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**Richard Pennant, Samuel Worthington and the mill at Penlan
a history of the Penrhyn Mills on the Lower Ogwen**

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RICHARD PENNANT, SAMUEL WORTHINGTON, AND THE MILL AT PENLAN:

A History of the Penrhyn Mills on the Lower Ogwen

The primary purpose of this book is to provide a detailed description and history of Penlan Mill. However, as it states in the Summary, the history of the mill is not just about a building but also about the principal characters that were involved in its construction and development: in particular Richard Pennant and Samuel Worthington, both of whom are discussed later. Perhaps inevitably, since the book was published additional pertinent material has come to light (in addition to the typing errors!), which is incorporated into this essay. It also will be incorporated in the main body of the text at some future date as and when the book is revised.

In many ways the history of the mill is inextricably linked with the history of the Penrhyn Estate at Llandegai, which was one of the major Estates in north-west-Wales during the latter part of the eighteenth and early part of the nineteenth centuries; and as such the publication of this work goes some way to meeting the objectives of the Institute for the Study of Welsh Estates (ISWE);¹ which aims to promote research into the history, impact, and functioning of estates on a pan-Wales basis. Publication of the above titled work fully compliment the aims of the Institute and at the same time elaborate the hitherto untold history of the mill and the part it played in helping to introduce industry to Llandegai.

The mill is both unique and historically important as it was the only flint mill to be built in north Wales, as well as being what possibly was the first brick-built industrial building in Llandegai: being one of only three (possibly four) brick-built buildings in Llandegai at the turn of the nineteenth century; the others being the new manor house built for Richard Pennant by Samuel Wyatt in 1785 (the precursor of the present-day neo-Norman castle),

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the Penrhyn open-air Bath House built by Benjamin Wyatt in 1796 on the newly-constructed mole near Aber Ogwen,² and possibly Wyatt's own home, Lime Grove.³

The mill also had a direct link with the Herculaneum Pottery at Toxteth in Liverpool, in addition to which it had what David Gwyn believes to be a part of the first iron-railed overland edge railway of any length in the world, and the first iron edge railway built for the mass movement of stone. However, whereas James Boyd conjectures that originally the Penlan railway only extended from Port Penrhyn to the mill at Llandegai, pre-dated the Penrhyn Quarry Railway by three years, and was only later extended to the Quarry,⁴ Gwyn does not agree. Instead he believes that the Penlan line merely was an off-shoot from the Quarry Railway.⁵ At present there is no available evidence to confirm either theory, although there is a belief that prior to publishing his book on the Penrhyn Quarry Railways Boyd had obtained supporting documents which no longer are publicly available. Irrespective of the above it seems unlikely that the mill would have opened without an adequate transportation system such as some simple form of tramway being in place, and in this scenario it is likely that the problems encountered with the working of this system are what prompted Wyatt to adapt the system and introduce the iron-railed edge railway to which David Gwyn refers.

The book contains a detailed description and history of Penlan Mill from when construction began in 1796 through to its demolition in 1955 and combines an historical narrative together with a detailed archaeological report. This is thought to be beneficial as together they provide a full and detailed record as to the past and present state of the Penlan site, and at the same time help enhance understanding of the mill in relation to some of the other sites with which it was closely associated. The decision to incorporate snippets of

² As recorded during a site survey carried out by the author in October 2002.

³ There is no specific reference as to the material from which this was constructed and the only available illustration shows a rendered façade. However, it is known that brick was the building medium favoured by the Wyatt family.

⁴ J.I.C. Boyd, *Narrow Gauge Railways in North Caernarvonshire, Vol.II, The Penrhyn Quarry Railways* (Usk, 1985).

⁵ Personal correspondence dated 20th November 2017.

incidental and anecdotal information is also thought to be beneficial as it helps to provide a more complete and 'human' over-view of the people and events that form part of the history. For example, the reminiscences of children harvesting fish from the leat, the musings of a war time fire watcher, the murder carried out by a former employee at Cochwillan Mill, and the names of some of the people who lived or worked at the various sites, etc.

The book also contains detailed drawings of both plans and elevations, and these are supported by a comprehensive set of photographs that were taken during excavation of the site. Together they provide a full and extensive record of the building as it stood at the end of 2011 when the work was completed. It also contains a description of how both flint and corn mills work, and how Penlan Mill may have functioned during each of these incarnations; at the same time seeking to compare this with the material evidence found during excavation. This is thought to be important as there appears to have been very little written about flint mills, the exception being Robert Copeland's history of Cheddleton Mill.⁶ This is perhaps one area that could have been included in Martin Watts' otherwise excellent history of mills and milling.⁷

Important as Penlan Mill was in the industrial and economic development of Llandegai it did not exist in isolation. Prior to it being built milling activity had centred on what were known as 'The Penrhyn Mills' which comprised Felin Uchaf (Cochwillan Mill), Felin Isaf, and Felin Hen,⁸ but following the construction of the new mill at Penlan this altered. While Felin Uchaf and Felin Hen continued to operate as grist mills the role of Felin Isaf changed. For a short time the original grist mill continued to operate as before but an extension was added to accommodate a paint mill, with the colours it produced being shipped to the pottery in Liverpool. The minerals required for this included ochre which was mined by the Liverpool

⁶ Robert Copeland, *A short history of pottery raw materials and the Cheddleton Flint Mill* (Hanley, 1972).

⁷ Martin Watts, *The Archaeology of Mills & Milling* (Stroud, 2002).

⁸ Although Felin Hen does not lie on the River Ogwen it was part of what historically was known as 'The Penrhyn Mills', and had for a long time been leased together with the other mill properties. This was the case when the Liverpool merchants took out a lease on the mills in March 1800, and continued until Samuel Worthington retired in 1829.

consortium that included among its number Samuel Worthington,⁹ and which also took out a lease on the Penrhyn Ochre Mine. Shortly after this grist milling on the Felin Isaf site ceased and that portion of the building was converted as a timber saw mill, a role which it continued to fulfil until the site was sold in 1955.

Other operations such as the production of hone stones were introduced at the Felin Isaf site, and the consortium took out a lease on the quarry at Pen y Benglog from where the stone for this was sourced. Some time after Worthington retired Felin Isaf and its associated activities were taken over by the Penrhyn Estate and the site became what was known as the Estate Works. It was run by William Baxter and soon became known as 'Mr Baxter's Yard'. In addition to continuing with the manufacturing activities Mr Baxter also supervised the Estate's tradesmen, which among others included masons, carpenters, joiners, painters, and glaziers. They were responsible not only for the maintenance of the Estate's various properties but also carried out building work, such as the later conversion of Penlan Mill, and construction of the new Writing Slate Manufactory at Port Penrhyn.

While there is a good deal of information available with regard to grist mills there is far less relating to industrial mills in general and flint mills in particular.¹⁰ There are a number of possible reasons for this, the most likely being that whereas grist mills have been in existence for centuries industrial mills have only been introduced more recently. This is reflected, for example, in the 'Mills Open' handbook published by the Society for the Protection of Ancient Buildings, which out of 456 entries lists only two flint mills,¹¹ these being Thwaite Mills in Leeds and Cheddleton Mill. Apart from a history of Cheddleton Mill little else has been published.¹² There are a very limited number of websites dedicated to flint mills, with those available in addition to the above including Glasgow North

⁹ The members of the consortium are discussed in more detail later on.

¹⁰ For example, there is no mention in Mike Davies-Shiel, *Water Mills of Cumbria* (Nelson, 1978); D. Morgan Rees, *Mines, Mills and Furnaces* (London, 1969); or Martin Watts, op cit.

¹¹ Jim Woodward-Nutt (ed), *Mills Open: Windmills and Watermills Open to the Public* (SPAB, London, 2004).

¹² Robert Copeland, op cit.

Woodside,¹³ Etruria,¹⁴ Mosty Lea, and Higher Washford: this latter also being included in a work by Tony Bonson.¹⁵ A second possible reason for the dearth of information relating to industrial mills is that the industries tended to be localised. As the industries died the buildings were demolished without being recorded, and this included their associated mills. By contrast grist mills are still found throughout the country.

It is believed that the publication of this work has gone a long way toward rectifying the paucity of information that there has been hitherto, while at the same time providing a background to the non-Quarry related industrial development of Llandegai. This includes many of the key people involved, illustrating their relationships in a way that has not been pursued in previous publications. It also provides a complete and detailed archaeological record of the Penlan Mill site, this being based on excavation work mainly carried out between 2009 and 2011. This record is original and unique, and the work cannot be replicated as much of the material record has subsequently been demolished or buried following ongoing industrial development.

Originally excavation work began in 2005/6 but unavoidably had to be curtailed, and unfortunately it was during the interim period that a number of changes took place; perhaps the most significant being the change of ownership, which necessitated the establishment of new relationships in order to secure access.¹⁶ The site is neither scheduled nor listed and had been sold with planning permission for industrial development, and as it now forms part of a dynamic industrial enterprise change is inevitable. It was during periods of absence that much of the damage was done to the site, the most notable feature to be damaged being the unique leat, which was almost completely demolished. Had there been continuity in the excavation work possibly many of the features could have been more fully recorded.

¹³ <https://canmore.org.uk/site/44016/glasgow-125-garriochmill-road-north-woodside-flint-mill>

¹⁴ www.etruriamuseum.org.uk

¹⁵ Tony Bonson, *Driven by the Dane: Nine Centuries of Waterpower in South Cheshire and North Staffordshire* (MMG, 2003).

¹⁶ Since returning to the site in 2009 relations with the new owners, Eric Coulson and Gary Jones of Celtest Ltd, have been very good and they were supportive throughout the period of excavation.

A further consequence of the enforced absences was that there was a lack of continuity in the labelling of some of the various artefacts that were found, and in large part this was due to an unavoidable delay between them being bagged and recorded. The vast majority of the items found on the site (which are referred to in the book as 'Finds' and catalogued in Section 8) have no direct relevance to the mill as in the main they were deposited on the site as a result of 'fly-tipping'. They have merely been recorded for completeness and their possible value to future researchers who may have an interest in such items.¹⁷ For this reason a full photographic catalogue of the Finds is being deposited with Gwynedd Archaeological Trust and the local Archives at Bangor University and in Caernarfon, where they will be freely available for general access.

Section 3 of the book contains a detailed description of the mill describing each facet of the building in turn, and following the sequence west wall, south wall, east wall, north wall, floor area, etc. This approach has been adopted in order to ensure that no detail is omitted, and that where appropriate individual (excavation) grid references and photographs can be included. It is believed that the adoption of this format provides for a simple and logical presentation of the data, while at the same time including the maximum amount of detail. This is thought to be particularly important in view of the ongoing damage that is being done to the site, and the fact that this is the only opportunity to record what remains of the material record. It also aids discussion when attempting to interpret the site.

A large number of illustrations have been included in the book, including photographs, maps, and plans. It is believed that their inclusion is particularly important as in many instances they provide the only surviving record of the site. Furthermore, in order to simplify some of the text elementary maps or charts have been included: for example, Samuel Worthington's holdings rented from the Penrhyn Estate, the 'virtuous cycle' of his slate and flint related activities, and his relationship with some of the other principal characters. The decision to exclude photographs of the approximately 1067 'Finds' from the

¹⁷ Even from casual observation it is evident that the shape and pattern of various containers had altered over the course of 50 years; for example 'Bovril' and 'Hartley's' preserve jars.

main body of the report is based on two main considerations: the size of the file and the cost involved in printing it.

The decision to incorporate some earlier illustrations in the book is also thought to be beneficial, as it brings together in one document all of the relevant data; again helping create a full and comprehensive record of the Penlan site. This is particularly important as most of the buildings no longer exist and inclusion of these illustrations helps highlight the changes that have taken place in the intervening period. For example, the drawings made by Frances Llewellyn and her students in 1980-81¹⁸ from which it is evident that by the time excavation work began some of the features still present in 1980 had been removed or demolished. These included the wooden launder above the water wheel pit, an intact mill stone, a large brick archway and (what appeared to be) an oven, these latter two forming part of the former east wall. The one remaining water wheel and its mounting had also been removed.¹⁹

In terms of interpreting the mill site there is a complication in that while initially it was constructed to grind flint, in around 1835 it was converted to a corn mill, which made interpretation of the remaining structure and artefacts more difficult. Boyd's assertion that it was converted to a hone mill at this time is incorrect as all of the available evidence indicates to the contrary.²⁰ Hone stone production did take place at Llandegai, but on the adjacent Felin Isaf site: initially under Worthington and latterly by William Baxter on behalf of the Estate.

The difficulty in interpretation has been further exacerbated by the fly-tipping that had taken place following demolition of the main buildings, which necessitated the removal of many tons of waste material before work proper could begin. In addition damage to the remaining standing walls had been caused by the removal of trees and shrubs that had

¹⁸ PRN 6387, F.M. Llewellyn, Survey of Penlan Mill and Kilns at Port Penrhyn (1980-81).

¹⁹ PRN 6387, op cit.

²⁰ J.I.C. Boyd, op cit, p. 23.

taken root following demolition, and by the removal of several layers of over-hanging brickwork in the outer wall of the water wheel pit, which represented a major hazard to anyone working on the site.

While little remains of the mills in terms of the material record, over the years the Penrhyn Estate has maintained excellent paper records and many of the documents are now held by the Archive and Special Collections Department at Bangor University and the Gwynedd County Archive in Caernarfon. There is a wealth of information contained in these manuscripts which include details of the Estate Rent Rolls, the leases held by various tenants over a period of many years, accounts, and correspondence. Working from these it has been possible to compile a comprehensive and accurate record of what work took place, when, by whom, and in some instances at what cost. For example, it was from examination of these documents that it was possible to establish that Penlan Mill had been built in five separate phases, and over a period of approximately eighty five years, viz: Phase I the construction of the original flint mill, Phase II its conversion to a corn mill, Phase III the addition of a stable, Phase IV the addition of a warehouse and the building of the private railway siding, and Phase V extensions to the upper yard.

While some of the peripheral information contained in the book has been published elsewhere, for example that pertaining to the transport links, it nonetheless is thought that portions of it justify inclusion in order to provide the background to some of the events that took place: also to provide context and broaden understanding of the core material. The selection of what material to include has posed a number of problems. For example, much was written about Richard Pennant, and to a lesser extent Samuel Worthington and Benjamin Wyatt, by many of the travel writers of the time, including The Rev. Bingley,²¹ J. Evans,²² T. Evans,²³ Fenton,²⁴ Hyde Hall,²⁵ Rev. Williams,²⁶ and T. Pennant.²⁷ Of these the

²¹ Rev. W. Bingley, *A Round North Wales (Performed during the Summer of 1798)* (London, 1800).

²² J. Evans, *The Beauties of England and Wales* (London, 1812).

²³ T. Evans, *Walks Through Wales (2nd Edition)* (London, 1819).

²⁴ Richard Fenton, *Tours in Wales 1804-1813* (John Fisher, ed.) (London, 1917).

²⁵ E. Hyde Hall, *A Description of Caernarvonshire (1809-1811)* (Caernarvon, 1952).

work by John Evans has perhaps proved to be the most informative, in that he endeavours to describe in some detail the processes involved in their various enterprises: the flint mill in particular. As apart from manuscript documents and newspapers these are the main primary sources, to a large degree they have been extensively quoted in subsequent books and articles by previous authors,²⁸ and therefore it is believed that little is to be gained by merely repeating well-rehearsed material; other than where it justifiably illustrates a given point.²⁹ Unfortunately the reliance on these sources can also appear as plagiarism, although this is not the intention.

Where secondary sources are quoted they have been fully referenced and attributed to the original author. For example, the development of the transport links, where R.T. Pritchard has produced seminal work on the post roads in Caernarvonshire³⁰ and the Caernarvonshire turnpike trust;³¹ and James Boyd's study of the development of the Penrhyn Quarry and Llandegai tramways.³² Also Merfyn Hughes's very detailed history of the main Shrewsbury to Holyhead trunk road (the A5),³³ a topic also covered by Quartermaine, Trinder & Turner.³⁴ Similarly the work by Myrvin Elis-Williams on the history of Port Penrhyn, in which he has compiled a comprehensive record of the ships that were owned or shared by some of the principal characters involved.³⁵ Where possible their works have been enhanced by the inclusion of analytical comment.

²⁶ Rev. P.B. Williams, *The Tourists Guide through the County of Caernarvon* (Caernarvon, 1821), p.32.

²⁷ T. Pennant, *Tours in Wales* (Caernarvon, 1883).

²⁸ For example: E.H. Douglas Pennant, *The Welsh Families of Penrhyn* (Bethesda, 1985); Dr Marian Gwyn, www.spanglefish.com; Jean Lindsay, 'The Pennants and Jamaica', *Caernarvonshire Historical Society Transactions*, 43 (1982); Peter Ellis Jones, 'The Wyatts of Lime Grove, Llandygai', *Caernarvonshire Historical Society Transactions* 42 (1981); Peter Hyland, *The Herculaneum Pottery, Liverpool's Forgotten Glory* (Liverpool, 2005).

²⁹ For example, where the personality of Samuel Worthington is described, viz: John Evans, Richard Fenton, and E. Hyde Hall, op cit.

³⁰ R.T. Pritchard, 'The Post Road in Caernarvonshire', *Caernarvonshire Historical Society Transactions*, 13 (1952).

³¹ R.T. Pritchard, 'The Caernarvonshire Turnpike Trust', *Caernarvonshire Historical Society Transactions*, 17, (1956).

³² J.I.C. Boyd, op cit.

³³ M. Hughes, 'The Holyhead Road 1810-1842: A Study in Highway Administration' (Thesis, BU, 1963).

³⁴ Quartermaine, Trinder & Turner, *Thomas Telford's Holyhead Road* (York, 2003).

³⁵ M. Elis-Williams, *Bangor, Port of Beaumaris: The Nineteenth Century Shipbuilders and Shipowners of Bangor* (Caernarfon, 1988).

One problem that has been identified from consulting secondary sources is that on occasion a website is the only source available. A second problem is that in some instances it would appear that a number of un-substantiated misconceptions and anomalies have been perpetuated and where these have been identified they are commented upon. In such instances an attempt has been made to enhance the narrative by challenging some of these assertions, some examples of which follow. This is not to offer criticism of the author, but rather to try and ensure that they are not carried forward; particularly where the author is well respected and often quoted.

The book also includes much original and previously unpublished material in respect of some of the peripheral sites and activities: for example that relating to the alterations to the local roads and the bridges at Tal-y-Bont; an example of this being the book by the Rev. P.B. Williams in which he describes the alteration to the route of the turnpike road as it approached Llandegai Village, and in which he records with great felicity '*...a very great improvement and accommodation to the public'.....'the new piece of road, to the left, made to avoid that dangerous and ugly hill near the church'*'; attributing this work to Lord Penrhyn and Benjamin Wyatt.³⁶ He goes on to describe how the Demesne had also recently been enclosed by '*...a wall of considerable length, which is done in a manner deserving the example of others...'.*³⁷

The material relating to the Penlan private railway siding, the Penrhyn Iron Mine, the Timber Yard, and Felin Hen is also original and based entirely on new research, as I believe is much of the material relating to Cochwillan Mill. The material relating to Felin Isaf (the former saw mill and Estate Yard) is also entirely original as to my knowledge no previous history has been written on this subject. Of these entities only Cochwillan Mill still remains fully intact, whereas there are a few remaining structures at Felin Hen. Totally original work on the long forgotten but recently re-discovered late eighteenth century structure known as

³⁶ Rev. P.B. Williams, op cit, p.32.

³⁷ Ibid, p.36.

‘Occupation’ Road’ is also included, this in the main being entirely based on excavation work carried out in 2011

No detailed physical description of Felin Hen is included at this time as it is peripheral to the main subject. While a full and complete history of Cochwillan Mill is included a physical description is not, as the present owners have already included this in their website.³⁸ However, one new and important item that has been included is a refutation of the commonly held belief that once it was a fulling mill.

The detailed description of the Penlan Mill site includes not only the main buildings but also the water channels that pass through it. These channels perhaps are one of the more unique features with a total of eight passing through the site: three of these being on the surface and five lying beneath it; the below ground channels being found during the course of excavation. The material relating to these channels is entirely original, and what they illustrate is not only the uniqueness of the mill site, but also the ingenuity of the men who built them. They remain as a testament to their foresight and vision and for these reasons alone they deserve to be recognised. As John Vince puts it so well, *‘The industrial archaeologist is better spending his time sketching the water courses rather than a piece of machinery’*.³⁹ He argues that the layout of the sluice gates, water courses, and the disposition of the other buildings is at least as important as the mill building itself. Whereas the building may survive (albeit in a different form), the rest will not.

Whereas most water mills are located adjacent to a river or canal, or have a dam feeding them, the water supply for Penlan Mill was conveyed overland for approximately 600 metres via a purpose-built leat, the middle section passing through a brick-built tunnel. The same leat was designed to also provide the water supply to the adjacent mill at Felin Isaf with which Penlan was closely linked. The water was carried to Felin Isaf by means of a

³⁸ www.felincochwillan.co.uk

³⁹ John Vince, *Discovering Watermills* (Aylesbury, 1987).

stone and slate-built spillway. The spillway also provided water for an aqueduct which was constructed to take water to the smithy and slate works which were located in the lower yard, adjacent to Felin Isaf.⁴⁰ The spillway served a third purpose which was to carry away unwanted water from the site: a purpose it still serves today.⁴¹

The four below ground channels comprise the Penlan Mill tail race, a large central drain, a small drainage channel running directly from the body of the mill, and a culvert. The tail race and the central drain are both substantial brick-built tunnels, and meet to form one outlet feeding into the spillway and aqueduct. The small drainage channel appears possibly to have formed part of the drying process involved in the production of the ground flint. The original purpose of the culvert is not clear as today it acts simply as a drainage channel for excess water emanating from beneath the nearby hill at Bryn. However it is evident that its course has been altered by the construction of the Chester & Holyhead Railway, and that it was re-routed to avoid under-mining the rail bed. Possibly it may originally have provided the water supply to the smithy and slate works in the Felin Isaf yard, with the aqueduct being built to replace it once its route had been truncated. Another possibility is that originally it had provided the water supply for one or more of the nearby properties, although this is unlikely.⁴²

There is one further below ground channel which appears to have been a later addition. This is a large iron pipe that carried water directly from the leat to the turbines located at the Felin Isaf site.⁴³ The water from the leat passed via a dedicated sluice into a large brick-built sump, passing through an iron filter as it did so. The pipeline then ran parallel to the aqueduct and spillway directly to the turbine. Unfortunately most of the structure has been demolished, although fortuitously many of the salient features were photographed prior to this taking place.

⁴⁰ See BU/Penrhyn 192 (undated).

⁴¹ See BU/PFA/2/59, the lease between Penrhyn Estate and Lewis & Co, 1883.

⁴² Raymond Millbank, *The Highs and Lows of an Evacuee: North Wales 1939-45* (Private publication, 2006).

⁴³ BU/Penrhyn 192.

What the construction of these water channels demonstrates is the degree to which the entire project was engineered, as well as the combined ingenuity of the Penrhyn Estate's tenants and employees during the life of Penlan and the adjacent mills. Initially there was a problem with the water supply and this was overcome. As the requirements pertaining to the site altered the water system was adapted accordingly. Even major events such as the arrival of the Chester & Holyhead Railway were accommodated, examples being that special stone arms to carry the aqueduct were built into the support columns of the railway viaduct as it crossed above the Felin Isaf site; and when electricity was needed for the saw mill the turbine pipeline was laid.

By comparison with other contemporary flint mills Penlan was extremely powerful, and this was one of the features that made it attractive to the Silurian Iron Ore Company which leased the site during the First World War period.⁴⁴ It had two 20 foot diameter water wheels, both overshot/pitch-back and working in tandem to produce an estimated 96-98hp.⁴⁵ (Boyd quotes their diameter as 16ft⁴⁶, although this contradicts all of the available evidence, most notably the physical measurement recorded by Frances Llewellyn.⁴⁷) This compares with Mosty Lea Mill which had a single 18 foot diameter pitchback wheel;⁴⁸ Higher Washford Mill which had a single 14 foot diameter breastfed wheel;⁴⁹ and the mills at Cheddleton where the North Mill has a single low-breast wheel 22 feet in diameter, and the South Mill has a similar wheel with a 20 feet 5 inch diameter.⁵⁰ Because of its great power Penlan Mill was able to operate more than one grinding pan at a time. It was also capable of crushing iron ore, although there is no firm evidence to confirm that this actually took place on the site, and at the turn of the 20th century it was proposed that it should be used to generate electricity.⁵¹ This idea was abandoned, although water from its leat was used to power a turbine in the saw mill at the adjacent Felin Isaf site.

⁴⁴ BU/Penrhyn ms22870.

⁴⁵ Gwynedd XM9801/2.

⁴⁶ J.I.C. Boyd, op cit, p.8.

⁴⁷ F. Llewellyn, 'Penlan Mill, Tal-y-Bont and Kilns' (Undated), (Bangor).

⁴⁸ Kibblestone International Scout Camp, *Mosty Lea Cribsheet*; also a site visit on 16th August 2018.

⁴⁹ Tony Bonson, op cit.

⁵⁰ Robert Copeland, op cit.

⁵¹ BU/Penrhyn 192.

Unlike many other flint mills outside the main pottery producing areas such as Stoke-on-Trent, Penlan Mill was purpose-built from the outset, only later being converted to a corn mill. This contrasts with other similar buildings such as Cheddleton Mill in Staffordshire, and Higher Washford Mill at Congleton. At Cheddleton there are two mill buildings on the site, the North and the South. It is believed that originally the South Mill was a corn mill and converted for flint production, whereas the North Mill was custom built to grind flint.⁵² Higher Washford Mill began life as a corn mill, was first converted to a silk mill, and in the late eighteenth century converted to a flint mill, later being extended in the early and mid-nineteenth century.⁵³ Whereas it is known that Higher Washford Mill is three storeys high with a large basement area, it is not entirely clear what was the height of Penlan Mill after its conversion to a corn mill; although at the proposal stage there was discussion around additional floors being added.⁵⁴ It would seem most likely that at no time did it extend vertically to more than two storeys and an attic, which is in line with the mills at Cheddleton. Mosty Lea Mill near Oulton in Staffordshire⁵⁵ comprises only one story, but with the settling and drying processes taking place in the basement, and it is possible that originally Penlan Mill followed this model, with the additional stories being added at the time of conversion.⁵⁶ Like Penlan, the Mosty Lea mill was built in red brick with a tiled roof, and had been converted from a bone grinding mill to a flint mill.

Other features of Penlan Mill that are important are its siting, location, and power output. In common with many other mills, Mosty Lea being an example, it was built into a hillside, being what Mike Davies-Shiel calls a 'bank mill'.⁵⁷ This facilitated the loading of raw materials directly to the upper floor, thus minimising handling. Its location also provided easy access to both the Port (Penrhyn) tramway and, perhaps of more relevance post conversion, ease of access to both the Shrewsbury to Holyhead Road and the Chester to Holyhead Road; being linked to both of these by the newly constructed, but subsequently defunct and forgotten, 'Occupation' Road.

⁵² Robert Copeland, op cit.

⁵³ www.britishlistedbuildings.co.uk/101330335-flint-mill-central-part-of-higher-washford-mill-congleton.

⁵⁴ BU/Penrhyn PFA/12/17.

⁵⁵ History England List Entry No. 1293996.

⁵⁶ As established during a site visit on 15th August 2018.

⁵⁷ Mike Davies-Shiel, *Watermills of Cumbria* (Nelson, 1978), p.62.

Among the items found on site during excavation there were a number of small pieces of machinery that could give some indication of how the mill may have operated, although in most instances it is not possible to ascertain whether they relate to the flint mill or the corn mill. Those that can be specifically identified include a number of metal cups which had formed part of a grain-moving conveyor, a wooden-shafted grain moving screw and some pieces of tile from a grain-drying floor,⁵⁸ also several pieces of sieve mesh of varying size were also found, together with what appears to have been a wooden grain shovel.

Finds also included some metal wedges used for balancing the water wheels, and numerous bolts of various sizes, some of them very large. A large quantity of iron nails and a number of pieces of wire rope and some pieces of chain were also found, plus a piece of rounded slate ridging tile of a type that was unique to the Penrhyn Estate. There was also a heavy metal key or spanner which may have been used for operating the various sluices.

As a further example of how the Penrhyn Estate adopted new technology, shortly after the opening of the Chester & Holyhead Railway in 1848 a private railway siding was constructed adjacent to the mill site, and this remained in use until around 1960.⁵⁹ Originally it was built to facilitate the import of grain from England and this was its primary function until milling ceased at the turn of the 20th century. During the First World War period and through into the mid-1920s it was used for shipping iron ore, and during the Second World War for shipping pit props and other materials for the war effort. Materials for use by the Estate continued to be shipped through the siding until its closure.⁶⁰

While the importance of the mill cannot be over-stated it is important to recognise that it would not have been built without the relationship that existed between Richard Pennant,

⁵⁸ These have been identified by Peter Crew as type 9D/8+7A=106 which were made in Buckley, Flintshire. The only other site locally to have this same type of tile is Cochwillan Mill in Tal-y-Bont, located less than half a mile from Penlan: both of these mills being owned by the Penrhyn Estate. (Private correspondence 25th November 2015.

⁵⁹ J.M. Dunn, *The Chester & Holyhead Railway* (Oakwood, 1968), Appendix.

⁶⁰ See BU/ms29355; Gwynedd/XB.14.98; BU/un-cat, Penrhyn Estate Saw Mill Account April 1947-31st March 1951; BU/Penrhyn 138; BU/PFA/2/59.

owner of the Penrhyn Estate, and Samuel Worthington who represented the consortium of merchants that had acquired leases for developing the Estate's mineral rights.

While primarily this study is centred on a much shorter period the Penrhyn Estate had played an influential role in the life of the local community over many centuries, but perhaps not to the same degree. Its history has been traced back through the Griffiths family to the thirteenth century, although there was no direct lineage after the demise of Pierce Griffiths in 1628. It was during his tenure that the Estate became divided into two separate moieties, remaining as such for almost the next 160 years. The more recent history of the Estate under the Pennant family (later Dawkins-Pennant, Douglas-Pennant and then Douglas Pennant), begins in 1771, when Richard Pennant inherited one half of the Estate by marriage. In 1785 he purchased the remaining part of the Estate, reuniting it to its former state.⁶¹

Unlike the previous hereditary owners of the Penrhyn Estate Richard Pennant was English. He also was immensely wealthy and well educated, having attended Newcombe's Academy in Hackney⁶² before entering Trinity College Cambridge in 1754, age 17. He also was brought up in a business environment, taking a keen interest in his Jamaican plantations. Although he did not graduate from Trinity in 1758, age 21, he became a member of the Society for the Encouragement of Arts, Manufactures, and Commerce, which had been founded four years earlier.⁶³ While by instinct he appears to have been a merchant he seems to have devoted much of his time in pursuit of his political career. At various times he was Member of Parliament for Petersfield and Liverpool, his accession to the Liverpool seat being aided by his wife whose maternal grandfather was Dr. Edward Norris, MP for Liverpool from 1714-22; the family still having come influential connections in the Borough, and his wife, Anne Susannah, being renowned as a formidable canvasser.⁶⁴

⁶¹ E.H. Douglas Pennant, op cit.

⁶² Retrieved from https://en.wikipedia.org/w/index.php?title=Newcombe%27s_School&oldid=841290291"

⁶³ Oxford Dictionary of National Biography, Volume 43.

⁶⁴ Ibid.

In 1783 he acceded to an Irish peerage, which still allowed him to sit in the House of Commons. Although he became a member of the minor aristocracy he was not *of* the aristocracy and did not necessarily think like a traditional aristocrat; his main pre-occupation being the pursuit of his business interests which included the improvement and development of his slate quarry and estate at Llandegai, as well as his sugar plantations in Jamaica. His father, John Pennant, had amassed the family fortune through the sugar trade, slavery, and investment in the salt industry,⁶⁵ and Richard had been brought up to run these enterprises. As Jean Lindsay puts it, not only did he inherit his father's business acumen but also possessed '*a belief in the progress of mankind*'. He was happy to use slaves but they had to be valued and humanely treated, and as a demonstration of this he gave instructions to his Manager in Jamaica for some of the slaves to be apprenticed to various trades.⁶⁶ It is also reported that being aware of the suffering of slaves he sent ploughs to help ease their conditions.⁶⁷ In some ways this appears to seem contradictory to his stance in the House of Commons where, together with his fellow Liverpool MP, he spoke against the abolition of slavery.⁶⁸

Pennant was an innovator and improver but unlike some others from that time, for example Josiah Wedgwood, Abraham Darby III and The Rev. Edmund Cartwright, he was not an inventor. What he did possess was huge energy, drive, and vision, and he applied these abilities to the development of his newly acquired Estates in north Wales. First he formulated a three-point plan: to maximise the mineral wealth that lay beneath his lands; to radically improve transport facilities; and to improve agricultural land and increase food output. With the first of these in mind he quickly recognised the vast potential of his newly acquired slate quarry, which in many ways he could equate to his sugar plantations in Jamaica. In Jamaica the raw material was sugar, and in Llandegai it was slate. In both cases the problem was one of extraction and distribution. These problems had been overcome in Jamaica and he now set about overcoming them in Llandegai. He saw the lack of roads and

⁶⁵ Dr Marian Gwyn, op cit.

⁶⁶ Jean Lindsay, op cit, pp.60-62.

⁶⁷ Oxford Dictionary of National Biography, op cit.

⁶⁸ The other Liverpool Member was Bamber Gascoyne Jnr, who served as joint Member of Parliament for the Liverpool constituency.

adequate wharfage not as insuperable barriers to development, but as obstacles to be overcome.

Having formulated his objectives he needed to find people who could carry them through to fruition and in this respect was fortunate in that he appears to have possessed the ability to recognise and harness talent in others. Initially he placed his trust in two men in particular: Benjamin Wyatt II, who he appointed as his Agent, and William Williams who acted as his first Slate Reeve at the Penrhyn Slate Quarry. Wyatt was charged with developing the infrastructure, such as the roads, wharfage, and tramways that were necessary for transporting slate from the quarry; for bringing about land reforms in order to improve agricultural output; and for re-forestation large parts of the Estate by planting woodlands. Wyatt's own estimation of the number of trees planted by 1800 was over 600,000,⁶⁹ which included making additional plantations '*around the bath house mole*'.⁷⁰ This was a major project as since the Estate had been divided generally it had been neglected, fallen into a very poor state, and was severely under-developed. In parallel with the tasks allotted to Wyatt, William Williams was tasked with expanding the slate quarry and maximising slate production.

A short time later Pennant came into contact with a consortium of entrepreneurs from Liverpool which included among its number a man named Samuel Worthington, and it was he who very quickly came to play a major role in the industrial development of the area. The primary interest of these entrepreneurs was the exploitation of the Estate's mineral wealth and in particular the distribution and sale of the slates from the Quarry, which continued until 1829 when Worthington retired.

To a large extent Pennant's ability to carry out his plan was due not only to the fact that he was extremely wealthy, but that he owned all of the land surrounding his Estate and was

⁶⁹ Peter Ellis Jones, op cit, p.87.

⁷⁰ BU/Penrhyn Ms 2941, 'Planting at Penrhyn '97'.

therefore able to implement his plan without undue hindrance. He also was a Member of Parliament and had an extensive network of contacts and acquaintances that he could call upon. While in the House of Commons he was numbered among a group known as 'West Indians & North Americans', which included those Members with major interests in the West Indies, and perhaps more specifically the sugar plantations.⁷¹ Between 1754 and 1790 out of a total of 1964 MPs 75 were classed as 'West Indians and North Americans' (3.8%). He also was a member of the so-called 'Rockingham Group' of Whigs, named after its leader, Charles Watson-Wentworth, 2nd Marquis of Rockingham; to which he remained loyal even after Wentworth's death. At that time the House of Commons comprised a number of groups that were classified by occupation. Among others these included Army Officers, Naval Officers, Country Gentlemen, 'East Indians', Merchants, Lawyers and Professional Men, Irishmen, Scotsmen, and Welshmen. Although classified as a member of the West Indian Group Pennant, like many others, had cross-interests. For example he quite easily could have been classified as a Country Gentleman or a Merchant.

The development of the Penrhyn Estate during the late eighteenth and early nineteenth centuries provides a good example of how a hitherto neglected Estate was transformed into a busy and energetic enterprise which proved to be of benefit to an increasing number of people.⁷² The new infrastructure that was put in place allowed an embryonic slate quarrying industry to be greatly enhanced, to such a degree that what once had been no more than a part-time or seasonal occupation for a handful of men soon became a major enterprise and world leader in its field. New industries were created and land usage increased to level never previously contemplated. The impact the development undertaken by Richard Pennant at the end of the eighteenth century had on the landscape and the changes introduced into the lives of local people cannot be immeasurable, and as Prof. Dodd has stated, in terms of farming he [Pennant] had been responsible for '*greater improvements than during the several preceding centuries*'.⁷³ In the main this was due to

⁷¹ The History of Parliament, www.historyofparliamentonline.org

⁷² See A.H. Dodd, *The Industrial Revolution in North Wales* (Cardiff, 1933).

⁷³ A.H. Dodd, *ibid*, p.37. Quoting the North Wales Gazette dated Jan 26th and Feb. 18th, 1808.

the introduction of new crops, in particular potatoes and turnips; and by the improved breeding of livestock.⁷⁴

One area that does not appear to have been covered in previous publications is the way in which Richard Pennant's political views were influenced by his education at Newcombe's Academy and Trinity College Cambridge, and by his wife. The Academy had been founded by Dr. Henry Newcombe who was a notable Whig of the period, and furthermore a number of prominent Whigs sent their children to the school, which also had produced a large number of future Members of Parliament. It therefore perhaps is largely due to his education at Newcombe's that he himself was a Whig. Many other contacts would have been cultivated during his time at Trinity College, which he entered in 1754 as a Fellow-Commoner at age 17, following matriculation from Newcombe's. His brother John Lewis was admitted on the same day, age 18.⁷⁵ The role of his wife has already been described.

To date very little has been published about Samuel Worthington apart from mention in a number of books by contemporary travel writers,⁷⁶ the only exception being a biography in Peter Hyland's book on the Herculaneum Pottery.⁷⁷ It appears that initially Samuel Worthington was an employee of the three Liverpool merchants Humble, Holland and Hurry, but soon he became a full partner.⁷⁸ However, partnerships at that time seem not to have been either permanent or exclusive. While the original Firm had included John Hurry, in June 1797 he withdrew from the partnership and was replaced by his son, Nicholas. Following this change the official title of the Firm was Humble, Holland and Hurry.⁷⁹ This partnership was in turn dissolved by mutual consent in 1801.⁸⁰ Humble and Holland also were in partnership with a Michael Pool, trading as Humble, Holland, and Pool: this

⁷⁴ Ibid, p.49.

⁷⁵ According to (a) Trinity College Cambridge *Alumni Cantabrigienses* he was admitted as a fellow-commoner on 18th January 1754, age 17. (b) Correspondence with Adam Green, Senior Assistant Archivist, Trinity College Library, 20th August 2018.

⁷⁶ J. Evans, Richard Fenton, and E. Hyde Hall, op cit. Also H.D. Hughes, *Antiquities of Llandegai and Llanllechid* (Caernarvon, 1952);

⁷⁷ Peter Hyland, op cit.

⁷⁸ Michael Humble was a financier, Samuel Holland a mining engineer, and Nicholas Hurry a ship owner.

⁷⁹ London Gazette, 1st July 1797, p.625.

⁸⁰ London Gazette, 31st October 1801, p.1317.

partnership being dissolved by mutual consent on 8th December 1804.⁸¹ Michael Humble was also in ship-building partnership with John Smallshaw, their partnership being dissolved by mutual consent in March 1798.⁸²

What these entries indicate is the degree to which the principals continued with their other enterprises, while at the same time being involved in the extraction and shipping of minerals from Richard Pennant's estate. Humble and Holland in particular appear to have invested in many enterprises, not all of which were successful. For example the partnership of Samuel Holland and Thomas Smith Williams, trading as Merchants, Dealers and Chapmen, was declared bankrupt on 8th November 1810.⁸³ Michael Humble, late partner of Humble and Holland, was declared bankrupt on 21st April 1813.⁸⁴ While these entries would suggest failure, alternatively they could be considered as indicative of the business acumen, initiative, drive, and willingness to readily adopt and adapt new ideas that these men possessed.

It would seem that Worthington too was involved in other outside enterprises. For example, from the Penrhyn Estate rental records it would appear that the partnership known as Samuel Worthington and Co was inaugurated in 1796, possibly at the same time that he went into partnership with the three merchants.⁸⁵ The Firm continued to trade as such until its dissolution by mutual consent in 1810.⁸⁶ He also was in partnership with one John Menzies, as in March 1813 there is notice to the effect that their partnership was dissolved, again by mutual consent.⁸⁷

⁸¹ London Gazette, 8th December 1804, p.1492.

⁸² London Gazette, 17th March 1798, p.241.

⁸³ London Gazette, 6th January 1810, p.60.

⁸⁴ Ibid.

⁸⁵ BU/Penrhyn Add.2809.

⁸⁶ London Gazette, 30th June 1810, p.969.

⁸⁷ London Gazette, 30th March 1813, p.662.

In 1796 the Liverpool partners acquired the Herculaneum Pottery in Liverpool⁸⁸ and one of the raw materials required by the Pottery was ground flint. Very quickly Worthington recognised that he could produce this from flint brought into Bangor as ballast aboard the returning slate ships, and so persuaded Richard Pennant to build a powerful water mill at Llandegai for processing it. Over time this became known as Penlan Mill, named after its location. In addition to producing the ground flint Worthington also began producing coloured pigments for use in the Pottery, utilising the minerals readily available from the Estate. He also expanded his activities into other areas such as the production of hone stones and writing slates, and during the thirty-plus years that he remained at Llandegai he played an ever-increasing role in the development of the area, in the process leasing a large number of properties from the Penrhyn Estate. The development of these industries both complimented and enhanced Richard Pennant's overall plan, and at the same time provided the basis for future growth and expansion, with Worthington playing a major part.

The departure of Worthington and his sons from Llandegai (by now known as Worthington and Co)⁸⁹ was to a large extent the result of the deteriorating relationship between him and the new owner of the Estate, George Hay Dawkins-Pennant. Whereas previously he appears to have enjoyed good relations with Richard Pennant and his widow, Lady Anne, his relationship with Dawkins-Pennant became increasingly acrimonious. In large part this was due to Dawkins-Pennant's belief that the Liverpool consortium had been granted over-generous terms in their original leases and when these came up for renewal he took the opportunity for redress. Matters further deteriorated over the next seven years until Worthington decided to leave.

While there is no discrepancy relating to the date of Worthington's retirement or his death, there is disagreement as to where he moved, and when. According to Boyd the family

⁸⁸ J.I.C. Boyd, *op cit.* p.8. According to Boyd, Richard Pennant had an interest in the opening of the Pottery, although there is no evidence to support this claim. He is not listed among the 28 shareholders and there is no reference to him in the Herculaneum Minutes Book.

⁸⁹ The three original partners, Humble, Holland and Hurry, had already left by this time and following their departure Worthington had introduced two of his sons into the business.

moved to Llanfairfechan where it appears he remained until his death⁹⁰; whereas according to Hyland he moved to Llandudno and remained there until moving to Whitchurch, Shropshire, in 1836. Neither offers any evidence. However, in this instance Hyland is partly correct as there is evidence of Worthington continuing to mine in Llandudno in the 1830s, and the Llandudno Parish Tithe Schedule shows that he still maintained a property there until at least 1845. One possible explanation for the discrepancy in the date could be that while he had indeed moved to Whitchurch, he also maintained a property in Llandudno in order that his family could remain close to their mining interests. According to C.J. Williams the lease on 'The Old Mine' on the Orme was renewed in 1837 for the lives of Worthington's sons, Archibald and William.⁹¹ This is perhaps borne out by subsequent entries in local newspapers. For example, at the time of the death of his wife, Alice, his address was listed as 'The Mount', Whitchurch;⁹² this also being his address when his own death notice was published in 1847.⁹³ The same address is also shown in the death notice for his eldest daughter, Catherine Skinner, who died shortly after him.⁹⁴

A facet of Worthington's life that has not previously been mentioned is his brief involvement with the Lancashire Volunteers. According to the London Gazette, in 1798 Worthington was appointed as a Lieutenant, alongside Thomas Hunt, Gent. The Major-Commandant was William, Earl of Sefton; with Thomas Robinson, Esq: and Barker Chifney, Esq: listed as Captains. The Ensigns were Peter Halewood and John Jackson, both listed as Gents.⁹⁵ In June 1800 Chifney resigned his commission and Worthington was promoted to Captain, with Jackson replacing him as Lieutenant. In turn Jackson's former position as Ensign was assigned to Ralph Mansfield. The entry also includes someone named Clarke: Gent, to be Surgeon.⁹⁶ This again highlights Worthington's involvement with the Earl of Sefton, with whom he was involved during his attempt to build a new kiln at Toxteth; and Barker Chifney, with whom he was involved during the construction of Penlan Mill. One of

⁹⁰ J.I.C. Boyd, Op cit, p.22

⁹¹ C.J. Williams, 'The Llandudno Copper Mines', *Caernarvonshire Historical Society Transactions*, 33 (1972), p.220

⁹² Liverpool Mercury, Friday February 10th, 1837.

⁹³ Jackson's Oxford Journal, Saturday 29th May, 1847.

⁹⁴ North Wales Chronicle, Tuesday 17th August, 1847.

⁹⁵ London Gazette, 11th August 1798, p.759.

⁹⁶ London Gazette, 13th June 1800, p.1056.

Chifney's other enterprises had been a partnership in the Firm of Chifney, Spode, and Co., which was dissolved by mutual consent in January 1804. The two other partners in that enterprise were Josiah Spode and Thomas Wolfe.⁹⁷ The date of his appointment to the Volunteers seems to confirm that during the mid-to-late eighteenth century Worthington was involved in a good deal of travelling between Liverpool and Llandegai.

Despite his apparently poor relationship with Dawkins-Pennant it would seem that Worthington was well respected in other circles. For example, in addition to managing his concerns relating to the Penrhyn Estate, in 1812 he was appointed by Henry Majendie,⁹⁸ the Bishop of Bangor, to act as his agent for collecting royalties from the Macclesfield Copper Company in respect of copper ore raised from the Old Mine on the Great Orme in Llandudno.⁹⁹ In 1824 Worthington & Co took over the running of the mine, being granted a lease covering 700 acres.¹⁰⁰ When he left Llandegai he moved to live in 'Ty Glas' at what is now known Church Walks, Llandudno.¹⁰¹

His appointment to this role may not have been as surprising as at first it might appear. In 1767 the Macclesfield Copper Company had built a smelter at Toxteth near Liverpool, and when in 1794 for legal reasons the site was forced to close it was taken over by the Herculaneum Pottery Company. However, when it was proposed that kilns for calcifying raw flint should be built on the site the Herculaneum Company encountered the same objections that the Macclesfield Company had previously, and indirectly this led to Penlan Mill being built. It is likely that during this process Samuel Worthington would have become

⁹⁷ London Gazette, 10th January 1804, p.53.

⁹⁸ Henry William Majendie DD (1754-1830), Bishop of Chester and Bishop of Bangor. *Oxford Dictionary of National Biography*.

⁹⁹ The company was incorporated on 19th August 1774 and dissolved on 1st November 1833. The Minute Book is held in the University of Manchester Library, Ref. GB 133 Eng MS 1344.

¹⁰⁰ C.J. Williams, *Op cit*, p.220

¹⁰¹ Conwy Archive, Llandudno, *Apportionment of Tithes- Parish of Llandudno, 11th October 1845*. The property is shown on sheet 2 as Plot 268 and is described as a 'Homestead' comprising 1 rod 32 perches and having an apportionment of 4/6d: the owner being Champneys Charlotte Margaret Mostyn. The house was demolished some time in the middle of the 19th century when the current terraces of mid-Victorian housing were built, shortly after the construction of the new St. George's Parish Church; and it was following the construction of the church that the street became known as Church Walks.

acquainted with members of the Macclesfield Board and a relationship forged.¹⁰² Alternatively he may have had prior contact with them during his days in the Macclesfield silk mills,¹⁰³ although there are contradictory opinions as to his actual background. For example, Boyd claims that he was a corn merchant,¹⁰⁴ whereas Hyland states that he was a silk thread maker.¹⁰⁵ Whereas Boyd offers no evidence to support his claim, Hyland quotes the Knutsford Marriage Register which records Samuel Worthington as 'thread maker'.¹⁰⁶ Possibly Boyd's confusion arose due to an entry from 1815 in the London Gazette declaring the bankruptcy of Worthington's son, '*Samuel Worthington the younger*' who was listed as a Corn-Merchant, Dealer and Chapman.¹⁰⁷ Archibald Keightley, Worthington senior's brother-in-law, was one of the solicitors acting in the case. Samuel the younger died in 1828 after a short illness.¹⁰⁸

There are also contradictory opinions as to Worthington's religious beliefs. Here again Boyd makes the un-substantiated assertion that he was a Quaker;¹⁰⁹ whereas from work done by Eric Foulkes it would seem likely that he was a Anglican, his marriage and the christenings of his numerous children all being conducted in the local parish churches.¹¹⁰ By the time in question, late 1700s and early 1800s, Quakers had set up their own marriage procedures, and even though at one stage this was challenged by the Anglican Church their adherence to the Quaker practice persisted.¹¹¹ Perhaps more conclusively, it is virtually inconceivable that a member of the Society of Friends would have joined the militia.

¹⁰² Jisc Archives Hub.

¹⁰³ Peter Hyland, *The Herculaneum Pottery, Liverpool's Forgotten Glory* (Liverpool, 2005).

¹⁰⁴ J.I.C. Boyd, op cit. p.8

¹⁰⁵ Peter Hyland, op cit. p.14

¹⁰⁶ While Hyland does not include a reference, according to Eric Foulkes it appears in the Knutsford Register as '1783, No. 70', etc.

¹⁰⁷ London Gazette, 21st March 1815, p.543.

¹⁰⁸ Liverpool Mercury, Friday 4th January, 1828.

¹⁰⁹ J.I.C. Boyd, op cit. p. 8

¹¹⁰ Private correspondence 17th February 2012. From this it is evident that the christenings took place in St Oswald's Church, Chester; Church Lawton parish church; and at St James' church in Toxteth Park, near Liverpool.

¹¹¹ www.hitchin.plus.com/Quakers/Marhist.htm

The book also reflects upon the inter-relationship between what Palmer, Nevell and Sissons refer to as 'Lords', 'Freeholders' and 'Tenants',¹¹² or what Gwyn and Palmer refer to as 'Patrician', 'Middling Sort', 'Plebeian', and a fourth group which they refer to as the 'Citizen' or 'Burgher' class, which represents what they call 'landless capital':¹¹³ the principal characters with which Richard Pennant now surrounded himself at Llandegai providing a good example of these different levels of society. Pennant himself represents the 'Lord'/'Patrician', Wyatt the 'Freeholder'/'Middling Sort', and Williams and Worthington the 'Tenants'/'Plebeians', although it perhaps is true to say that by the time he retired Worthington had himself become one of the 'Middling Sort', as perhaps is evidenced by his connection with the Lancashire Volunteers. The Liverpool merchants, Humble, Holland¹¹⁴ and Hurry represent what Gwyn and Palmer refer to as the 'Citizen' or 'Burgher' class, not necessarily being land owners but possessing capital.

In conclusion. The publication of the history of Penlan Mill, the mills with which it was linked, and their associated industrial activities, has gone some way toward remedying the paucity of information available; and at the same time help provide some new background to the industrial development of Llandegai, the key people involved, and how this formed a part of the overall development of the Penrhyn Estate in the early part of the nineteenth century. It also provides a detailed archaeological and historical record of the Penlan Mill site which, as the building is rapidly deteriorating, should be of benefit to future historians and mill enthusiasts.

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¹¹² Marilyn Palmer, Michael Nevell & Mark Sissons, *Industrial Archaeological Handbook* (York, 2012), p.13.

¹¹³ David Gwyn and Marilyn Palmer (eds), 'The Landscape Archaeology of the Vale of Ffestiniog', *Industrial Archaeology Review*, Vol. XXVII, May 2005.

¹¹⁴ According to Prof. Dodd, Samuel Holland was a cousin to Mrs Gaskell, the novelist. A.H. Dodd, *A History of Caernarvonshire 1284-1900* (Caernarfon, 1968).