

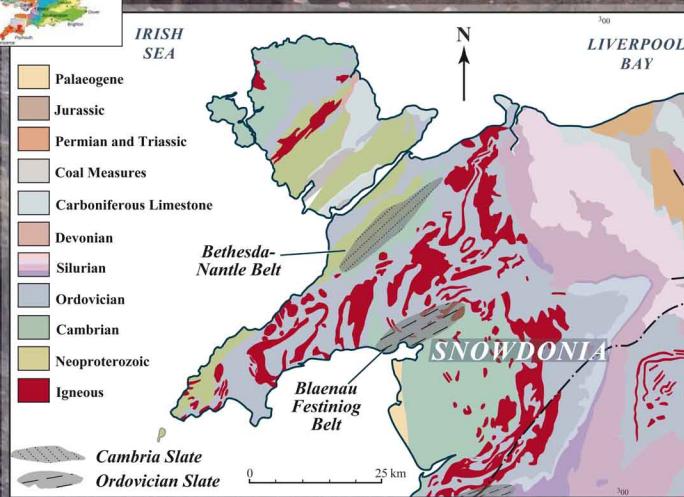


Welsh Slate: A Candidate for Global Heritage Stone Status

Jana Horák¹, Terry Hughes² & Graham Lott³

¹National Museum of Wales, Cardiff CF10 3NP, Wales, UK ²Slate & Stone Consultants, Ceunant, Gwynedd, Wales, UK

³British Geological Survey, Nottingham NG12 5GG

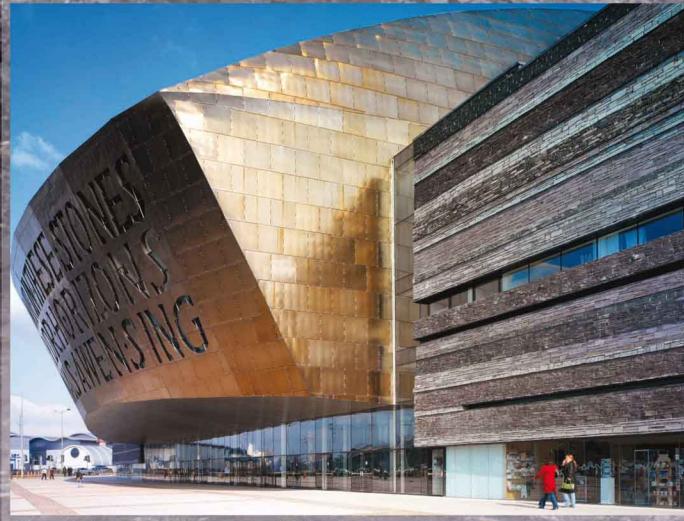
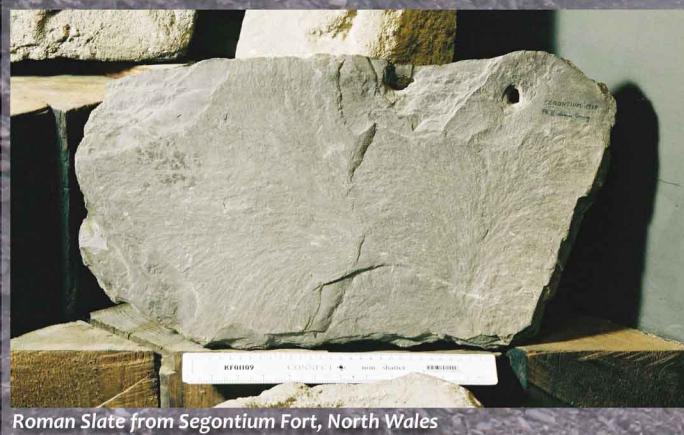


LOCATION

Name: Welsh Slate
Place of Origin: Bethesda-Nantlle & Ffestiniog Belts, Gwynedd, Wales, U.K.
Area of occurrence: North-west Wales
Principle Location of Quarries: Bethesda to Nantlle & Blaenau Ffestiniog areas

GEOLICAL DATA

Geological Age: Middle Cambrian (Llanberis Slate Formation)
Arenig-Caradoc (Nant Ffrancon Subgroup)
Meta morphism: c. 400 Ma
Petrographic Name: Metamorphic Slate
Primary colours of Stone: Shades of grey, purple, & green



Wales Millennium Centre, Cardiff

Slate is the iconic stone of Wales, and has a temporal and geographic record of usage such that it is considered worthy of consideration for Global Heritage Stone status. North Wales slate has an extraction history of almost 2000 years, and is of exceptional quality making it both durable and appropriate for a wide range of uses.



Segontium Caernarfon

HISTORY OF USAGE

- The earliest records of slate used in North Wales are from the Roman fort at Segontium Caernarfon - 77AD. Significant exploitation commenced in the late 16th century (Lewis, 1924). Records show trade to Ireland, Wales and parts of England by sea.

- In the late 18th century small independent quarry workings were taken over or amalgamated and developed as quarries (Cambrian) or underground workings (Ordovician), with a substantial increase in output.

- By the end of the 18th century the region produced c. 26,000 tonnes per annum - 57% of the UK output. By 1882 this rose to a peak of 450,000 tonnes per annum, driven by demand for roofing in the developing industrial towns and good access by sea, canal, and subsequently rail transport to markets. The industry came to dominate the UK roofing materials market and to develop a substantial exports market worldwide.

- The impact of WWI and WWII on labour availability and competition from industrial roofing materials resulted in a contraction in the industry; today there are just a few operating companies. However the late 20th (Hughes, 1995) and early 21st centuries have seen a stabilisation of overall demand and it is estimated that output continues at 50 – 60,000 tonnes per annum.

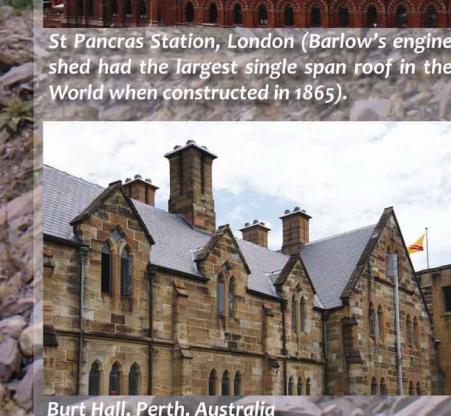
Lewis, E.A., 1924. Maritime Trade in Wales in Stuart Times, The Times Supplement: Industrial Wales, London.

Hughes, T. G., 1995. The Slate Industry in Gwynedd, Gwynedd County Council, Caernarfon. North, M. J., 1925. The Slates of Wales, National Museum of Wales, Cardiff.



USAGE – GEOGRAPHICAL DISTRIBUTION

- From the Industrial Revolution Welsh slate became the roofing material of choice for housing, government, industrial and commercial buildings throughout England, Wales and Ireland and, to a lesser extent, Scotland. Welsh slate has also been used worldwide, primarily in northern Europe, former UK colonies, North and South America, and Japan.
- Examples of prominent buildings include (roofing slate unless indicated otherwise):



Argentina	Great Southern Railway Buildings, Argentina	1900
Austria	Kunsthistorisches Museum, Vienna	1891
Australia	St. Pauls College, University of Sydney	1858
	Glebe Town Hall, Sydney	1881
	Juniper Hall, Paddington, Sydney	1824
	National Arts Centre (formerly Darlinghurst Gaol), Sydney	1822
	St. James' Anglican Church, Sydney	1824
	All Hallows Girls School Brisbane, Queensland	1882
	Flinders Street Station, Melbourne	1909
	Victoria Barracks, Melbourne	19thC
	Customs House, Newcastle, NSW	1877
	The Burt Hall, Perth	1917
Denmark	Amalienborg (The Royal House), Copenhagen	
	Town Hall, Copenhagen	1905
	Louisiana Museum for Modern Art, Copenhagen	1958
France	Hotel de Ville, Paris	
	Hotel de Ville, Aire sur la Lys	
	Rebuilding of Hamburg	1842
	St Mary's Cathedral, Hamburg	1893
Hawaii	Royal Mausoleum	1865
Ireland	Trinity College Dublin	
	Dublin Customs House	
	Dublin Castle	
	Church of the Immaculate Conception, Cavan	
	Turin University	
Italy	Catharinakerk, Eindhoven	1867
	De Grote Kerk, Maassluis	
	Peace Palace, Vredespaleis, Den Haag	1900
New Zealand	Arts Centre, Christchurch	1882
Nigeria	N & S Railway stations	
South Africa	Military Hospital, Cape Town	
	Town Hall, Cape Town	1905
Poland	Warsaw Cathedral	
Sweden	The English Church, Gothenburg	1857
	Segontium Fort, Caernarfon	77AD
	St Asaph Cathedral	1601–04
	Bevis Marks Synagogue, London	1701
	Buckingham Palace, London	
	Custom House, Belfast	1856
	Welsh Assembly Building, Llandudno (cladding)	19°C & 20°C
	Eagles Meadow Shopping Centre, Wrexham	21°C
	Baltic Flour Mill Gateshead (walling)	21°C
	Cardiff Central Library (flooring)	21°C
	National Waterfront Museum, Swansea (walling)	21°C
	Wales Millennium Centre, Cardiff (walling)	21°C
USA	Exxon HQ, Texas	late 20thC
	The Shaker Museum, Enfield, New Hampshire	1837–1841
	Boston airport (flooring)	late 20thC
	West Indies	
	The Red House (parliament building), Trinidad	1907