

Hodkin and Jones: a Legacy Cast in Stone? An Investigation into the Significance of Concrete in Domestic Buildings in Britain during the Late Nineteenth and Early Twentieth Centuries

Tegwen Roberts

INTRODUCTION

We have passed through what has been termed the steel age, and are now in the concrete age.

(Associated Portland Cement Manufacturers, 1912 p. 4)

Concrete is the characteristic constructional and architectural material of the twentieth century (Trinder 1992, p. 169). However, the historical development of domestic concrete during the late nineteenth and early twentieth centuries is as yet poorly understood (Lawrence Hurst pers. comm. 2004). It has generally been assumed that the widespread use of concrete in domestic buildings was not really seen in this country until the First World War (Mark Watson pers. comm. 2004). Contemporary documents suggest that this is not necessarily true. Recent case studies suggest that the use of concrete in domestic buildings in Britain may have been much more widespread at a much earlier date than is usually assumed. They also suggest that the remains of concrete work in domestic buildings may be extremely significant in illustrating the way concrete was understood and viewed, both as a structural and ornamental material, during the nineteenth and early twentieth centuries. This paper considers the case study of Hodkin and Jones, a “fibrous plaster and cement” manufacturing company working in Sheffield in the late nineteenth and early twentieth centuries, and investigates the potential significance of a number of reinforced concrete structures surviving at the site of the company’s works, built c.1900.

THEORETICAL BACKGROUND

Although it is widely accepted that concrete was used in foundations, and on large civil engineering projects throughout the nineteenth century (Chrimes 1996), it is often assumed that concrete was not widely used in domestic buildings in Britain until the First World War, when there was an increased demand for cheap housing, and a need to find new and more economic types of building materials.

There are a small number of recorded examples of concrete houses from before the First World War, but these have traditionally been dismissed as being few in number, and have been recorded more for rarity value rather than anything else (Stratton 1997). However, this paper suggests that

these assumptions are not necessarily justified, and that the use of concrete in domestic buildings in Britain has a much longer history, which in recent years has remained largely unexplored (Lawrence Hurst pers. comm. 2004).

BRIEF HISTORY OF CONCRETE

Artificial Stone

Concrete is produced by mixing aggregate, sand, and a binder such as cement or lime, which then sets to form an artificial stone-like material which is strong under compression, but on its own has relatively little tensile strength (Newby 1996, p. 264). It was first introduced into Britain by the Romans, however, after the Roman period its use declined, and it was not until the mid-eighteenth century that interest in concrete was really revived (British Cement Association 2004, <http://www.cementindustry.co.uk>).

The first hydraulic lime-based cement, patented by James Parker in 1796, was known as Roman Cement, and was widely used in footings, and as a waterproof mortar in brickwork for important buildings, and civil engineering projects from the late eighteenth century onwards (Hurst 1996, p. 284). During the same period, there was a growing interest in attempts to replicate natural stone in decorative plasterwork and rendering. One of the first known attempts at reproducing stone was “Coade stone”, patented in 1769, and used until around 1840 (Dawson 1995, p. 27).

In the late eighteenth century (after the introduction of Parkers Roman Cement), the term “Artificial Stone” gradually became synonymous with items cast from cement and aggregate, a mixture also known as pre-cast concrete (Dawson 1995).

During the nineteenth century, cement and textured plasters were used to produce a wide variety of surface renders and decorative pre-cast mouldings and panels to be used in place of natural stone. They were also used to produce regular-sided concrete blocks, which could be produced easily in metal, or wooden moulds (which required little technical skill) and then used in the same way as brick or natural stone. Concrete blocks were also used to face mass concrete walls, which were either pre-cast (e.g. in panels), or cast “in-situ” using a variety of different formwork systems. A number of these systems were patented in the period c.1860-80, and were advocated as being particularly suited to the construction of cottages and workers’ dwellings (Hurst 2001, p. 33).

Domestic buildings constructed using these systems are known to exist from as early as the 1830s (Stanley 1987, p. 21). However, during most of the nineteenth century, concrete appears to have been used independently by individual entrepreneurial builders operating in different areas, and although the use of concrete seems to have increased considerably in certain areas, it does not seem to have become particularly widespread (Stanley 1987). This began to change during the later part of the nineteenth century, as artificial stone became increasingly popular as a cheap building material, and ideas of reinforcement began to be introduced (Hurst 1996).

Reinforced concrete

The idea of joining metal with concrete to create a reinforced structure was first patented by William Boutland Wilkinson (of Newcastle) in 1854. However, this patent attracted little attention, and most of the known work on reinforced concrete in the mid- to late- nineteenth century took place in Europe and America (Bussell 1996a, p. 295). The first fully reinforced concrete structure in Britain was Weavers Mill in Swansea, built in 1897, using the Hennebique system, developed in France by Francois Hennebique in the late nineteenth century (Bussell 1996a, p. 301).

The Hennebique system eventually became the most popular, and the most widely known reinforced concrete system in Britain, however there were many other individual, and experimental, proprietary systems which were developed and patented in Britain during the same period, and which continued to flourish until the end of the first World War (Bussell 1996, p. 295). In the beginning most of these systems were concerned with the manufacture of floors, ceilings, and foundations. There were precedents for this in the earlier part of the nineteenth century when concrete had increasingly been used in fire-proof construction for floors, ceilings and beams (Cusack 2001, p. 155).

The first concrete floor was patented by Henry Hawes Fox in 1844, and it involved a cast-iron T-joist and a timber lath framework, which was then covered with concrete. His design, which was marketed by James Barrett, proved to be extremely popular, and “Fox and Barrett” floors were used in many buildings built as late as 1885, or even 1890 (Hurst 1996, p. 286). Contemporary sources suggest that a “great number” of similar systems were also developed (Webster 1891). However, these early ferro-concrete systems generally used concrete as an infill between cast iron or wrought iron beams, without the interaction of the two materials being fully realised, or understood (Sutherland 1996, p. 258). It was only in the later part of the nineteenth century that the composite action of concrete with bars and filler joists was first used consciously, and calculated mathematically (Sutherland 1996, p. 258).

In the period c.1885-1910 general understanding and use of structural concrete in Britain developed rapidly (de Courcy, 1987), as did its popularity. Between 1897 and 1908, over 130 reinforced concrete framed buildings were built in Britain using Hennebique’s system, along with many other structures, including bridges, reservoirs and industrial projects (Cusack 2001, pp. 159-60).

During the early years of the twentieth century reinforced concrete was readily embraced by many large commercial companies, including dock and harbour companies and co-operative societies, and also by the government (Bussell 1996, p. 302). There is also contemporary documentary evidence for an increasing use of concrete in domestic buildings at the same time. For instance, there is an article in *The Builder*, from 1903, giving details of a concrete housing scheme in Liverpool which had been proposed to provide affordable accommodation for the “dispossessed slum population” (1903, p. 175).

In 1912 the Associated Portland Cement Manufacturers claimed that in the first decade of the twentieth century a large number of bungalows, cottages, houses, barns, sheds along with many other types of structure had been made using concrete. Concrete was considered to be “specially applicable” to the erection of cottages for “agricultural labourers, farmers, estate agents and the like” (APCM 1912, p. 186), because, as seen in the earlier nineteenth century, walls and floors could be produced on site relatively easily and cheaply by unskilled labourers, either pre-cast into block form, or cast in-situ (APCM 1912).

As concrete gained in popularity during the first decade of the twentieth century, there was also an increasing concern with regulating the use and design of structural concrete, particularly in terms of fire resistance and acceptable stresses. The first codified design method for reinforced concrete appeared in 1915, in the form of the London County Council’s Reinforced Concrete Regulations (Bussell 1996b, p. 317). These regulations were not widely implemented until after the First World War, however they heralded the end of the “golden age” of the proprietary systems seen in the late nineteenth and early twentieth centuries (Bussell 1996a, p. 315).

Summary

The use of concrete in buildings in this country began to develop in the mid-eighteenth century. This development was both gradual and sporadic, as the nature of the material and its structural capabilities was not widely understood (Stratton 1997), and before the early twentieth century the design and construction of reinforced concrete was a specialist activity, done on the basis of empirical knowledge (Cusack 2001). The first British textbook on concrete, *Reinforced Concrete*, by CF Marsh, did not appear until 1904. In 1906 the Royal Institute of British Architects appointed a committee to review the use of reinforced concrete in Britain, and their first report was published in 1907 (Bussell 1996b, p. 317). Before this, the development and implementation of concrete systems had been almost wholly unregulated (Sutherland 1996).

Contemporary records suggest that, through the second half of the nineteenth century, concrete became increasingly popular for both practical and economic reasons, and an increasing number of specialist concrete firms began to produce cement and artificial stone for use in buildings, and other structures. The activities of a number of these concrete manufacturers, many of which were regional, relatively small-scale initiatives, often driven by an enterprising individual, or group of individuals, continued into the early years of the twentieth century, when national regulations and codified designs began to be introduced, allowing a greater number of companies to produce concrete structures much more easily, and cheaply.

Little historical work has been done on the development of these early British concrete specialists. The large-scale introduction of fully reinforced structures during this period, by designers such as Hennebique and Mouchel, who were working on a national scale, often for large corporate and commercial organisations, is comparatively well documented. However, the work of contemporary

British companies, who were also producing structural concrete, albeit on a smaller and more localised scale, is an area of research that has largely been neglected (Simon Swann pers. comm. 2004).

Although there is a wide range of contemporary sources for cement and concrete production in Britain from the beginning of the twentieth century onwards, there is relatively little detailed information about the actual development of ideas, and the distribution of structural concrete, both pre-cast and reinforced, particularly in domestic buildings before the middle of the twentieth century (Sutherland 1996). Unfortunately, early concrete structures are often not recognised for what they are (Cossons 1993, p. 159), and the significance of early structural concrete in buildings in general has not been widely appreciated (Simon Swann pers. comm. 2004). This is demonstrated by the site of the Havelock Bridge Works in Sheffield.

CASESTUDY: THE HAVELOCK BRIDGE WORKS

Description

The Havelock Bridge Works, formerly the premises of Hodkin and Jones, a fibrous plaster and artificial stone manufacturer from Sheffield, is situated just south of Sheffield City Centre, grid reference SK355 855.



Figure 1. Houses at North West end of Queens Road terrace (March 2004).

The site is on a corner between Queens Road and Myrtle Road, bordered by the Sheaf River and the Midland Railway. The current layout includes a number of works buildings and an open yard,

behind a frontage of terraced concrete houses and a ground floor shop-front, facing onto Queens Road. The houses are two-storied and mostly brick built, but with a front elevation made entirely of regularly coursed artificial stone blocks (**fig.1**). The lintels of the doors and windows of these houses are also made of artificial stone, with a smoother surface finish, and reinforced bars through the middle (**fig.2**). They have a distinctive, indented floral design.



Figure 2. Lintel of Queens Road house, showing corrosion of internal reinforcement (March 2004).



Figure 3. Myrtle Road House (March 2004).

At the NW end of the terrace there is a cart-way with artificial stone setts, leading to a doorway made of rendered brick with artificial stone detail (**fig.4**). The associated building, made of rendered concrete blocks and reinforced concrete, is still visible in the yard behind, retained within the later warehouse that now stands on the site. This warehouse also incorporates part of an early concrete slab wall with visible cast iron supports (**fig.9**).



Figure 4. Decorative Plaster on doorway behind Queens Road frontage (March 2004)

On the SW side of the site there is another row of terraced houses which face out onto Myrtle Road. These houses are brick built, with artificial stone lintels, with a plain embossed circular design in the middle. The foundations of these houses are built up along the SW edge of the works yard and comprise load bearing brick walls with reinforced concrete floors above, original cast iron or steel supporting joists, and concrete arches (**figs.6 and 7**). Externally, the NW gable wall of the Myrtle Road terrace has plaster decoration similar to the adjacent gable wall of the Queens Road houses. This corner of the site is also surrounded by a low wall made of artificial stone blocks, of the same dimensions as those seen in the Queens Road frontage. The wall originally had a concrete balustrade (seen in an archive photo from 1962), which is now missing. There is a large concrete sign at the back of the site, facing the railway. It reads “Hodkin and Jones, Sheffield Concrete Works” and is reinforced with a cold-worked steel bar (cf. Bussell, 1996), which is visible in one corner where the concrete has spalled.

Historical development of the site

Hodkin and Jones was established in 1868 by Herbert Hodkin, a plasterer from Sheffield. He went into partnership with William Jones in 1881, and together they traded as “Plasterers, white washers and layers of encaustic tiles” from a property in Bramall Lane (Pawson and Brailsford 1884).

In 1889, the firm established a central stores at 51 Blonk Street (which was later expanded). In 1895 they opened another centre at 426 London Road, which was then moved to the Havelock Bridge Works site on Queens Road around 1900 (Graham Hague, pers. comm. 2004). The works first appears on the Ordnance Survey map in 1903, and is given as the address of Herbert Hodkin on a patent application dated 25th June 1900 (Patent Spec. No.1462).

The main site appears to have been more or less built in one phase, over a period of no more than a couple of years. The houses on Queens Road and Myrtle Road gradually appear in the local directory listings between 1900 and 1905. The earlier Ordnance Survey maps show that before this the area was occupied by garden plots and a small number of dwellings. The site was built alongside the Midland Railway (which opened in 1870), and had its own railway sidings. These railway lines have now disappeared, and two of the larger works buildings have been replaced by later warehouses. The houses appear to be largely unaltered from the outside, although the main Hodkin and Jones building, at the SW end of the Queens Road terraces, has been substantially extended at the back, and has a modern inserted shop frontage at ground floor level.

Hodkin and Jones vacated the site in the early 1990s, although they are still trading from a site in Dronfield, and the Havelock works is now occupied by Keyline Builders Merchants.

Documentary Sources

There is no known company archive, and the historical evidence relating to the early years of the Hodkin and Jones firm, and the Havelock Bridge site, consists of a small number of official documents, trade advertisements, and contemporary journal references.

Some of the earliest references to the firm, outside of the street listings, are two trade advertisements in the Pawson and Brailsford directory for Sheffield in 1889 (**fig.5**) which advertise the firm’s Tile Pavements and Concrete Floors, along with a variety of plasters and cement based products. The concrete floors are advocated as being “Fire-proof, damp-proof, vermin-proof, sound-proof and everlasting” (Pawson and Brailsford 1889).

Another advertisement for the firm can be found in White’s directory of Sheffield and the surrounding area from 1903. This advert describes the company as concrete workers, specialising in fireproof floor construction and “concrete masonry of all descriptions” (White 1903, p. 21).

There are also a number of patent applications under the name of Herbert Hodkin, from the years between 1895 and 1907. The first, dated 14th August 1895, is for “Improvements in the

Manufacture of Concrete Paving Slabs, and in the Machinery therefore” (Pat. Spec. No.15264). Two other patents, from 1900 and 1903, set out details for different methods for constructing reinforced concrete walls. The earlier patent (from 1900) relates to partition walls made from interlocking slabs of plaster (fig.8).

ESTABLISHED 1868.

HODKIN & JONES,
BUILDING MATERIAL
MERCHANTS,

Agents for Messrs. G. & T. EARLE'S Celebrated
PORTLAND AND ROMAN CEMENTS.

WHOLESALE DEALERS IN

SLATES, RIDGE TILES, PLASTER, SUPER-FINE PLASTER for Dentists, Silversmiths, &c., KEENE'S CEMENT, MASTIC CEMENT, LIAS LIME, LATHS, NAILS, HAIR, LIME, TRENT SAND, WHITING, TILES, &c.

Sole Agents in Sheffield for the ADAMANT Co.'s
PATENT PLASTER & CHROMOLITH
FOR WALLS AND CEILINGS.

Get Best Materials kept in Stock, at Lowest Prices.

Central Stores—BLONK STREET, } **SHEFFIELD**
 Office—BRAMALL LANE, }

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HODKIN & JONES,
 BRAMALL LANE, SHEFFIELD.

LAYERS OF
TILE PAVEMENTS
 AND
CONCRETE
FLOORS

FIRE-PROOF
DAMP-PROOF
VERMIN-PROOF
SOUND-PROOF
EVERLASTING WEAR

Nothing better for WAREHOUSES, WORKSHOPS, IRON STORES, CELLARING, YARDS, GARDENS, PLAY GROUNDS, ENGINE BEDS, &c. It is especially adapted to STABLE FLOORS, having no joints to hold objectionable matter.

NOTE.—Concrete can be made to span any area.

PLASTERERS', SLATERS' AND BUILDERS' MERCHANTS.

NOTE THE ADDRESS—

Office—BRAMALL LANE, } **SHEFFIELD.**
 Stores—BLONK STREET, }

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Figure 5. Trade advert from Pawson and Brailsford Directory of Sheffield, 1889.

Another patent application from 1903 sets out “Improvements in or relating to the Construction of Concrete Floors and Ceilings” (Pat. Spec. No.25492). This floor design uses an unusual corrugated reinforcing system, and appears to have been relatively successful. It is mentioned in a number of contemporary journals from 1907 onwards as one of 20 “well-known” British systems of reinforced floor design.

In reference to the Hodkin and Jones floor system, the Concrete and Constructional Engineering journal (CCE) from 1907 states:

This [system] consists in the reinforcement of concrete slabs with special bars having 3 corrugations in their width. By affording resistance to tension in the concrete these bars obviate the use of rolled steel joists. They are placed on edge, and are fixed in position either by being built into the walls or when resting upon steel girders by means of a specially pierced and bent plate slotted over the butting ends of the bars.

(CCE vol. 2 1907, p. 435)

Another reference, in the same journal, also describes the company's artificial stone:

Hodkin and Jones, Ltd. of Sheffield, make artificial stone for dressings of hard limestone with sand and Portland cement, the latter specially manufactured for the purpose. The usual colour of this stone is a warm buff, but any tint can be matched. Plain material can be delivered in about 14 days and moulded work in two or three weeks, and the price averages 3s. 6d. to 4s. per cube ft. For staircases, etc., a wear-resisting material is made by the employment of Leicestershire granite instead of limestone.

(CCE vol. 2 1907, p. 68)

METHODS OF CONSTRUCTION

There are no documentary records relating directly to the construction of the site, and because of the nature of reinforced concrete, and the current state of the site, it is hard to determine exactly how some of the buildings were constructed. However, there are a number of noticeable features that appear to be of immediate significance, in terms of both structural and social considerations.



Figure 6. Concrete jack-arch floor supporting the yard of the Myrtle Road houses (March 2004).

Queens Road Frontage

The most visible external feature of the site is the Queens Road frontage. Despite the use of artificial stone, the Queens Road houses are built very much in a traditional, local style. Many of the "stone" terraced houses in Sheffield are brick-built, but with a stone facing wall. The Queens Road houses are no different, except that their frontage is made from handmade artificial stone blocks, known as Hodkin and Jones Rockies, which were produced by the company in wooden moulds at the Havelock Bridge Works site (David Monks pers. comm. 2004).

It has generally been assumed that the Queens Road houses were built as workers' housing (Graham Hague per. comm. 2004), however contemporary evidence suggests that this is unlikely. The street listings suggest that, although some of the houses were used by workers from Hodkin and Jones, many of them (and also the houses on Myrtle Road) housed tram drivers and other tradesmen. At the time that the houses were built in 1900 Sheffield was already an urban city. There would therefore have been no real need for companies to provide special workers' accommodation (Graham Hague per. Comm.. 2004.). It therefore seems more likely that the Queens Road, and the Myrtle Road houses were built as speculative housing, something that happened in many urban areas during the late Victorian and early Edwardian periods (Bowyer 1973).

It may be suggested therefore, that these houses were partly intended as an advert for the company both as an endorsement of their products, and of their expertise. The choice of artificial stone blocks in place of stone may also have been partly one of economy. However, the fact that the main part of the buildings was made of brick does suggest that the external artificial stone work was intended for show, something which is also a feature of the entrances into the site. The back walls of the houses, facing the main yard, are plain brick, however, the gable walls, which flanked the main entrances, were originally covered in plaster, which hides the brick underneath, and gives the impression of stone. In the same way, the office doorway (**fig.4**) is made from brick covered with plaster, and pre-cast artificial stone pieces, to give the impression of a stone façade. The walls surrounding the doorway are also rendered with cement on the outside, and etched to give the impression of ashlar blocks.

Myrtle Road

In contrast with the traditional-style exterior, the interior of the site is more innovative in design. As mentioned above, the Myrtle Road houses, which have no obvious external concrete features (all but one of the concrete lintels are painted), are constructed on a series of reinforced concrete floors. These floors are a significant feature in themselves. There are very few detailed technical drawings, or records relating to specific examples of early proprietary systems (Sutherland 1996). The only remaining record of many of the proprietary systems of concrete floors and ceilings that developed through the nineteenth and early twentieth century is through patent designs and occasional journal references (Sutherland 1996). These records are useful, but they rarely provide a full picture, particularly in terms of the development and application of ideas and technology (Stratton 1997). The floors beneath Myrtle Road are therefore of particular significance in that, combined with the patent records, they could potentially provide a much more complete picture of empirical knowledge and understanding within the company at the time of their construction.

The Myrtle Road floors are all slightly different in design, and may represent experimental prototypes of the patent Hodkin-Jones design from 1903. As mentioned earlier, much of the concrete work done at this time was done on the basis of empirically derived knowledge, and although this began to change during the first part of the twentieth century, at the time the Havelock Bridge site was constructed there were no codified methods of design.

Other features

The other reinforced concrete structures on the site all appear to use slightly different methods of reinforcement. Behind the plastered façade described above, the office building at the NW end of the site has a lower storey made of concrete blocks (rendered on the wall facing the passage), and an upper storey made of reinforced concrete, with a rough textured ‘panelled’ surface. There is also a wall made of concrete panels with cast-iron supports, a design which appears to be similar to that described in Hodkin’s patent.



Figure 7. Concrete floor supporting Myrtle Road houses (March 2004).

SIGNIFICANCE OF THE SITE

The use of artificial stone blocks in the Queens Road Houses is not unique in itself. Documentary evidence suggests that stone blocks were being produced in this way throughout the nineteenth century (Hurst 1996). There are a few known examples of concrete block buildings still in existence, for instance, there are a number of concrete houses in Shrewsbury c.1909-14, built from “Cyclops” concrete stone, supplied by a local company G. & W. Edwards (Trinder 1996). However, in general, documented examples of concrete-block walls and houses are rare, especially from the late nineteenth and early twentieth centuries. This seems strange when the numerous contemporary sources, particularly from the early twentieth century are looked at, which suggest that pre-cast concrete, and concrete blocks in particular, were actually becoming increasingly popular, and were being widely used in buildings at this time. The CCE journal from 1908 includes an entire section on artificial stone blocks, with the preface that:

So many enquiries reach us as to the artificial stones available, and their component parts, that we herewith present some general information, together with the particulars of some

of those well known on building and engineering works...In plain work, artificial stone cannot always be very economically used, but the use of this material for paving and internal construction is largely on the increase.

(CCE 1908, p. 60)

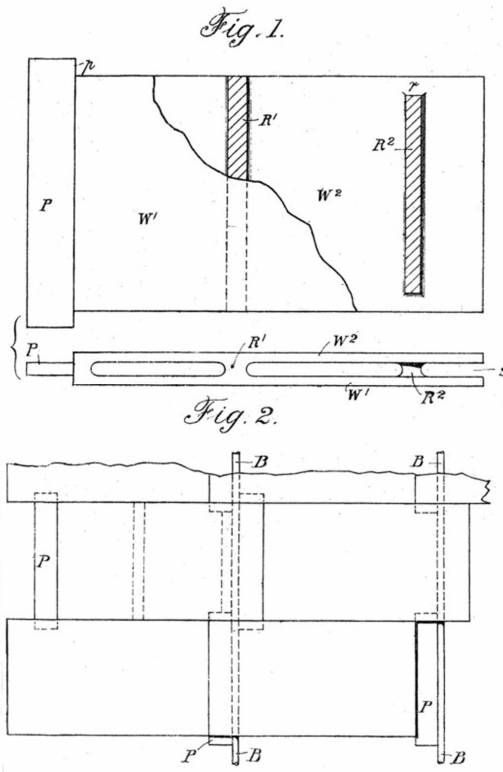


Figure 8. Illustration from Patent Specification No.11,462. Fig.1 shows a side view and an edge view of one of the slabs. Fig. 2 shows a number of slabs (on a smaller scale) put together.

This corresponds with a number of contemporary trade adverts which suggest that a lot of the concrete work at this time, particularly in low-key, domestic buildings, may have been internal and therefore hidden from sight. This evidence may partly explain why there are, as yet, few recorded examples of domestic concrete work from the late nineteenth and early twentieth centuries.

As shown above, the historical evidence suggests that Hodkin and Jones were producing and developing a range of concrete systems and products during the late nineteenth and early twentieth centuries. They appear to have been relatively successful because their business expanded throughout the period, and indeed still exists today. Unfortunately, records of their other work are scarce. Some evidence does exist, including their earlier works building on London Road, which

has an ornate, plaster moulded façade incorporating decorative pillars and lintels, dating to around 1895. There are also a number of lintels matching those used on the Myrtle Road houses on some of the pre-war housing on Burcot Road in Sheffield, and on Middlewood Road in Oughtibridge, on the North side of the city. This illustrates the potential importance of sites such as the Havelock Bridge Works in recognising other examples of early concrete use in domestic buildings, which might otherwise go unnoticed.

As shown above, the Havelock Bridge Works site is also significant because of the examples of early reinforced floor and wall construction, which date from a period in which no regulations existed for the use of structural concrete, and about which relatively little is known. However, despite its significance, the site is not currently protected. Many of the buildings are in a poor state of repair, and the central part of the Queens Road frontage has recently been condemned. The rest of the buildings are threatened by the possibility of a full redevelopment of the site. An application for listing has been turned down, and the site was overlooked in a recent English Heritage survey of the city (Graham Hague pers. comm. 2004).



Figure 9. Detail of cast iron column in concrete panel wall (March 2004).

DISCUSSION

The significance of early concrete buildings in general has begun to be recognised more in recent years, and there have been a number of recent restoration projects on concrete buildings. An example is at Castle House in Bridgwater, Somerset, which is one of the earliest known surviving large-scale attempts at building a façade with pre-cast elements, built c.1850 by John Board, a

Somerset cement manufacturer (Simon Swann pers. comm. 2004). Another example is the church of St. John and St. Mary, in Goldthorpe, South Yorkshire, which was built 1914-6 by Albert Nutt, using his patent running concrete cast formwork, and which received a large Heritage Lottery Grant for full restoration in 2002 (<http://www.wam.ndo.co.uk/stmary.html>).

However these projects have tended to be for historical “one-off” buildings, associated with particular individuals, or systems (Brian Murless pers. comm. 2004). No-one has really considered wider patterns in the use and technological development of domestic concrete, particularly in the period of expansion between 1885-1910 (Stratton 1997). As seen in Sheffield, examples of domestic concrete, particularly from the later nineteenth and early twentieth centuries are often not recognised, and in recent years, despite a general lack of knowledge about concrete during this period, little work has been done towards their preservation, protection, or investigation.

One of the significant things about the Havelock Bridge Works site, is the way in which different types of structural concrete were combined, apparently for various practical and economic reasons. The Queens Road and Myrtle Road houses together illustrate the way in which, in the nineteenth and early twentieth centuries, concrete might be used structurally within buildings, and in conjunction with more traditional building styles, and materials, and thus be disguised, or hidden externally. These are issues that have not really been studied yet in any great detail (Lawrence Hurst pers. comm. 2004).

An important thing to note is that examples of early concrete may not be what we now would immediately recognise as concrete. For instance, it is not widely realised that many of the painted decorative features on late Victorian and Edwardian speculative housing are of pre-cast concrete, used as an economical and more durable substitute for the soft, easily carved stone alternative (Hurst 1996, p. 291).

Concrete was generally used for practical reasons, because of its cheapness, durability, adaptability and fireproof nature, and only for ornamental reasons in an attempt to replicate stone. Concrete itself did not become an acceptable surface finish for buildings until after the 1930s (Barry 1971, p. 66). As demonstrated in Sheffield, it is likely that there are many more examples of earlier pre-cast work hidden underneath paint and render (Lawrence Hurst pers. comm. 2004), or early reinforced work hidden behind external skins of brick and more traditional masonry (Stratton 1997).

The other significant thing about the Havelock Bridge Works site is the potential it has to contribute towards our understanding of technological development and general applications of reinforced concrete in Britain during the late nineteenth and early twentieth centuries. This is an issue that has received more attention in recent years, although as seen at the Havelock Bridge Works, the significance of this type of structure is still not widely acknowledged in general terms, and the issue of recognition is still a difficult one.

FINAL SUMMARY

There was a growing interest in the use of concrete during the nineteenth century, as a cheap alternative to stone, and as an easily manipulated, fire-resistant material. These properties made it ideal for use in small-scale buildings and domestic dwellings, as shown in the contemporary literature of the time.

The use of concrete in domestic buildings began in the mid-eighteenth century. However this adoption was probably quite sporadic, and pioneered by small groups, or individuals, as opposed to being more widely accepted on a national, or even regional scale.

The period c.1885-1910 saw a widespread increase in experimentation by specialists, most of whom were probably still working on a local, or regional scale, but to a much greater extent than has perhaps been generally assumed. It seems that many of these groups were probably experimenting with all sorts of different uses for concrete, including proprietary reinforcing systems, and pre-cast blocks, panels etc, which were combined with (and therefore hidden within) more traditional methods of construction for reasons of economy and practicality. However the work of these specialists, and the significance of that work, has not really been recognised, or studied, until very recently. Early concrete, particularly in domestic buildings, is probably more common than generally assumed, however it is often not recognised, and even when it is, its potential significance is not widely understood, as demonstrated by the Havelock Bridge Works in Sheffield.

More work needs to be done in future, to identify, examine and record examples of early concrete and its uses, particularly in domestic buildings where it appears to have been widely used, but rarely recognised. It is only through a more detailed understanding of such sites that we can fully appreciate the historical development of a material that quickly became the characteristic constructional, and architectural, material of the twentieth century.

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