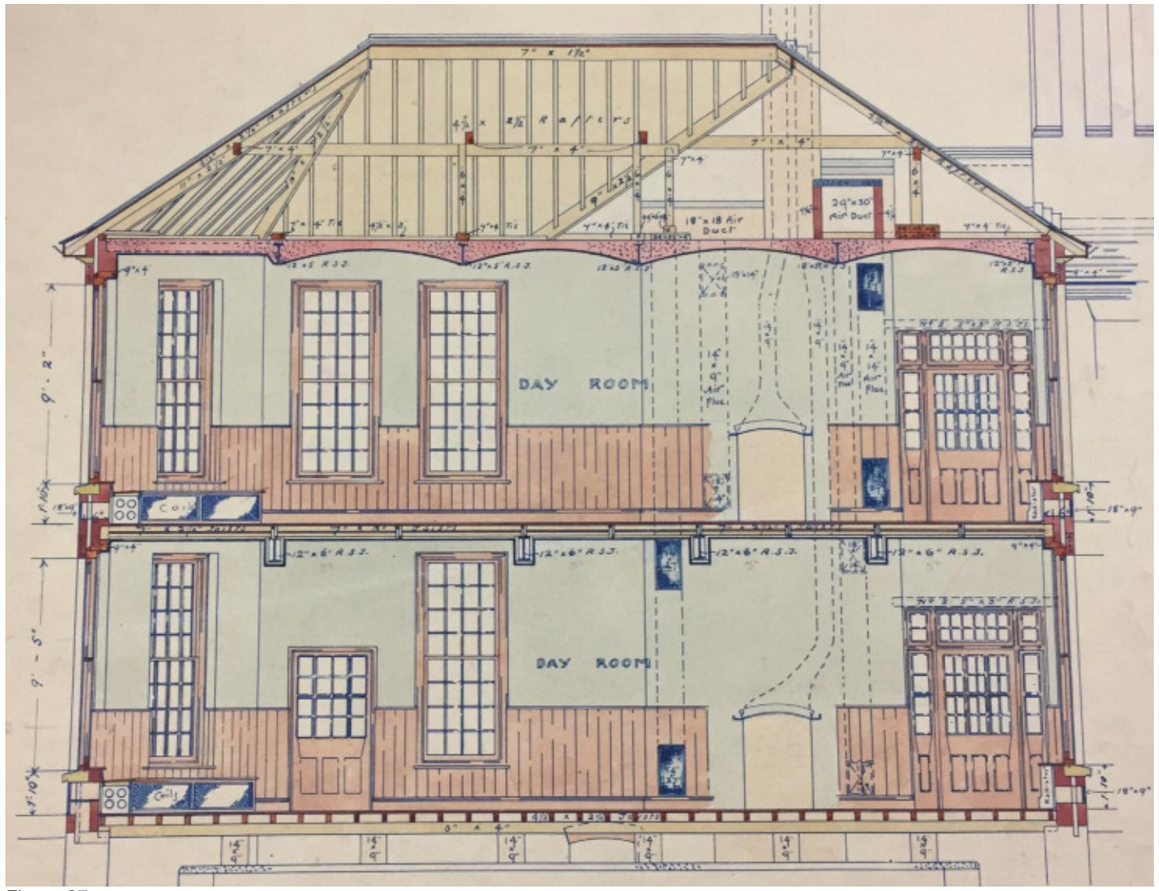
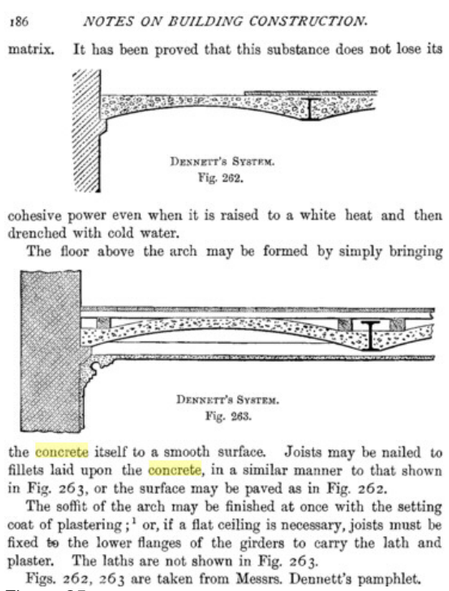


Figure 27



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matrix. It has been proved that this substance does not lose its

DENNETT'S SYSTEM.
Fig. 262.

cohesive power even when it is raised to a white heat and then drenched with cold water.

The floor above the arch may be formed by simply bringing

DENNETT'S SYSTEM.
Fig. 263.

the concrete itself to a smooth surface. Joists may be nailed to fillets laid upon the concrete, in a similar manner to that shown in Fig. 263, or the surface may be paved as in Fig. 262.

The soffit of the arch may be finished at once with the setting coat of plastering;[1] or, if a flat ceiling is necessary, joists must be fixed to the lower flanges of the girders to carry the lath and plaster. The laths are not shown in Fig. 263.

Figs. 262, 263 are taken from Messrs. Dennett's pamphlet.

Figure 25

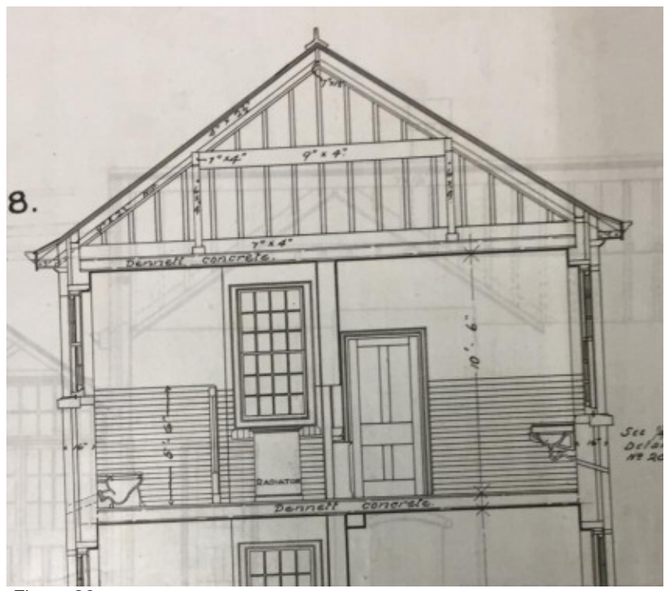


Figure 26

Figure 28

Figure 29

Figure 25: Typical construction of the 'Dennett's System'. *Source:* Smith 2015, p. 186
Figure 26: Extract from Section No. 2 male toilet block (with reference to 'Dennett Concrete'); Oatley & Skinner Architects. *Source*: Bristol University 2019
Figure 27: Section No. 105 through Day Room; Oatley & Skinner Architects. *Source:* Bristol University 2019
Figure 28: Curved profile of decorated fire-proof ceiling construction, Whitchurch Hospital. *Source:* Derelict Places 2019
Figure 29: Curved profile of decorated fire-proof ceiling construction, Whitchurch Hospital. *Source:* Britton 2019

METAL: STRUCTURE

Construction and engineering were no strangers to the use of metal in buildings and engineering works, which saw prolific use of metal since the Industrial Revolution in cast-iron columns and girders in the mills and industrial buildings and engineering structures of Britain (Fellows 1995, pp. 49-53).

But as Clarke (2014, p1) observes:

> It was not until the early 1880...that mass production of structural-grade steel really began...mild steel, as it had become known, combined a degree of strength , toughness and ductility that set it apart from all other materials, including cast and wrought iron. With a compressive strength almost as great as cast iron, and a tensile strength appreciably in excess of wrought iron, it lent itself to use for all the cardinal structural members in buildings and bridges – beams, columns, struts, ties and connectors.

At Whitchurch Hospital we witness a willingness on behalf of the Architects to readily engage in the use of lightweight steel construction in the various trussed roof forms throughout the complex, from boiler rooms, plant and service spaces through to the curved ceiling of the Recreation Hall. This would appear to mirror the evolving practice of the day.

Throughout the buildings, we also see the use of isolated steel beams (particularly in conjunction with the support of suspended timber and concrete floors and ceilings) and occasionally the use of cast iron columns.

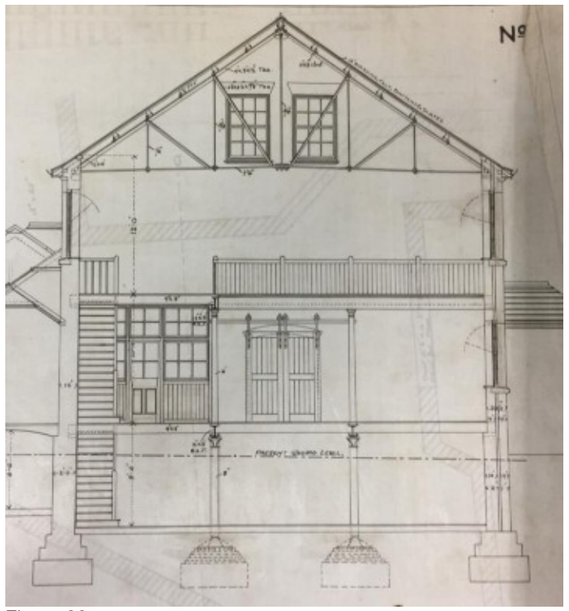


Figure 30

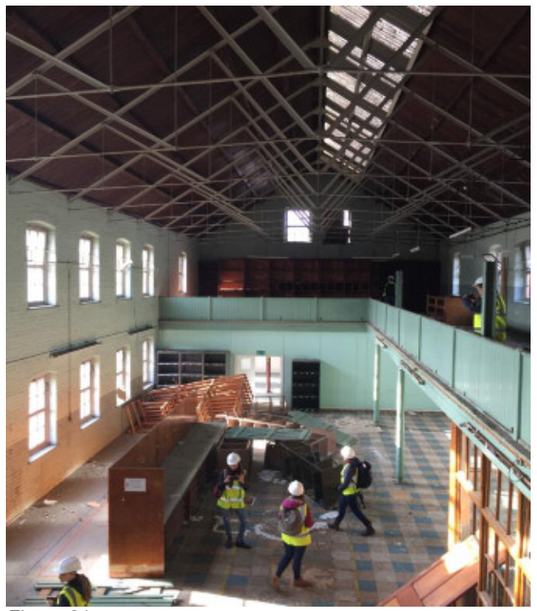
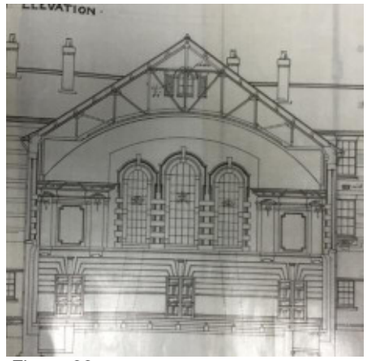


Figure 31

Figure 32



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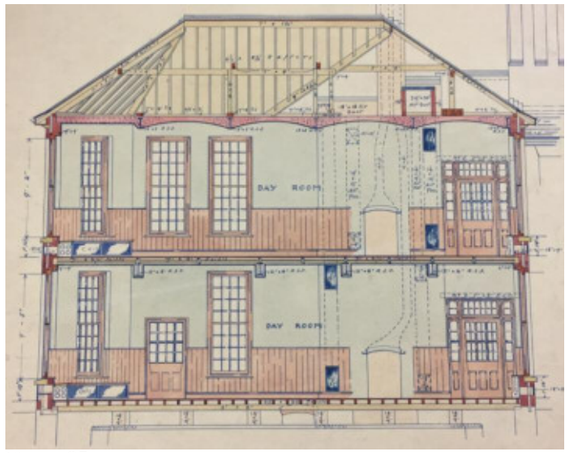
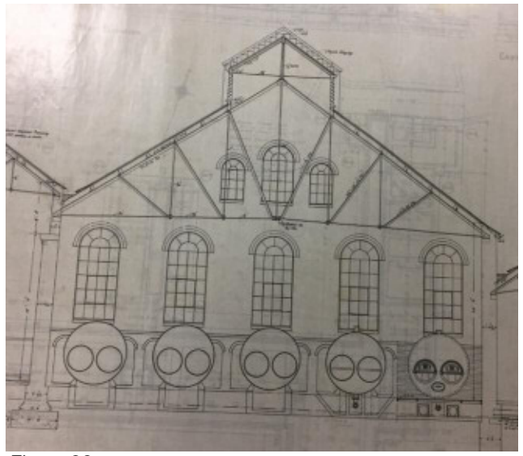


Figure 35



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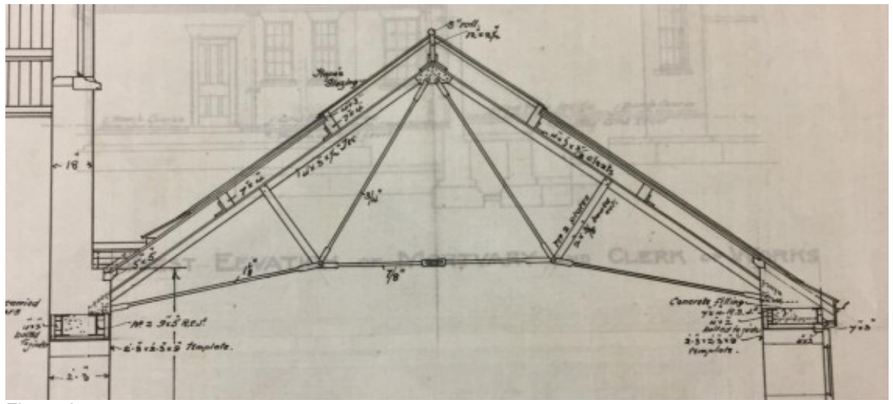
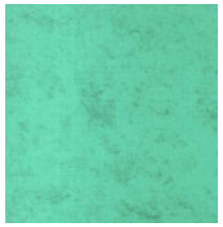


Figure 37

Figure 38

(Top left) Lightweight mild steel roof trusses to Records Store. *Source*: Britton 2019
Figure 30: Section No. 69 through Records Store; Oatley & Skinner Architects. *Source*: Bristol University 2019
Figure 31: Lightweight mild steel roof trusses to Records Store. *Source*: Britton 2019
Figure 32: Recreation Hall. *Source*: Britton 2019
Figure 33: Section through Recreation Hall; Oatley & Skinner Architects. *Source*: Bristol University 2019
Figure 34: Recreation Hall. *Source*: Britton 2019
Figure 35: Section No. 105 through Day Room block; Oatley & Skinner Architects. *Source*: Bristol University 2019
Figure 36: Section through Boiler House; Oatley & Skinner Architects. *Source*: Bristol University 2019
Figure 37: Section through service building; Oatley & Skinner Architects. *Source*: Bristol University 2019
Figure 38: Cast iron column to Records Office. *Source*: Britton 2019



METAL: COPPER

Man has had a long association with copper (English Heritage 2013, pp. 450-452; Lyons 2104, p.220) and it has long been deemed suitable for use as a roofing material (Slocombe 2012, p.100), indeed many of the great churches of medieval Europe were roofed using copper cladding (English Heritage 2013, p. 452). At Whitchurch Hospital, the use of copper is more modest but no less deliberate, taking advantage of the materials inherent properties.

As Redman (2015) notes:

> Copper roofing is less prone to thermal movement than lead, enabling it to be laid using upstand seams and clipped more securely to its substrate.

English Heritage (2013) observe that:

> Copper has a number of properties that make it eminently suitable for roofing. It has a relatively low coefficient of thermal expansion. It is also light compared to lead...Its excellent tensile strength also means that very thin sheets (typically 0.6mm and 0.7mm) can be used without much fear of creep, which makes it admirably suited for use on steeper pitches such as domes. Copper has an excellent natural resistance to corrosion, since the surface reacts with the air to produce a natural patina which protects the underlying copper.

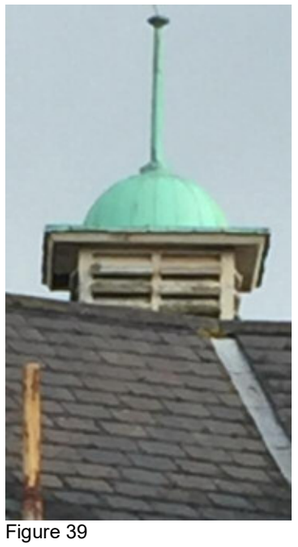


Figure 39

Figure 40

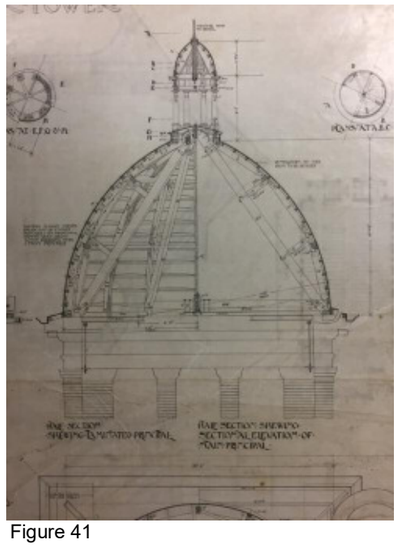


Figure 41

Figure 42

Figure 39: Main entrance portico, Whitchurch Hospital. *Source:* Britton 2019
Figure 40: Main entrance portico, Whitchurch Hospital. *Source:* Britton 2019
Figure 41: North elevation of main entrance block; Oatley & Skinner Architects. *Source*: Bristol University 2019
Figure 42: Main entrance portico, Whitchurch Hospital. *Source:* Britton 2019

METAL: WINDOWS, RAINWATER GOODS, SANITARY PIPES & LEADWORK

Whilst timber box sash windows are the predominant window type employed at Whitchurch Hospital, the Architects specified steel windows in a number of key spaces within the building; for example, to the Main Entrance Building and the Recreation Hall.

Cast iron rainwater gutters and downpipes were tried and tested staples of building and construction. They were mass produced and readily available from the burgeoning builder's merchants and supply companies serving the construction industry. Similarly, cast iron pipes for above-ground sanitary disposal were available off the shelf.

The use of leadwork for roof flashings, valleys and abutments was also common-place and in widespread use in building and construction. As evidenced at Whitchurch Hospital, significant lead theft has occurred which has been, and will continue to be, a cause for the accelerated decay and deterioration of the building's fabric until this matter is addressed and rectified.

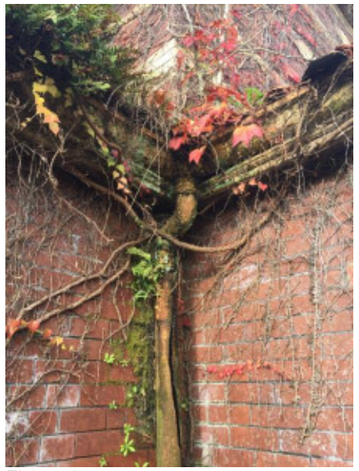


Figure 45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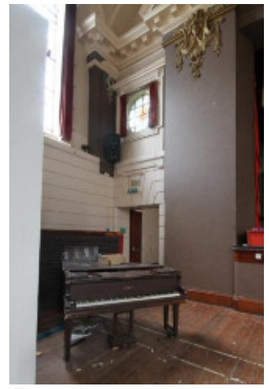


Figure 49

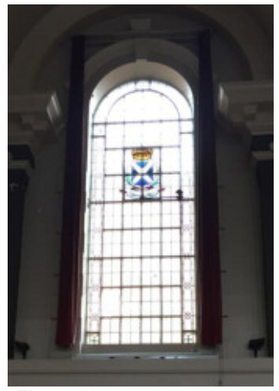


Figure 50

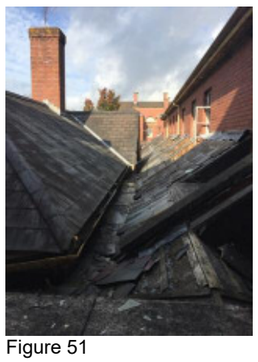


Figure 51


Figure 52


Figure 53


Figure 43


Figure 44

(Top left) Metal window to main entrance portico (internal view). *Source:* www.28dayslater.co.uk 2018
Figure 43: Metal window to main entrance portico (external view). *Source:* Britton 2019
Figure 44: Painted metal rainwater gutter and downpipe. *Source:* Britton 2019
Figure 45: Painted metal rainwater gutters and downpipes. *Source:* Britton 2019
Figures 46 & 47: Painted metal rainwater gutters, downpipes and foul drainage pipework. *Source:* Britton 2019
Figures 48 & 49: Painted metal windows to Recreation Hall. *Source:* www.28dayslater.co.uk 2018
Figure 50: Painted metal windows to Recreation Hall. *Source:* Britton 2019
Figures 51 & 52: Lead flashings and gutters to roof (illustrating lead theft at the hospital). *Source:* Britton 2019
Figure 53: Rainwater gutters, hoppers and downpipes. *Source:* Britton 2019

STONE: BATH STONE

In their description of the building (Oatley & Skinner 1908, Item 280 – see Appendix B), the Architects note that the red brick is “relieved” in the more prominent parts of the building such as the Main Entrance Building and top of the Water Tower with dressed stone.

The use of dressed stone, i.e. Bath stone, was prevalent in the new middle-class houses being built in Cardiff at the time. This combination of red brick and the use of bath stone projecting bay windows and stone detailing was characteristic of the new domestic architecture at that time. The aesthetics of these materials generally found favour and the use of Bath stone with the red brick at Whitchurch Hospital harmonises with the contemporary domestic architecture being constructed in the city at that time. It was familiar. Whether this was a conscious decision of the architects or one driven by cost and practicalities is not known at this time.

Bath stone is a Great Oolite Limestone (Ashurst & Dimes 1977, p16) of the Jurassic Period quarried in the Bath area of the UK and has a long history of use as a building material. It’s importance as a building material stems from its inherent qualities as a ‘freestone’, which means that it can be freely cut (or ‘squared’), sawn and carved in any direction thus lending itself to use as dressed stone and ashlar work (Historic England 2012, p.42 and p. 39; Knapper 2013) in construction.

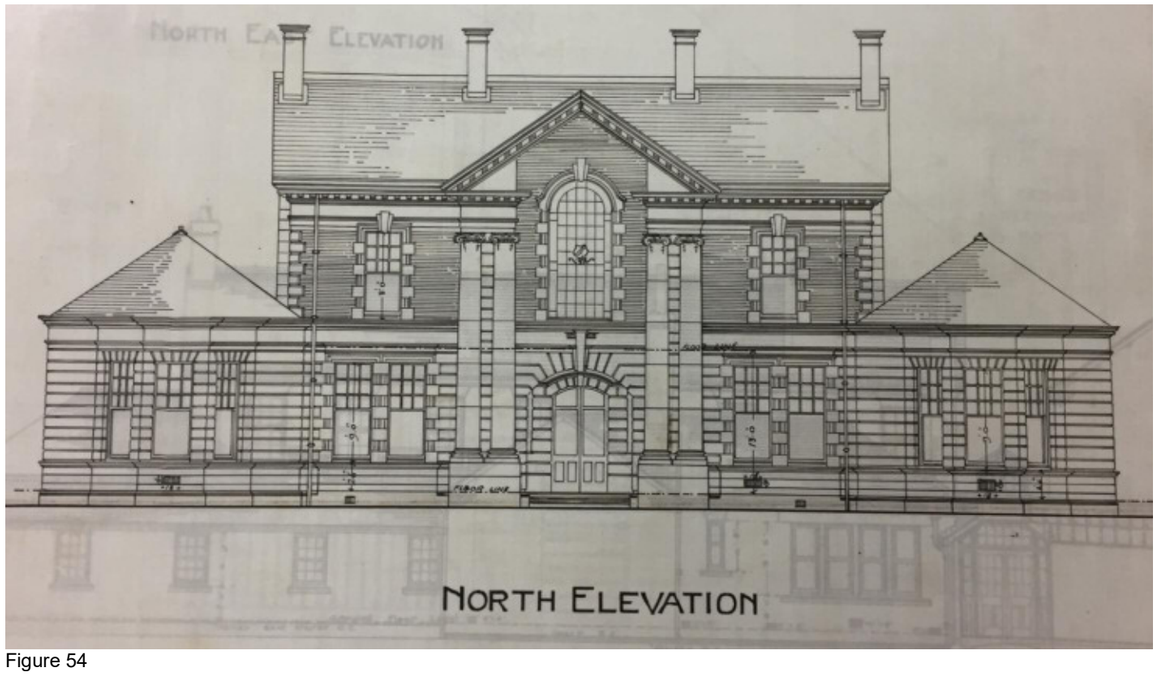


Figure 54

Figure 55

Figure 54: North elevation of main entrance block; Oatley & Skinner Architects. *Source*: Bristol University 2019
Figure 55: Main entrance portico, Whitchurch Hospital. *Source:* Britton 2019

STONE: PORTLAND STONE

As previously noted (Oatley & Skinner 1908, Item 280 – see Appendix B), dressed stone was also used at the top of the Water Tower. In a departure from the use of the Bath stone to the Main Entrance Building, the Water Tower is constructed using Portland stone, so characteristic of the new Civic Centre in Cathays Park (Hilling 2016, p. 92).

The use of Portland stone, however, on a building whose aesthetic is derived extensively from a palette of red brick, buff brick and Bath stone raises some interesting questions. One might say, from an aesthetic perspective, that the juxtaposition of the Portland stone against the backdrop of red brick, buff brick banding and Bath stone is incongruous. The decisions as to why Portland stone was used atop the Water Tower may be lost to the annals of history and forever remain a mystery. In the absence of any historical documentary evidence to confirm the answer at this time, could one suppose architectural influence had been derived by the Architects from the Portland Stone Clock Tower at Cardiff City Hall or perhaps from further afield in Venice's Campanile di San Marco, either consciously or sub-consciously?

The answer is likely to be more prosaic, however, and the decision is probably grounded in reasons of practicality and robustness as "in general, Portland [stone] is a durable stone with good weathering characteristics and it can be used for all exposures on buildings including elements which must endure the worst of the weather" (Woolfitt 2009).

Figure 56

Figure 57

Figure 58

Figure 59

Figure 56: Water tower, Whitchurch Hospital. *Source*: Romy Wood (www.romywood.co.uk), 2014
Figure 57: Cardiff City Hall Clock Tower. *Source*: Robert Freidus (www.victorianweb.org/sculpture/hodge/11/html), 2011
Figure 58: Campanile diSan Marco, Venice. *Source:* www.venetoinside.com (undated)
Figure 59: Water tower, Whitchurch Hospital. *Source:* Britton 2019

STONE: SLATE

The Cadw Listed Building Description (Appendix A) makes reference to the use of 'Welsh slate roofs' at Whitchurch Hospital. No documentary evidence or records have been found to date as part of this study to corroborate this statement. From my own observations on site, it is accurate to say that the roofs are predominantly covered in natural slate but the origin and specification of those slates is unknown. Whilst it is likely, on the balance of probability, that Welsh slates would have been used, this would require further investigation.

It should be noted that by the late 19th century, "slate had become one of Wales's most important industries. Wales produced over four-fifths of all British slates in this period..." (National Slate Museum, 2020).

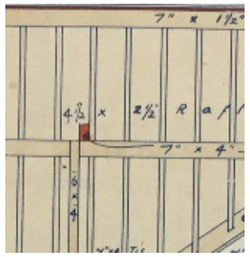
Research of the Asylum Committee's meeting minutes (Appendix B) reveals that approval had been granted to the main contractor, William King & Son Limited, to employ Messrs. Charles Cornish & Co., of Bristol, to do the roof slating on the project as a sub-contractor. For reasons unstated in the minutes, this earlier approval was rescinded and the main contractor was obliged to carry out the roof slating "without the intervention of a sub-contractor" (Asylums Committee, 1903).

Of further interest is a note in the Committee's minutes making reference to allegations of unsubstantiated defective roof slating dated 1906 (Appendix B).

Figure 60

Figure 61

Figure 60: Slate roofs at Whitchurch Hospital. *Source:* Hiveminer (undated)
Figure 61: Slate roofs at Whitchurch Hospital. *Source:* Britton 2019



TIMBER: STRUCTURE

As Rees (1969, p. 293) notes:

The period between 1860-90, in particular, saw a great expansion in the timber industry, not only from Norway, Russia and the Baltic States, but also from Canada, to create the supplies for the vast schemes of building which were proceeding during these years.

Increased mechanisation and innovation in wood working machinery (for example, the fretsaw or 'jigsaw') resulted in greater efficiencies in the preparation of timbers for the construction industry (Long 1993, p. 69 and pp. 181-183).

At Whitchurch Hospital, structural timber is extensively used throughout the site for the construction of suspended timber floors and a variety of traditional timber cut roof constructions, as well as ceiling joists. Traditional timber rafters, purlins, struts, binders and props are used throughout. In some areas, the timber roof structure is concealed. In other areas, the timber roof structure is left unashamedly exposed and bare to see – either for functional economy or dressed for aesthetic reasons.

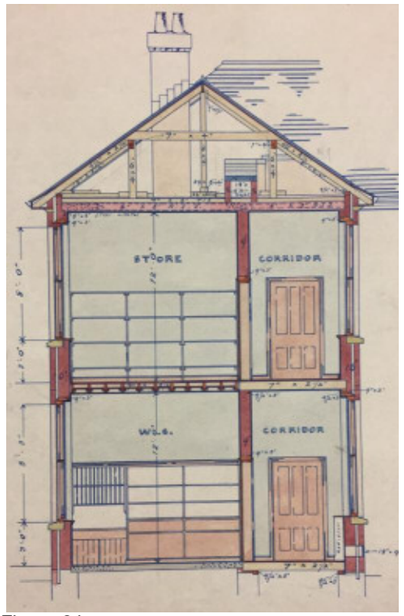


Figure 64

Figure 65

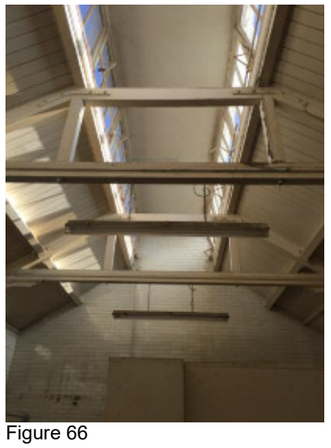
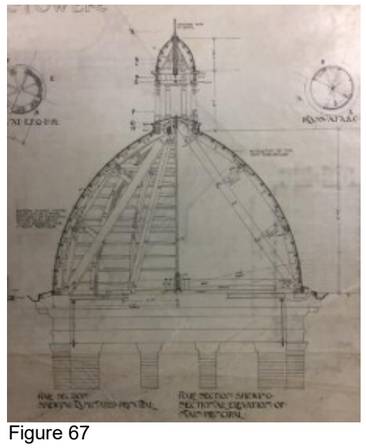


Figure 66



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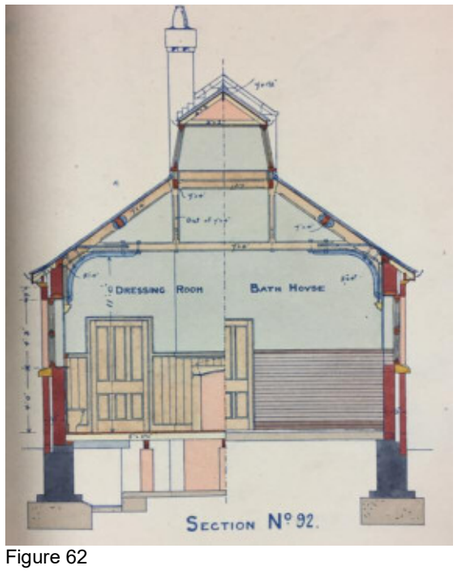


Figure 62

Figure 63

(Top left) Extract from Section No. 105; Oatley & Skinner Architects. *Source:* Bristol University 2019
Figure 62: Section No. 92 through Bath House & Dressing House; Oatley & Skinner Architects. *Source:* Bristol University 2019
Figure 63: Stained timber roof structure and infill panelling to Dressing Room. *Source:* Britton 2019
Figure 64: Section No. 2 through store rooms; Oatley & Skinner Architects. *Source:* Bristol University 2019
Figure 65: Section No. 49 through Main Entrance building; Oatley & Skinner Architects. *Source:* Bristol University 2019
Figure 66: Timber roof structure to Bath House. *Source:* Britton 2019
Figure 67: Section through Water Tower cupola showing timber structure; Oatley & Skinner Architects. *Source:* Bristol University 2019
Figure 68: Windows King Post timber trusses to workshop outbuilding. *Source*: www.28dayslater.co.uk 2018

TIMBER: DOORS

Hundreds of doors would have been required at Whitchurch Hospital. Whilst some have been replaced over the life of the building, many of the original doors remain in-situ. Predominantly the internal timber doors are mass-produced framed and panelled doors fabricated with softwood timber and either stained or painted.

Door widths and style vary throughout depending on the space the door serves. There is clear hierarchy in the door styles, with doors to the more important, public areas of the building being wider and more ornate than their somewhat more functional cousins to the work-a-day areas of the hospital.

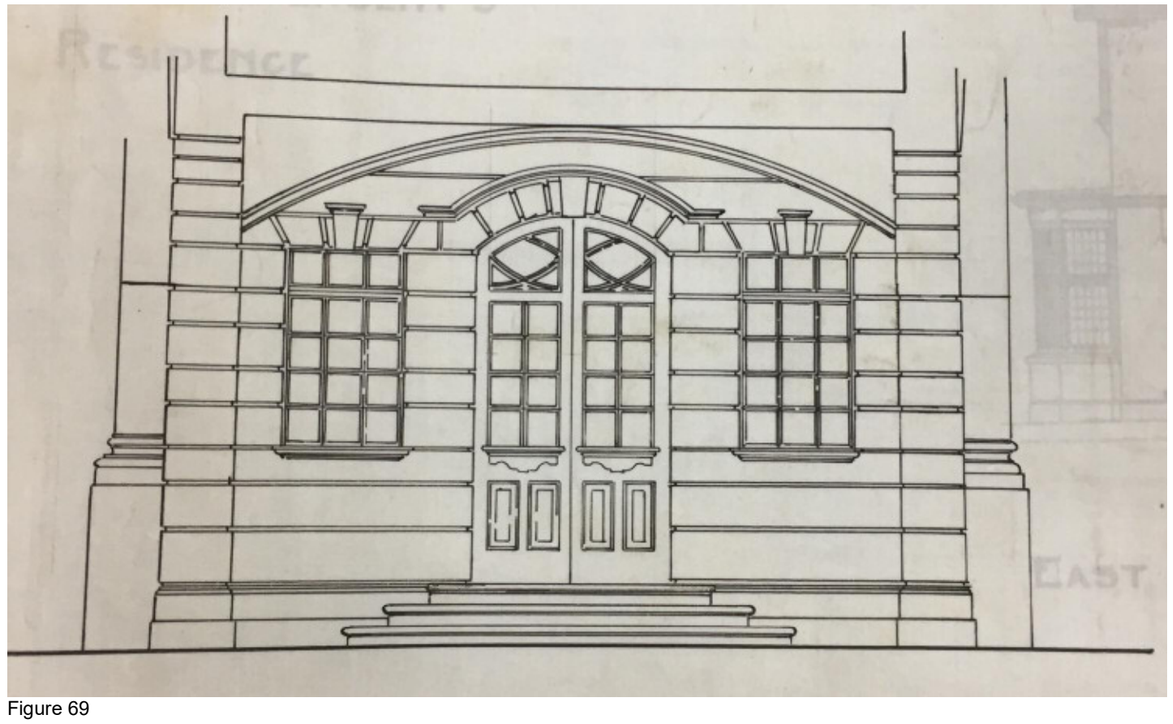
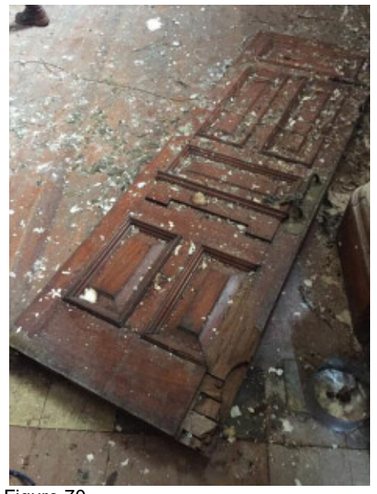


Figure 69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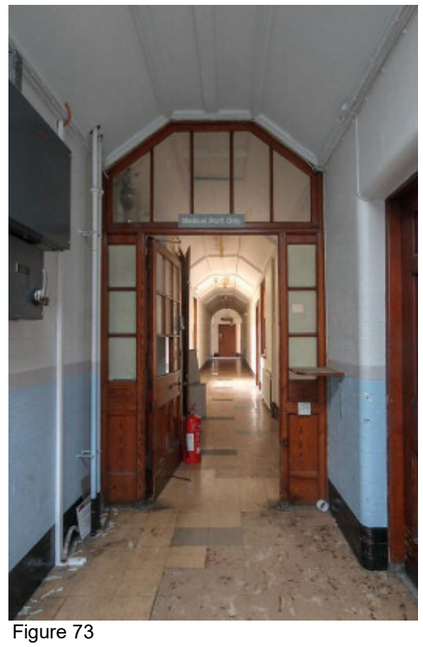


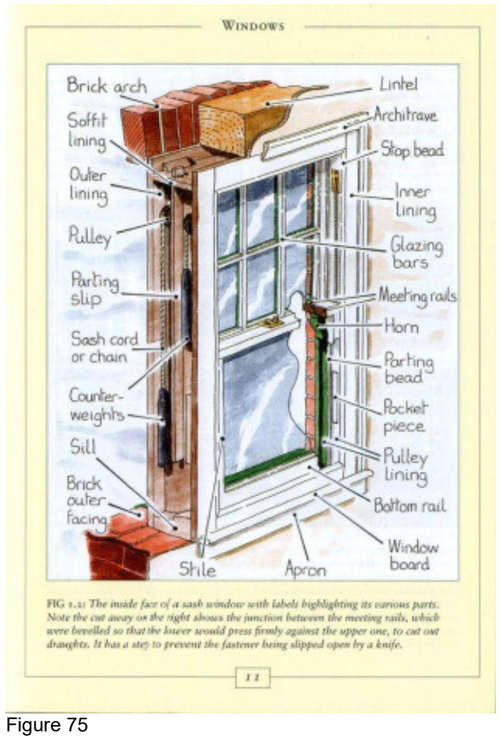
Figure 73

(Top left) Matron's office door. *Source:* www.28dayslater.co.uk 2018
Figure 69: Drawing of the principal timber entrance doors; Oatley & Skinner Architects. *Source:* Bristol University 2019
Figure 70: Stained timber framed and panelled door to Recreation Hall. *Source:* Britton 2019
Figure 71: Painted part glazed timber framed and panelled doors. *Source:* www.28dayslater.co.uk 2018
Figure 72: Stained timber wall dado panelling to main reception space. *Source:* www.28dayslater.co.uk 2018
Figure 73: Stained part glazed timber framed and panelled door, side screens and fanlight. *Source:* www.28dayslater.co.uk 2018

TIMBER: WINDOWS

As with the timber doors at Whitchurch Hospital, hundreds of windows would also have been required. Again, the scale and nature of the construction employs repetition of design and mass production to deliver painted timber box sash windows almost universally throughout the site.

Whilst the consistent use of the box sash window echoes the Architects' requirement for "a plain and simple character" (Oatley & Skinner, 1908 – refer to the Visiting (Mental Hospital) Committee minutes dated 22 May 1908 in Appendix B), there is still a certain amount of variety hidden within this consistency. The timber box sash windows are generally all small pane arrangements of 6-pane over 6-pane or 9-pane over 9-pane windows, although in a few locations such as the Main Entrance Building, 6-pane over 1-pane box sash windows are employed.



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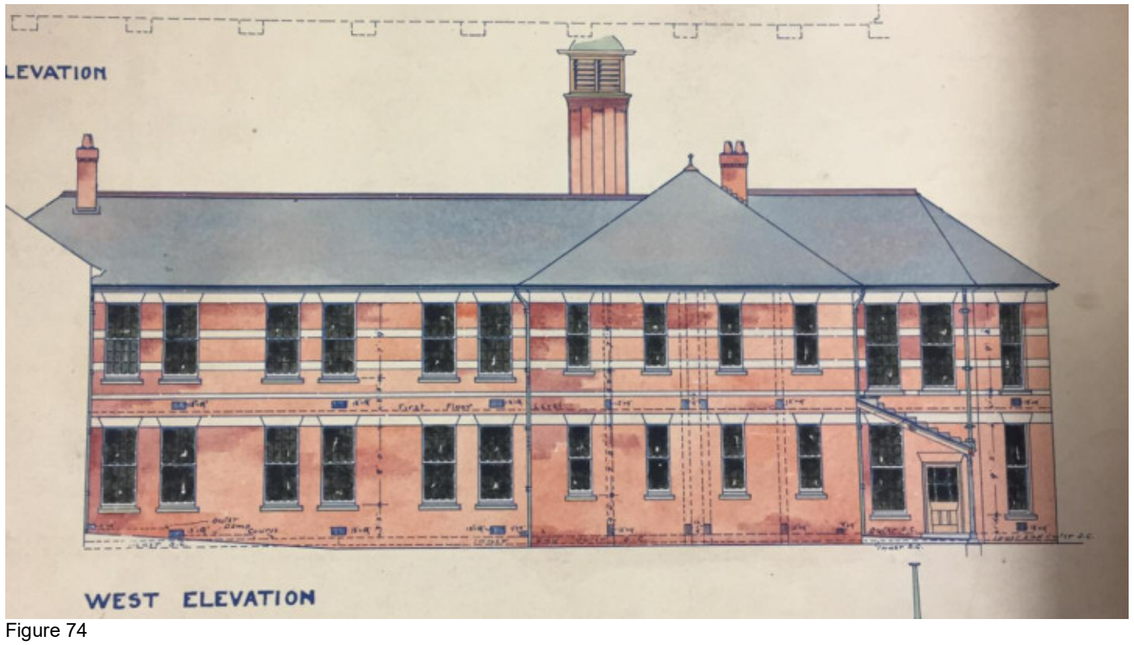

Figure 74

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Figure 78

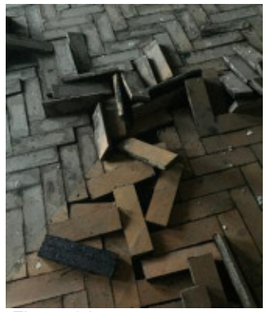
(Top left) Small pane timber window to corridor. *Source*: Britton 2019
Figure 74: Drawing of the West Elevation; Oatley & Skinner Architects. *Source:* Bristol University 2019
Figure 75: Drawing showing a timber box sash window. *Source:* Yorke 2013
Figure 76: Damaged timber box sash window at Whitchurch Hospital. *Source:* Britton 2019
Figure77: Windows to the east wing, Whitchurch Hospital . *Source:* Torchwood Locations (undated)
Figure 78: Windows at Whitchurch Hospital. *Source:* Britton 2019

TIMBER: FIXTURES, FITTINGS & FINISHES

Throughout Whitchurch Hospital, timber is put to work on a whole variety of fixtures, fittings and finishes ranging from staircase handrails and balusters to balcony T&G guarding to decorative dado wall panelling to purpose-made cabinetry, workbenches, cupboards and screens. Timber parquet flooring is used in various areas within the building. Timber is also employed for the construction of lantern roof windows, ventilation cowls and sliding screens. The timber appears to be mass produced softwood stock, either stained or painted.


Figure 82


Figure 83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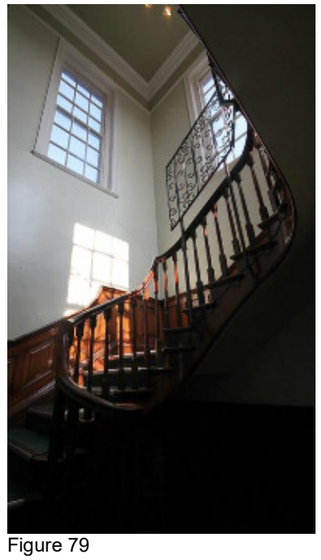
Figure 79


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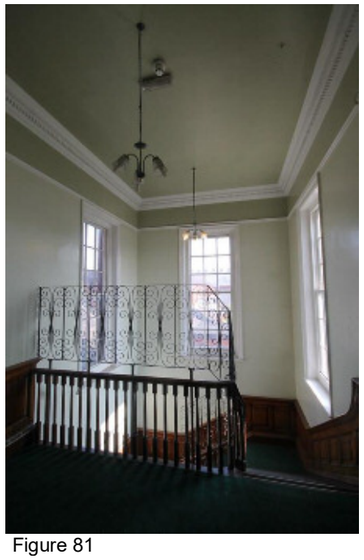
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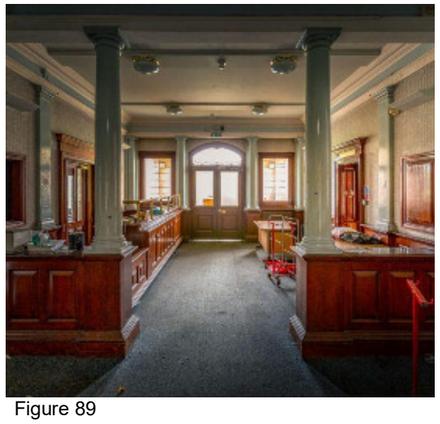
Figure 89

(Top left) Stained timber panelling to Dressing Room roof structure. *Source:* Britton 2019
Figure 79: Stained timber handrail, balusters and wall panelling to Main Entrance stair. *Source:* www.28dayslater.co.uk 2018
Figure 80: Stained timber panelling / fire surround to reception / meeting room to Main Entrance building. *Source:* Britton 2019
Figure 81: Stained timber handrail, balusters and wall panelling to Main Entrance stair. *Source:* www.28dayslater.co.uk 2018
Figure 82: Painted timber ventilation cowl to stable roof. *Source:* Britton 2019
Figure 83: Section No. 98 through timber ventilation cowl to stable roof; Oatley & Skinner Architects. *Source:* Bristol University 2019
Figure 84: Timber parquet flooring. *Source:* Britton 2019
Figure 85: Painted timber cabinetry and screens to laboratory. *Source*: Britton 2019
Figure 86: Painted and stained T&G timber panelling and screens to Records Office. *Source:* www.28dayslater.co.uk 2018
Figure 87: Painted and stained T&G timber panelling and screens to Records Office. *Source:* Britton 2019
Figure 88: Stained timber cabinetry to pharmacy. *Source:* www.28dayslater.co.uk 2018.
Figure 89: Stained timber wall dado panelling to main reception space. *Source:* www.28dayslater.co.uk 2018

INTERIOR FINISHES

Whilst large parts of the interior of Whitchurch Hospital has been modernised and sanitised during the course of its working life, there remain a number of interior finishes of interest and note dotted throughout the building, most notably in the higher status areas of the Hospital such as the Main Entrance Building and Recreation Hall, including ornate plasterwork, panelling, fireplaces and feature principal timber stairs. Functional areas such as the Bath House block retains original glazed walls tiles, asphalt flooring and slate shower dividers and the finishes in this areas retains a high degree of the original finishes.

Figure 95

Figure 96

Figure 90

Figure 91

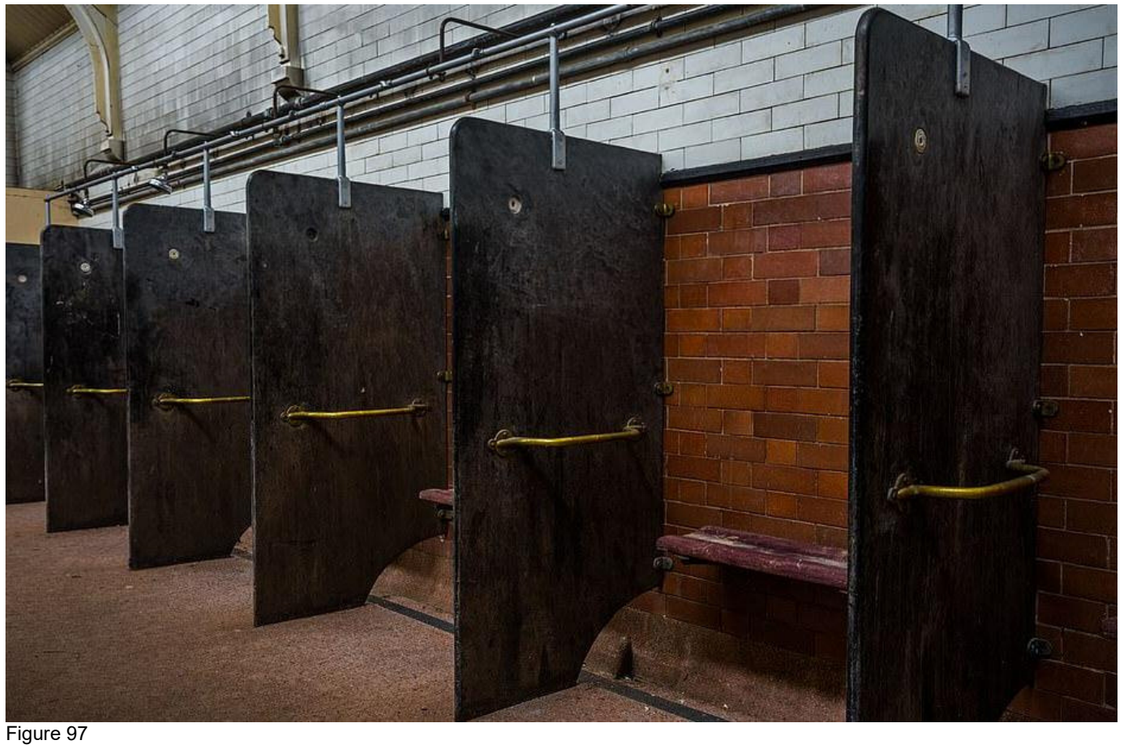

Figure 97

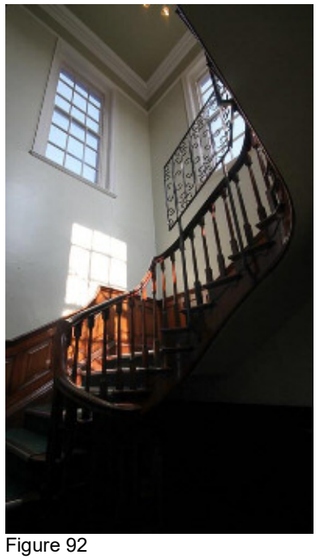

Figure 92

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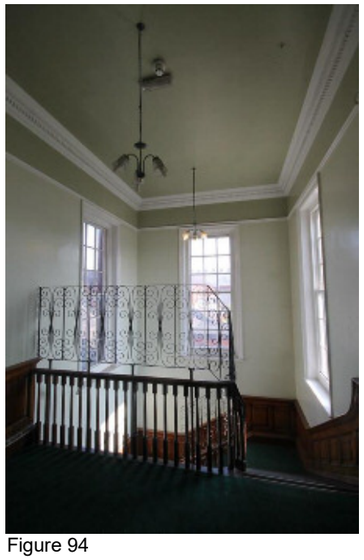

Figure 94

(Top left) Stained timber panelling to Dressing Room roof structure. *Source:* Britton 2019
Figure 90: Decorative plaster cornice and surround to stage in Recreation Hall. *Source:* Britton 2019
Figure 91: Painted and stained T&G timber panelling and screens to Records Office. *Source:* Britton 2019
Figure 92: Stained timber handrail, balusters and wall panelling to Main Entrance stair. *Source:* www.28dayslater.co.uk 2018
Figure 93: Stained timber panelling / fire surround to reception / meeting room to Main Entrance building. *Source:* Britton 2019
Figure 94: Timber stair and decorative plaster cornice to Main Entrance Building. *Source:* www.28dayslater.co.uk 2018
Figure 95: Coat of Arms in decorative plaster to the curved arch over the stage in the Recreation Hall. *Source:* Britton 2019
Figure 96: Decorative plaster cornice and ceiling rose to barrell-vaulted ceiling at first floor in the Main Entrance Building. *Source:* www.28dayslater.co.uk 2018
Figure 97: Original tiles, flooring and fixtures to the Bath House. *Source:* Antony Meadley 2019

WHITCHURCH HOSPITAL: SUPPLY & PROCUREMENT

The absence of significant specification notes on the original architectural drawings for Whitchurch Hospital as viewed at Bristol University Special Collections, coupled with no documentary evidence having been found to date of the main building contractor's supply chain and purchase orders for the project results in limited information and evidence for the origins and source of the building materials used in the construction of Whitchurch Hospital.

Notwithstanding this, information documented in the Asylum Committee meeting minutes held at Cardiff Council's Cathays Branch & Heritage Library has revealed some tantalising pieces of evidence regarding the procurement of the project and confirms that the construction was by no means an exclusively Cardiff, or even a Welsh, based project. Extracts from a selection of these minutes can be found in Appendix B of this report.

The project Architects, Oatley & Skinner, had their practice based in Bristol. The contract for the foundations and sub-structure works was tendered to companies in Cardiff, Croydon, Pontypridd and Wolverhampton. The contract was awarded to the firm of D.W. Davies of Cardiff, for the tender sum of £16,666.

The main superstructure works contract drew tenders from places as diverse as Bristol, Cardiff, London, Swansea and Wolverhampton, with the successful tender of Messrs. William King & Sons of London (£232,390) beating Willcock & Co., of Wolverhampton into second place by a mere £638. Even then, some Councillors proposed rescinding the appointment of W. King & Sons in favour of Cardiff contractor Watkin Williams. The proposal was not successful.

This pattern follows for the heating & venting tenders (Cardiff, Liverpool, London and Trowbridge), where Messrs. H. Haden & Sons of Trowbridge near Bath were successful.

Tenders for the erection of fencing drew interest from even further afield with prices submitted from a number of Cardiff and south Wales based companies alongside those from Birmingham, Dudley and Walsall in the West Midlands, Glasgow and Workingham in Cumbria.

The contract for electrical wiring received tenders from Blackburn, Bristol, Cardiff, Devonport (Plymouth), Kettering (Northamptonshire), London, Manchester, Newport, Pontypridd, Sheffield and Trowbridge. D. Firth & Co. of Manchester provided the accepted tender.

The minutes reveal a number of interesting matters arising from the construction of Whitchurch Hospital and help to illustrate, colour and inform some of the problems encountered along the way, including trade union disputes, arbitrations and allegations of defective workmanship.

The minutes also make reference to a small number of local suppliers such as John Bland & Co. Limited (who were Cardiff timber importers and merchants), Cross Brothers (Limited) 'the Cardiff Ironmongers', John Williams & Sons Limited and Robinson, David Timber Merchants of Cardiff. The minutes also record requests for the contractor to resolve defective toilet cisterns with the product supplier named as Duckett & Sons of Burnley, Lancashire.

SESSIONS & SONS

As little documentary evidence and records have been found to date relating to the origin and source of many of the materials used in the construction of Whitchurch Hospital, it is particularly special to discover a piece of physical evidence in the building fabric which relates back to a particular manufacturer or supplier. In this instance, inset porcelain disks inscribed with 'Sessions & Sons Ltd., Cardiff' fixed into the slate shower screens / dividers provide direct evidence of who supplied the product.

As Long (1993, p. 55) notes:

> Sessions and sons, also a prominent Cardiff builders' merchants, was founded in 1838 in Gloucester, and opened a large branch in Cardiff in 1857...the business included the 'latest patents and novelties' in roofing slates, also timber, joinery, laths, terracotta goods, cement, grates, fenders, baths and other sanitary goods and iron goods.

Figure 98

Figure 99

Figure 100

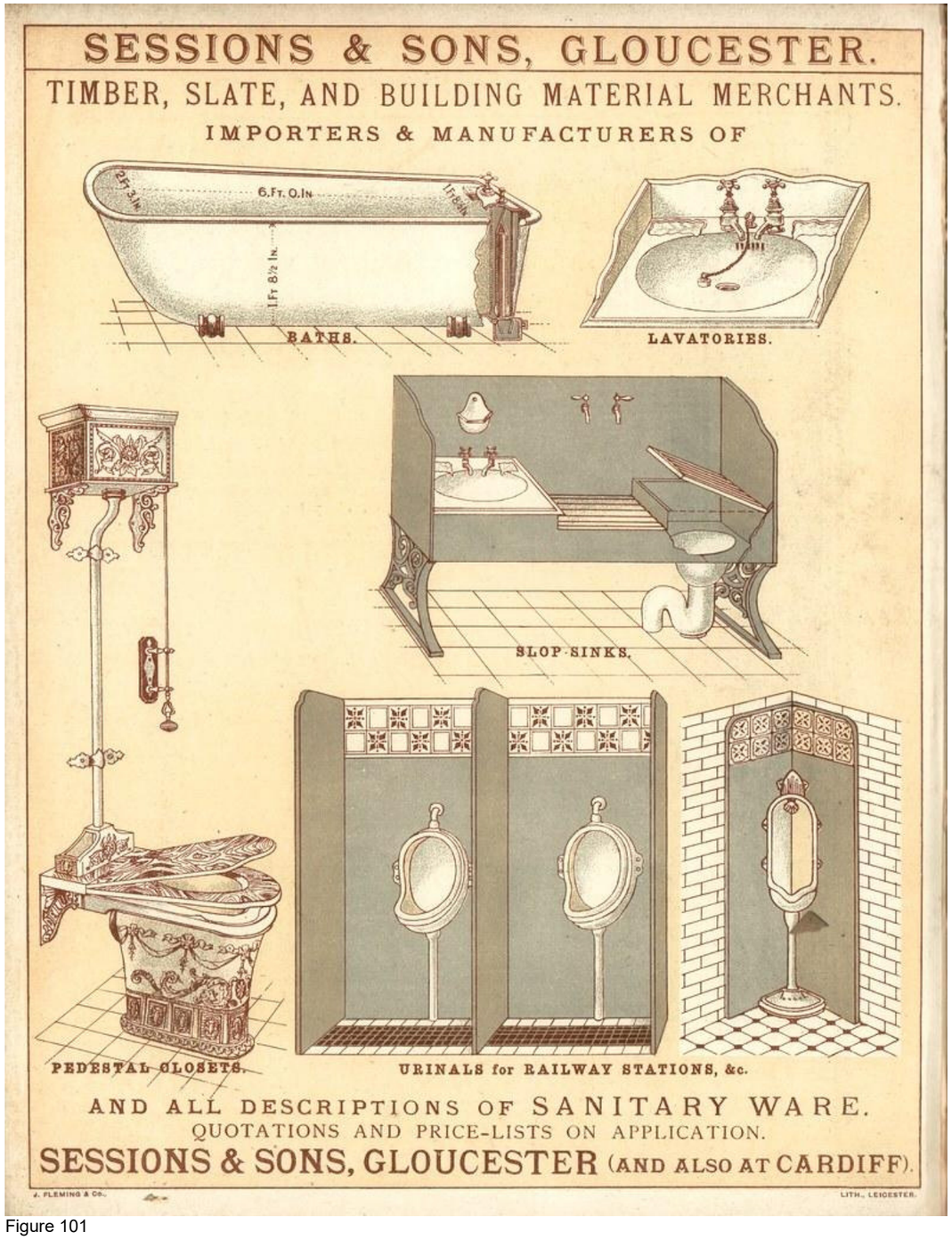

Figure 101

(Top left) Sessions & Sons, Limited advert dated 1898. *Source*: www.gracesguide.co.uk, 2018
Figure 98: Inset 'Sessions & Sons, Limited' logo disc to slate shower screens / dividers. *Source*: www.thetimechamber.co.uk, 2019
Figure 99: Slate shower screens / dividers in Bath House (with inset logos). *Source*: www.thetimechamber.co.uk, 2019
Figure 100: Advert for 'Sessions & Sons, Limited' dated 1907. *Source*: www.gracesguide.co.uk, 2018
Figure 101: Sessions & Sons, Limited trade catalogue dated 1893. *Source:* www.hiveminer.com (undated)

OTHER SUPPLIERS

Information regarding the product specifications, suppliers and manufacturers used on the project is scarce. Whilst architectural drawings prepared by Oatley & Skinner make reference to 'Limmer Rock Asphalte' as the specified floor finish in the Sanitary Annexe blocks, no evidence has come to light to confirm whether this specific product was actually installed on site.

Minutes of the Asylum Sub-Committee sitting on 12th December 1906 (Item 663) in respect of tenders for joiners' tools and ironmongery reads:

Tenders from John Williams and Sons, Limited, and Cross Brothers, Limited, were received. *Resolved*—That the Medical Superintendent be empowered to select the lowest items from each of the lists, and to purchase the goods required.

Entry 664 from the same minutes relating to timber reads:

Tenders from John Bland and Co., Ltd, and Robinson, David, & Co., Ltd., were received for various kinds of timber. *Resolved*—That the tender of John Bland & Co., Ltd. (being the Lower) be accepted.

Minutes of the Visiting (Mental Hospital) Committee meeting dated 5th March 1908 (Item 2231) read:

Defective Cisterns—A Report, dated the 28 th February, was read from the Architects pointing out that the Committee had approved of Messrs. Duckett & Sons goods against the Architects' advice. However, they were of opinion that Messrs. Duckett could be called upon to put the Cisterns right if not satisfactory, and they asked Messrs. King to call upon them to do so.

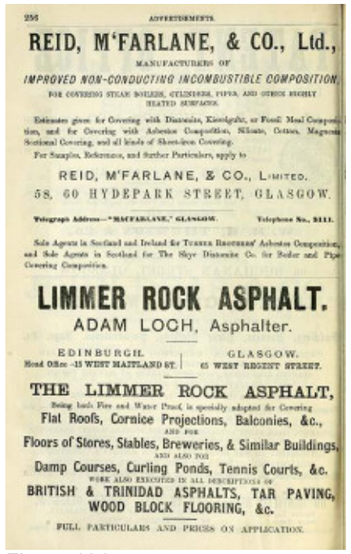

Figure 104

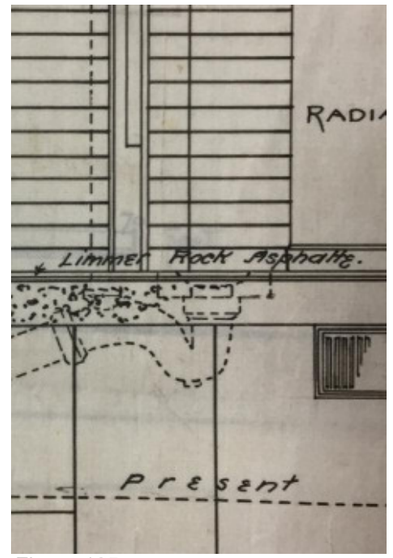

Figure 105

Figure 106

Figure 107

Figure 102

Figure 103

(Top left) Brass logo for Cross Brothers Limited, Cardiff. *Source:* www.dragonquarry.com (undated)
Figure 102: Advert for Duckett & Son Limited, dated July 1898. *Source:* www.gracesguide.co.uk 2011
Figure 103: Duckett & Son Limited logo imprinted on porcelain. *Source:* www.ipernity.com 2017
Figure 104: Advert for Limmer Rock Asphalt. *Source:* PO Annual Glasgow Directory 1900-1901 www.digital.nls.uk (National Library of Scotland)
Figure 105: Extract from Sanitary Block section drawing; Oakley & Skinner Architects. *Source*: Bristol University, 2019
Figure 106: Advert for Cross Brothers Limited, Cardiff. *Source:* Maurice Harp ('Welsh Perfins 1868-1880) 2018
Figure 107: Aerial photograph showing the Robinson, David & Co. Limited's works on East Tyndall Street, Cardiff (undated). *Source:* www.coflein.gov.uk (undated)

APPENDIX A

Cadw Listed Building Description

Summary Description of a Listed Buildings

Reference Number	Building Number	Grade	Status	Date of Designation	Date of Amendment
11715		II	Designated	15 April 1994	31 May 2002

Name of Property	Address
Whitchurch	

Location

Unitary Authority	Community	Town	Locality	Easting	Northing
Cardiff	Whitchurch	Cardiff	Whitchurch	314607	180517

Street Side	Location
	On large site between Park Road and Velindre Road in the north of Whitchurch Community.

Description

Broad Class	Period
Health and Welfare	

History

Built 1902 to 1908; official opening 15 April 1908; originally known as 'Cardiff Lunatic Asylum' and later as 'Cardiff City Mental Hospital'. Architects Messrs Oatley and Skinner of Bristol. Building amongst most modern of its period, having provision fo latest treatment methods, and also a large recreation hall, bakery, kitchen, boiler house, own fire station. Taken over by military 1914-1919 as 'Welsh Metropolitan War Hospital' (refurbished following war), and again during Second World War as 'Whitchurch Emergency Hospital'. Taken over by Ministry of Health in July 1948.

Exterior

The hospital is built of red brick with yellow brick banding, Welsh slate roofs; the entrance black main elevation has ground floor and dressings of Bath stone. Developed form of 'broad narrow' or echelon plan widely used for large mental hospitals from later C19. Spine of administration and service blocks has, to each side, five two-storey ward blocks (roughly L-shaped) stepped back in echelon, and connected by curved corridor to rear, and cross corrdiors. Convex (south) side faces out to give sun and light to ward blocks; concave corridor thus encloses service blocks with entrance block facing north. Entrance block in Wrenaissance style. Two storeys, three bays with advanced gable central bay with open porch below. Slate roof with weathered red brick end chimneys, and two smaller chimneys to ridge. First floor in brick with deep eaves band course (dentil cornice) and dressings in Bath stone; ground floor in horizontally chanelled Bath stone. The windows are horned sashes with small panes to upper sash and single large pane below. Single first floor window to each outer bay has architrave with keystone and rusticated surround. Two ground floor windows to each outer bay. Advanced central bay has a broken pediment, end paired Ionic pilasters, large round-headed first floor window with keystone and rusticated surround, on ground floor open segmental arch to porch; returns have teo windows to first floor (rusticated surrounds) with fround floor arches similar to front. Gable ends treated as pediments with projecting central stack. To each side of two-storey section, attached single storey pavilions, hipped roofs, banded Bath stone, semi-hexagonal bays to front, two windows to returns. Rear of entrance block in red brick and connects body of hospital via corridor flanked by one- and two-storey office blocks. To east (left) of entrance, yard formed by L-shaped works and Laudry blocks (mortuary block to north) has boiler houses (with prominent ridge ventilators) and 2-storey attached range. To rear of boiler houses is combined water tower and chimney. Top stages consist of copper dome with small lantern over open loggia (3-bays to each side), brick pillars with stone capitals and cornice. Freestone cornice and bandcourse, roundels, yellow brick bands. Attached chimney follows water tower up to cornice then becomes cylindrical chimney in brick. To west (right) of entrance, area between corridors has attached service buildings in materials materials. Disposed to either side of entrance are ten rougly L-shaped 2-storey ward blocks in red brick with yellow brick banding; red brick chimneys, slate roofs, small-pane horned sash glazing. Blocks connected to each other and/or to rear corridor to enclose small courtyards; to rear, each ward block has attached two-storey sanitary block and ventilation cupola in red brick with wooden louvres surmounted by small dome and pinnacle. Ward blocks are disposed almost symmetrically, and are numbered 1 to 5 East and West respectively. Wards 1 (East and West) have two-storey splayed bays near inner angles. Ward 2 (West) has bay in same position, but block 2 (East) has bay near centre of elevation. Wards 3 and 4 to each side have polygonal corner bays. Wards 5 to each side have two slayed bays to outer corners. Some ward blocks have, on south-facing walls, modern single-storey shallow extensions in yellow brick with corrugated roofing materials; some 2-storey extensions in red brick. Between Wards 1 (East and West), is 2-storey staff house connected by corridor to body of hospital, six windows with recessed central bay, and ground floor splayed bay-windows to outer bays. To rear of house, 2-storey physiotherapy and pharmacy departments. Behind these, other blocks include main recreation hall, largely obscured by adjacent buildings but with prominent louvre, and kitchens. A network of corridors forms courtyards with buildings attached to corridors for office, medical, and service uses.

Interior

Most interiors remodelled and modernised (these were not available for inspection at resurvey January 2002 except fo the entrance hall). Entrance block retains square hall, plain ceiling with cornice. Three bays to each side with Roman Doric engaged columns or pilasters. Panelled wood dado; to right, fireplace, to left, door to enquiry office. Entrance to hospital through screen wall with columns. Transverse corridor with classical detailing. To right, staircase hall to former boardroom area with wooden stair in style of circa 1700 six panelled doors etc., offices modernised. Main recreation hall (approximately 15m by 30m) retains original interior. Segmentally vaulted ceiling with cross-ribs. Seven bays to sides, each with round-headed window; piers betwen windows have dentil cornice with cartouche and floral pendants. West end wall has triple blind window, taller central window flanked by lower windows treated as walls; dentil cornice continues from side window-piers; to each side round window with pediment and square architrave; three doorways with double-leaf doors. East end has stage with large segmental pedimented proscenium arch, to each side, cartouche with female head and swags; window to each side; below each window, a square-headed doorway with double-leaf doors. Doors each lead to lobby with wooden staircase to rear stage area.

Reason for designation

Included as the best example in Wales of a large mental hospital using echelon plan form, and for its special architectural interest as the work of Oatley and Skinner.

APPENDIX B

Selected extracts from the minutes of Asylum Committee Meetings 1902-1908

Extract taken from the 'Asylum Committee' Minutes dated 3rd March, 1902 regarding Heating and Venting Tenders:

1501 The Sub-Committee reported as follows:—

"In accordance with instructions your Sub-Committee, consisting of the Mayor, (Councillor F.J. Beavan) and Councillors F.J. Veall and Morgan Thomas, proceeded to Bristol, and at the offices of the Architects opened five tenders received for the above. Three Firms who had been invited, viz:— Messrs Crispin, (Bristol) Proger & Sons, (Cardiff) and Cross Brother, (Cardiff) found themselves unable to tender or various reasons. The following is a list of the Tenders as opened:—

Name of Firm. Address	Amount of Tenders for 1st portion of Asylum (750)			Add for completed Asylum (1200)
James Simpson & Co., London	£	s	d	
Section 1.—Steam Boilers &c.,	4767	0	0	Not
Section 2.—Heating and Ventilating	11774	0	0	Tendered
Section 3.—Hot Water Service	1706	0	0	for
Section 4.—Cooking Apparatus	969	0	0	
Section 5.—Bake Ovens &c.	814	0	0	
Total	£20,030	0	0	
Darque Griffiths & Co., Liverpool	£	s	d	
Section 1	5,356	6	3	Not
Section 2	11,264	9	5	Tendered
Section 3	4,399	0	0	for
Section 4	864	0	0	
Section 5	616	10	0	
Total	£22,500	5	8	

(This Firm gives an alternative price for certain alteration to Specifications of £23,223 13s. 2d.)

John Williams & Sons, (Limited) Cardiff		£	s	d		£	s	d
Section 1		7,537	10	0	Section 1	562	10	0
Section 2		6,999	2	6	Section 2	2,745	0	0
Section 3		2,531	5	0	Section 3	910	0	0
Section 4		1,125	0	0	Section 4	281	5	0
Section 5		558	15	0	Section 5	0	0	0
Total complete, £23,250 7s. 6d.	Total	£18,751	12	6	Total	£4,498	15	0

(This Firm will reduce by £1,000 on 1st portion, and £400 on 2nd portion, if their Patent Heaters are allowed to be used).

G.Haden & Sons, Trowbridge		£	s	d		£	s	d
Section 1		3,889	0	0	Section 1	569	0	0
Section 2		10,760	0	0	Section 2	4,020	0	0
Section 3		4,627	0	0	Section 3	1,250	0	0
Section 4		1,072	0	0	Section 4	317	0	0
Section 5		438	0	0	Section 5	146	0	0
Total complete, £27,003 0s. 0d.	Total	£20,781	0	0	Total	£6,302	0	0

Ashwell & Nesbitt, London		£	s	d		£	s	d
Section 1		4,970	0	0	Section 1	0	0	0
Section 2		11,300	0	0	Section 2	4,500	0	0
Section 3		5,300	0	0	Section 3	1,900	0	0
Section 4		1,300	0	0	Section 4	350	0	0
Section 5		470	0	0	Section 5	150	0	0
Total complete, £30,240 0s. 0d.	Total	£23,340	0	0	Total	£6,900	0	0

Your Sub-Committee, having considered in detail, the plans submitted by Messrs John Williams and Sons, and by Messrs G. Haden & Sons, requested the Architects to report on the whole of the Tenders received, with special reference to those of the two firms above named, to the full Committee in Cardiff on Thursday, March 13th., 1902, at 3 o'clock p.m., and this they agreed to do on the understanding that as the report will be strictly of a confidential nature, the Committee will sit as a Sub-Committee.

Extract taken from the 'Asylum Committee' Minutes dated 13th March, 1902 (Sitting as a Sub-Committee) regarding Heating and Venting Tenders:

1856 A letter, dated 12th March, was read from Messrs. J. Williams & Sons, Limited, enclosing two telegrams from their representative in New York as to the working of certain apparatus known as the Evans' Admiral system.

1857 "The Architects reported that they had carefully considered the Schemes submitted by the five competitors who had tendered, and that they were of opinion as follows:--

1.—That Messrs. Ashwell & Nesbit had not fully complied with the condition, as they had not finished the particulars asked for, but pleaded pressure of work, and that their drawings and specification were such as they could not seriously consider.

2.—That Messrs. Darque Griffiths & Co., had been at great pains in submitting two most carefully and elaborately worked out schemes, but they regretfully passed over their tender, as their prices were higher than the prices of other good firms, without there being compensating advantages.

3.—That Messrs. James Simpson & Co.'s scheme contained nothing to recommend it to special consideration.

4.—That the schemes submitted by Messrs. John Williams & Sons, and Messrs. G. N. Haden & Sons, with the exceptions pointed out, highly commended themselves to the Architects. They had gone very carefully into all the details of both schemes, and after full consideration had come to the decided conclusion that Messrs. Haden & Son's scheme was the one which alone could be recommended for acceptance, and this for the following reasons:-- (1) The work included In Messrs. Haden's tender was upon the whole decidedly superior to that proposed by Messrs. Williams. (2) That Messrs. Haden had provided many items which Messrs. Williams had not. (3) That Messrs. Haden's scheme for hot water supply was more up-to-date, more easily managed, and decidedly more economical than the other, especially having regard to their use of exhaust steam during the summer months, and the consequent great saving in consumption of coal. (4) That the Architects' view had been confirmed by their Consulting Engineer."

Resolved—That this Committee having confidence in the Architects and after discussion of their report and of the tenders referred to therein, accepts the tender of Messrs. Haden & Sons, subject to the approval of the Secretary of State.

Extract taken from the 'Asylum Committee' Minutes dated 17th March, 1902 (Sitting as a Sub-Committee):

1860 The Town Clerk reported:—

"The Committee having decided to accept Messrs. Haden's tender on the advice of the Architects, the proper way to deal with the matter will be to include the heating and ventilation in the general building contract as a provisional sum. The Contractor will then have to make a sub-contract with Messrs. Haden. This course is the one usually adopted with reference to similar matters, and the advantages of it are that the Corporation would hold one Contractor responsible for the whole of the work in connection with the building, whereas if there were separate contracts, and delays or difficulties occurred, each Contractor would throw the blame on the other, and it would be difficult for the Corporation to know which was really responsible, and it would be impossible to hold one liable for the defaults of the other.

The ground on which the Architects chiefly based their recommendation, and which the Committee decided to accept the tender was, that Messrs. Haden & Sons proposed to utilise a waste product (the exhaust steam) to greater advantage than did Messrs Williams & Sons, with a consequent great saving in the consumption of coal. The Architects believed that the cost of the maintenance owing to economy in coal consumption in the use of Messrs. Haden's scheme would be considerable, amounting to say £150 to £200 per annum for 750 beds. The Town Clerk suggests, therefore, that as a condition of acceptance of their tender, they should be required to guarantee the amount of coal which will be required in connection with working their system."

Resolved—That before the acceptance of Messrs. Haden's tender is communicated to them, the Borough Engineer be instructed to proceed to Bristol, and go into the schemes of Messrs. Haden & Sons and Messrs. Williams & Sons with the Architects, with special reference to the four points enumerated in the Architects' report, and report generally upon the whole matter to this Committee as early as possible.

Extract taken from the 'Asylum Committee' Minutes dated 25th March, 1902 (Sitting as a Sub-Committee):

1861 The Borough Engineer reported on the matters referred to in the Architects' Report and fully confirmed their recommendations.

1862 *Moved and seconded*—That the decision of this Committee of the 13th March (accepting Messrs. Haden's Tender (subject to the approval of the Secretary of State) be reaffirmed , it being understood that the acceptance only applies to work for the first portion of the Asylum.

Moved and seconded by way of Amendment—That as a condition of the acceptance of their Tender, Messrs. Haden be required to enter into a guarantee, to be approved by the Town Clerk, that the consumption of coal in the working of their system will not exceed 2½ tons a day of 9 hours for the raising of every 7,500lbs. of steam per hour.

The Amendment was put and lost, whereupon the original Motion was put and carried and Resolved accordingly.

1863 *Further resolved*—That the acceptance of Messrs. Haden's Tender be subject to their entering into a proper Contract with the Contractor for the building (to be prepared by the Town Clerk) for the carrying out of the work included in the Tender.

Extract taken from the 'Asylums Committee' Minutes dated 24th July, 1902 regarding Tenders for Foundations:

1124 A letter from the Architects, dated 19th July, was read, stating that first instalment of quantities could be obtained on the 28th inst., and the balance in about a week, and that at least a fortnight should be allowed for tendering.

The Town Clerk stated that advertisements had been issued, inviting tenders by the 18th August.

Resolved—That this Committee meet on 19th August to accept a tender.

Extract taken from the 'Asylums Committee' Minutes dated 19th August, 1902 regarding Tenders for Foundations:

1241 Tenders for the construction of the basements and foundations and other works for the New Asylum at Whitchurch were received as follows:—

	£	s	d
Lattey & Co., Cardiff	26,676	4	11
J. & T. Binns, Croydon [London]	24,584	0	0
Charles Wall, London	22,065	0	0
Frank Ashley, Cardiff	21,041	15	7
James Allen & Son, Cardiff	20,632	5	0
W. Symonds & Co., Cardiff	19,578	9	10
E. Turner & Sons, Cardiff	18,880	0	0
Watkin Williams, Pontypridd	18,000	0	0
A. Willcock & Co., Wolverhampton [West Midlands]	17,250	0	0
David Davies, Cardiff	17,137	13	0
W. Thomas & Co., Cardiff	13,923	0	0
D.W. Davies, Cardiff	16,666	0	0

Resolved—That the Tender of Mr. D.W. Davies, of Cardiff, be accepted at £16,666 subject to the approval of the Corporation and the Secretary of State.

1242 *Resolved*—That an application be made to the Local Government Board for sanction to the appropriation of the sum of £16,666 out of the monies received and to be received from the Glamorgan County Council under the Arbitrator's award, in connection with the dissolution of partnership in the Glamorgan Asylum, for the purposes of the above contract.

Extract taken from the 'Asylums Committee' Minutes dated 17th October, 1902:

1864 A letter, dated 3rd October, from the Local Government Board was read, stating that the Board would hold a Local Inquiry as to the appropriation of money for the foundations contract, and suggesting that the Corporation should extend their application to cover the total cost.

1865 A letter, dated 10th October, from the Architects was read stating that the estimated cost of buildings, with the Architects' commission and Clerk of Works salaries, would be £248,588 4s. 4d., to which they suggested an addition of 5 per cent for extras, and pointing out that there would be further items for electric plant, water main, railway siding, fencing, laying out ground, furnishing, &c., which would not come under their cognisance.

Resolved—That application be made to the Local Government Board to provide by appropriation of the balance of the Glamorgan Asylum Award (£33,000), and by borrowing of the residue of the necessary amount, the sum of £264,006 (including the sum of £16,666 for which application has already been made) for the purpose of the balance of the purchase price of the site and erection of the Asylum Buildings and matters in connection therewith.

Extract taken from the 'Asylums Committee' Minutes dated 5th February, 1903 regarding progress of foundation works:

1266 A letter, dated 4th February, was read from the Architects, stating that progress had been made, but that it would be necessary to further increase the number of men employed.

Resolved—That a copy of this letter be forwarded to the Contractor.

Extract taken from the 'Asylums Committee' Minutes dated 2nd March, 1903 regarding progress of foundation works:

1269 A letter, dated 28th February, from the Architects was read stating that they were of opinion that it would be the end of June before Mr. Davies could complete his contract, which would be two months in excess of his time over contract, being a fair allowance for inclement weather. The Architects stated that progress had been much more satisfactory lately.

Resolved—That the Town Clerk write the Contractor, calling his attention to the above report, and informing him that payment of the liquidated damages for delays stipulated for by the contract will be enforced against him.

Extract taken from the 'Asylums Committee' Minutes dated 2nd April, 1903 regarding Tenders for the Superstructure:

2021 Mr. Skinner reported that it would be possible at the end of April to advertise for Tenders for the Superstructure, and that Tenders could be received by the end of June.

Resolved—That in due course the necessary advertisements should be inserted in the same papers as those for the Foundation Contract.

Extract taken from the 'Asylums Committee' Minutes dated 2nd July, 1903 regarding Tenders for the Superstructure:

647 The following Tenders were received:—

	£	s	d
William King & Sons, Westminster [London]	232,390	0	0
Willcock & Co., Wolverhampton [West Midlands]	233,028	0	0
Watkin Williams, Cardiff	233,990	0	0
D.W. Davies, Cardiff	237,750	0	0
J. Allen, Cardiff	238,516	18	11
McCormick & Sons, London	242,787	0	0
Turner & Sons, Cardiff	244,222	0	0
Lloyd Bros., Swansea	263,376	0	0
Stephens, Bastow & Co., Bristol	264,997	0	0
William Thomas & Co., Cardiff	275,297	19	5

Resolved—That subject to information to be obtained as to the position of Messrs. William King and Sons and of their proposed sureties, their tender be recommended to the Council; and that a Sub-Committee, consisting of the Mayor, Chairman and Deputy-Chairman, in conjunction with the Town Clerk and the Architects, be appointed to take all necessary steps for obtaining such information and to report to this Committee.

Extract taken from the 'Asylums Committee' Minutes dated 11th July, 1903 regarding Superstructure Contract (as part of Item 778):

6 Mr. Skinner reported as to the present position of the work under this Contract.

7 The Sub-Committee reported:—

'Your Sub-Committee, accompanied by the Town Clerk and Mr. Skinner, visited Messrs. W. King & Sons at their premises, 3, Vauxhall Bridge Road, Westminster, on the 7th inst. They have also been in communication with the Town Clerk of Newport, and have caused the Architects and Messrs. Riddell & Company to make numerous confidential enquiries.

As a result of the enquiries made as above mentioned, your Sub-Committee are satisfied that Messrs. W. King & Son are an old established firm of good repute and with experience in Asylum work, and then spoken of by Mr. G.T. Hine. Messrs. King & Son have supplied a list of 24 matters, comprising some of those completed by them between 1897 and 1902. These include the following:—

Norfolk County Asylum	...	...	£60,000
St. Olaves Grammar School	...	...	£32,000
Artillery Mansions	...	...	£90,000
All Saints' Convent, Colney	...	...	£43,000
St. Olaves Girls' School	...	...	£22,000
Infant Orphan Asylum	...	...	£23,000

As regards the Company offered as surety, your Sub-Committee prefer to advise the Committee to take the personal obligation of two individual sureties. Messrs. W. King & Sons have put forward the two names following—J. Russell Chibnall, Esq., Chiswick Hall, S.W., and W. Howard Meredith, Esq., York Road, Lambeth.

Your Sub-Committee are satisfied with the information received by them with regard to Mr. Chibnall, whom they believe to be in a sound position. He is the Chairman of Directors of Chibnall's Bakeries, Limited. They are also satisfied as to the position of Mr. Meredith, who is a Builders' Hardware Manufacturer carrying on an old established business.'

Resolved—That the tender of Messrs. W. King & Sons, of 3, Vauxhall Bridge Road, Westminster, be recommended to the Council for acceptance, subject to the approval of the Secretary of State, and subject to the members of the said firm duly executing the Contract for the works referred to in the said Tender; subject also to Messrs. J. Russell Chibnall and Howard W. Meredith entering as Sureties into the

Resolved—That the tender of Messrs. W. King & Sons, of 3, Vauxhall Bridge Road, Westminster, be recommended to the Council for acceptance, subject to the approval of the Secretary of State, and subject to the members of the said firm duly executing the Contract for the works referred to in the said Tender; subject also to Messrs. J. Russell Chibnall and Howard W. Meredith entering as Sureties into the Bond referred to in the said Tender; and that the said Contract (a draft whereof is installed by the Chairman and marked "A" for the purpose of identification) be executed by the Chairman and Town Clerk on behalf of this Committee, and that the Council be desired to approve thereof and to authorise the Town Clerk without further reference to the Council to affix the Common Seal to a Memorandum of such approval to be endorsed on the said Contract when executed.

779 On the reading of the ASYLUMS COMMITTEE of 11th inst., moved and seconded—That the proceedings of the Asylum Committee of 11 th inst. be approved and adopted.

Proposed by Alderman Trounce by way of Amendment, seconded by Councillor Davis—That the resolution to paragraph 647 of the Asylums proceedings (accepting a Tender for the superstructure of the New Asylum) be rescinded; and in lieu thereof—That the Tender of Mr. Watkin Williams at £233,990 be accepted, subject to the Asylums Committee being satisfied, after making careful enquiries, as to the position of Mr. Williams and his proposed sureties.

The Amendment on being put to the Meeting was lost.

Extract taken from the 'Asylums Committee' Minutes dated 17th September, 1903 regarding Superstructure Contract:

1328 The Town Clerk reported that the contract with Messrs. W. King & Sons had been returned on the 20th August approved by the Secretary of State.

Extract taken from the 'Asylums Committee' Minutes dated 17th September, 1903 regarding Sub-Contract for Slating:

1329 A letter, dated 7th September, from the Architects was read, stating that the builders required permission to employ Messrs. Charles Cornish & Co., of Bristol, to do the slating.

Resolved—That the employment of Messrs. Charles Cornish & Co., be approved on condition of their signing an undertaking to observe the provision of the fair wages clause of the contract.

Extract taken from the 'Asylums Committee' Minutes dated 26th September, 1903 regarding Sub-Contract for Slating:

1342 The Town Clerk reported that he had received Messrs. Cornish's undertaking to comply with the Fair Wages Clause of the Contract.

Extract taken from the 'Asylums Committee' Minutes dated 13th October, 1903 regarding Sub-Contract for Slating:

1693 The resolution of the Council of the 12th inst., referring back this matter, was read.

Resolved—That the Council, having refused to confirm the consent of this Committee to the employment of a sub-contractor for the slating, The Town Council inform Messrs. King and Son that this work must be carried out without the intervention of a sub-contractor

Extract taken from the 'Asylums Committee' Minutes dated 26th October, 1903 regarding Sub-Contract for Slating:

10 A letter dated 14th October from the Architects was read stating that they had informed Messrs. King that the Committee could not approve a sub-contractor for the slating.

Extract taken from the 'Asylums Committee' Minutes dated 15th February, 1906 regarding Slating and Plastering (item 1518):

The following Report from the Architects was read:—

"With reference to the alleged defective slating and plastering mentioned at the Committee Meeting some weeks ago, at which our Mr. Skinner was present, and to your subsequent letter upon the subject, we beg to report our opinion.

From time to time, in the ordinary course, we have inspected these works, and have always been perfectly satisfied with the manner in which they were being done.

We have recently made a special inspection, and have not been able to detect any inferior materials or workmanship worth mentioning, so that our opinion is confirmed that the works is well done.

Upon enquiring of the Clerk of Works, we find they know of no defective slating throughout the building.

With regard to the slating, we have had parts of the roof stripped in a number of instances, and in every case found the work of proper quality, and we consider it would be a waste of money to have any further stripping done. The only thing we know of which might have given colour to the rumour that there was defective slating in the buildings, is the fact that Messrs. King themselves had a piece of slating stripped from one side of the Recreation Hall, because they were not satisfied with the workmanship.

We consider that the complaint ought not to have been made, and in the event of complaints of such nature being made in the future, we suggest that the person who brings the charge should be required to furnish full details of the alleged defects.

We should have reported upon this matter before, but we understood that the individual who made the charge had afterwards withdrawn it, and that the matter, therefore, had dropped."

Resolved—That the above report be entered upon the Minutes.

Extract taken from the 'Asylums Committee' Minutes dated 26th September, 1903 regarding Dadoes in Day School:

1345 A letter from the Architects, dated 22nd September, was read suggesting, that in place of framed and panelled Dadoes, the walls should be of cement, painted and varnished and provided with a chair rail.

A telegram from the Architects, dated 26th September, was read stating that the approximate saving in cost would be at least £300.

Resolved—That the Architect's proposal be adopted.

Extract taken from the 'Asylums Committee' Minutes dated 11th July, 1903 regarding the Clerk of Works:

8 *Resolved*—That Mr. Frederick Orton be continued as Clerk of Works in connection with the superstructure on the terms of his present appointment, viz, at a salary at the rate of £250 a year, Mr. Orton to devote the whole of his time to his duties, to reside within one mile of the site, and the engagement to be determinable by one month's notice on either side.

Extract taken from the 'Asylums Sub-Committee' Minutes dated 21st July, 1904 regarding the erection of fencing:

911 Tenders for the erection of Fencing at the Asylums Site, Whitchurch, were considered as follows:—

No.	Name and Address	Amount		
		£	s	d
1.	—Hill & Smith, Brierley Hill [Dudley, West Midlands]	333	3	6
2.	—Alfred H.S. Stone, Quay Street, Cardiff	426	16	0
3.	—John Elwell, Birmingham	290	0	0
4.	—W.A. Baker, Ltd, Newport	471	0	0
5.	—Wm. Rain, Coalbridge, Near Glasgow	319	14	3
6.	—Thomas Bevan, Penarth	375	0	0
7.	—Rubery & Co., Darlaston [Walsall, West Midlands]	420	0	0
8.	—Mountford, Philips & Co., Llantrisant	380	13	8
9.	—Wm. Rowe, Cardiff	273	13	0
10.	—Geo. Kyte & Co., Cardiff	328	15	6
11.	—John Williams & Sons, Cardiff	326	15	6
12.	—Raybould & Co., Workington [Cumbria]	314	10	0

Resolved—That the Tender of Mr. W Rowe, Cardiff, at £273 13s. be accepted.

Extract taken from the 'Asylums Committee' Minutes dated 15th June, 1905 regarding the Wiring Contract:

435 A letter, dated the 14 th June, was read from Philpot Crowther, Llandaff, objecting to one manufacturer's rubber-cover cables being specified in the Specification.

The Borough Electrical Engineer and Manager reported as to the matter.

The following tenders were opened, viz:—

	£	s	d
W.A. Baker & Co., Newport	12,900	0	0
W.C. Booth & Co., Stalybridge [Manchester]	10,254	0	0
Saunders & Co., Cardiff	9,716	0	0
Price, Friend & Co., Cardiff	9,500	0	0
Edwards & Armstrong, Cardiff	9,212	0	0
Walsall Electrical Co., Limited	9,130	0	0
T. Scott Anderson, Sheffield	8,500	0	0
South Wales Installation Co., Pontypridd	8,229	0	0
Buchanan & Curwen, Bristol	8,200	0	0
Clements, Booker & Co., Westminster [London]	8,178	0	0
H.A. Jackson, Blackburn	8,150	0	0
A.G. Arnold & Co., Newport	8,030	0	0
G.N. Haden, Trowbridge [Wiltshire]	7,930	18	9
M. Sharp, Devonport [Plymouth]	7,868	0	0
Clay Bros., Cardiff	7,850	0	0
Lea & Warren, Kettering [Northamptonshire]	7,206	15	0
D. Firth & Co., Manchester	7,198	0	0
Troup , Curtis & Co., Avonmouth Dock, Bristol	4,584	3	6

Resolved—That the Tenders be referred to the Sub-Committee re Mechanical Stokers, for enquiry as regards any below £8,000.

Extract taken from the 'Asylums Sub-Committee' Minutes dated 17th July, 1905 regarding the Tenders for Wiring:

1070 The Borough Electrical Engineer and Manager submitted the following statement of the tenders and replies received by him to his enquiries made in pursuance of the resolution of the last meeting of this Sub-Committee:—

Resolved—That the tender of Messrs. D.Firth & Co. be accepted, subject to information to be obtained by the Borough Electrical Engineer and Manager with regard to the said firm, being satisfactory.

Extract taken from the 'Asylums Committee' Minutes dated 20th July, 1905 regarding the Wiring:

1072 *Resolved*—That Messrs. D. Firth & Co., the successful tenderers for the wiring, be requested, having regard to the state of labour at Cardiff, to employ local labour as far as possible in connection with the works to be carried out by them.

Extract taken from the 'Asylums Committee' Minutes dated 19th October, 1905 regarding the Electrical Wiring Contract:

1780 Correspondence between the Architects, the Borough Electrical Engineer and Manager, the Contractors for the Building, and the Contractors for the Electrical Wiring was read, with reference to the question of the Contractors for the Wiring, working after the Contractors for the Building had left the works, and using artificial light.

The Town Clerk had written the Architects and the Borough Electrical Engineer and Manager that the Contractors for the Wiring must carry on the work in a manner to which no objection could be taken, and which would not invalidate the policy of insurance.

Resolved—That the action of the Town Clerk be approved.

Extract taken from the 'Asylums Committee' Minutes dated 19th October, 1905 regarding the Employment of Labourers under Electrical Wiring Contract:

1781 A letter, dated the 26th September, from the Operative Bricklayers' Society, was read, complaining of the employment by the Contractors for the Wiring, of labourers in cutting holes, etc., in the place of bricklayers.

A letter, dated the 29th September, from the Contractors was read, stating that the services of skilled bricklayers were not required for the work in question, which was usually done by labourers.

The Town Clerk stated that he had been in correspondence with the Borough Electrical Engineer and Manager and the Architects on the subject.

A further letter, dating the 14th October, from the Operative Bricklayers' Society, was read, suggesting that a deputation should meet the Committee.

Resolved—That the Operative Bricklayers' Society be informed that this Committee are not aware of any rule requiring the employment of bricklayers for the work in question, and suggesting that the matter might be amicably settled between the Society and the Contractors; but that if the Society desired to bring forward evidence in support of their contention, they should be at liberty to attend the next meeting of this Committee, when the Contractors would also be invited to attend.

Extract taken from the 'Asylums Committee' Minutes dated 29th November, 1905 regarding the Wiring Contract:

201 The Report of the City Electrical Engineer and Manager with regard to this matter was read, in which he called attention to the small progress made, the insufficient number of workmen employed, the insufficient quantity of materials obtained, and the withdrawal of workmen on the 27th November, in consequence of the refusal of the Engineer to give a Certificate for which the Contractor had asked.

The Town Clerk drew the Committee's attention to the provisions of the contract.

Resolved—

(1) That notice be forthwith given to the Contractors in accordance with Clause 26 of the Contract, and that failing compliance within seven days, a further notice to determine the Contract in accordance with the clause be given.
(2) That notice be given to the Sureties of the steps taken and contemplated by the Corporation.
(3) That in the event of the Contract being determined, the same be re-let to Messrs. Lee and Warren, or, failing them, to Messrs. Clay Bros. & Co., upon the terms of their tender respectively, subject to their sureties being deemed satisfactory.

Extract taken from the 'Visiting (Mental Hospital) Committee' Minutes dated 22nd May 1908:

280 City of Cardiff – Mental Hospital – The Town Clerk submitted the following description of the Mental Hospital, prepared by the Architects and City Electrical Engineer and Manager:—

"The general aspect of the building is about S.S.E. The main entrance is on the N.E. side of the estate from the Merthyr Road, from which point there is an approach road to the entrance and official block, which is placed centrally in the north of the main buildings.

The main buildings comprise the Administrative Department – in the centre – and the Wards for accommodation of patients which surround it on all sides, except the north, and which are in communication with it by means of corridors. The Female Division is on the west side of the centre, and the Male Division on the east side.

The Wards are contained in ten blocks, five in each Division, there being accommodation in all for 336 males and 414 females, or a total of, in the first instance, 750 patients. The Administrative Department is planned to provide for the extension of the Hospital to accommodate a total of 1,250 patients.

All blocks are so arranged as to afford the free access of sun and air, and all have an uninterrupted view of the surrounding country. All Dormitories are cross-ventilated, and every day room has a south aspect.

In addition to the day rooms and dormitories, each ward contains a number of single rooms for patients, a limited number of attendants' rooms, a ward scullery, store, boot room, and a sanitary annexe cut off from the Ward by a cross-ventilated passage, and containing baths, lavatories, and other sanitary arrangements.

The Sick and Infirm Wards are placed nearest the centre, so as to be nearer the Dispensary and the quarters of the Resident Medical Officers, which later are in a separate block in the centre of the south front.

The Wards communicate directly with the Airing Grounds, the front fences of which are sunk in a Ha-Ha.

The Administration Buildings comprise Steward's stores, kitchen department, bakery, recreation hall, and various offices. On the male side of the Administration are workshops for the employment of Tailors, Cobblers, Upholsterers, Carpenters, Painters, Plumbers, and other trades. On the female side there are a sewing room and laundry, the machinery in which later has been provided by Messrs. T. Bradford and Co., of Manchester and London.

For each sex there is a general bath house and its dressing room, and the bathing arrangements are by means of sprays instead of the ordinary plunge baths.

A room measuring about 50 feet by 20 feet is provided for each sex in which patients can see their friends.

Flanking the Administration Department are blocks containing accommodation for the attendance, with the usual mess rooms and recreation rooms.

Attendants' Infirmaries are provided on the first floor above the Dispensary Block.

The Patients' Recreation Hall measures about 100 feet by 50 feet, and is provided with a stage.

The Water Tower rises to a height of 150 feet, and is a conspicuous landmark. It contains high level cold water storage tanks and various other tanks and fittings in connection with the Engineering Department.

The Central Boiler House contains five Lancashire boilers, which generate steam for the electric lighting, heating, cooking, and laundry work.

All steam and water mains and electric cables are conveyed in sub-ways underneath the corridors of communication.

The exhaust steam from the electrical generating plant is utilised primarily for the hot water supply, and secondarily for the heating.

The hot water is circulated throughout the buildings by means of pumps.

Ventilating radiators are provided in the various rooms, fresh air being introduced from without, and becoming warmed as it passes over them. Vitiated air is extracted by means of electrically-driven fans.

The Heating, ventilation, hot water supply, bakery, and cooking apparatus have been installed by Messrs. G. N. Haden & Sons, of Trowbridge.

The total number of lights in the whole of the buildings is approximately 3,600.

The Lighting includes the main buildings, chapel, Medical Superintendent's residence, and nine cottages. There are also installed 21 motors of various sizes for driving ventilating fans and other machinery.

The lighting is arranged upon two circuits, namely, main circuit and auxiliary, and by this means the main circuit controls two thirds of the lighting in each section, the other third being connected to the auxiliary, so that it is possible for the whole of the lights to fail at one time, thereby affording a certain amount of protection. The switches are arranged in such a manner that if one circuit failed, the whole of the lights would be transferred to the other.

Current is generated by 2 150 K.W. Bellis-Siemens Steam Dynamos, and for standby and light load purposes a 1,000 ampere hour Tudor Accumulator Company's Battery has been installed. In connection with the battery there is a small Booster for charging purposes, and end cells and "Trumpy" switch for automatically keeping constant pressure when discharging.

The whole of the installation is controlled by a switchboard consisting of 18 panels, situated in the engine room.

The Detached Buildings consist of Medical Superintendent's Residence, lodge, residences for the Steward, Clerk of Works, Engineer, and Gardener, and six cottages for married Attendants. The whole of these front the Merthyr Road with the exception of the Medical Superintendent's house, which occupies the site of the old house formerly known as Velindre.

The chapel, which seats about 300 persons, is a building of the simplest possible character and construction, and is placed some distance to the north of the main buildings.

The buildings, generally, are of a plain and simple character. They are built of red brick, relieved in some instances by bands of buff bricks, and in the case of a few of the more important features as, *e.g.*, the Entrance and Official Block, and the upper portion of the water tower, by stone dressings. The external walls are in most cases built hollow.

The ceilings immediately underneath the roofs in the Ward Blocks are of fire-proof construction.

Every part has ample provision for escape in the case of fire. Staircases are provided at both ends of all Wards."

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