

A World of Copper: Globalising the Industrial Revolution, 1830-1870

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Abstracts

Huw Bowen, Swansea University

‘Asiatic markets and the growth of the Welsh copper industry, 1730-1914’

Historians have long recognised that overseas exports played at least some part in the early development of the Welsh copper industry, but little systematic evidence has ever been provided to establish the strength of connections with the wider world economy. Yet the extensive records of the East India Company enable much light to be thrown upon the extent to which the expansion of copper exports to Asia went hand-in-hand with the growth of smelting in the Swansea-Neath region. As a result, it is argued in this paper that Asian markets exerted considerable influence on Welsh smelting companies not only by providing regular orders which helped to sustain companies in the early stages of their development but also by encouraging producers to diversify their output to meet the specific needs and requirements of an increasingly important overseas market. From its very beginning the Welsh copper industry was integrated into the international economy with the East India Company’s trade playing a key role in that process; and during the nineteenth century a progressively more ‘open’ trade saw smelters and merchants attempt to exploit new markets for Swansea copper in the East.

Des Cowman, Mining Heritage Trust of Ireland

‘Sources and Shortcomings in the Swansea ore shipping statistics’

Ore Shipments and Sales from the *Cambrian* 1832-1852: Chile, Cuba and Australia.

The weekly *Cambrian* contains details of ore sales and shipments into Swansea. From these it is possible to build a picture of the growth of Chilean, Cuban and Austrian ore imports as well as sporadic tonnages coming from places like New Zealand, the U.S. and Norway. While the *Cambrian* reports are by no means comprehensive, it is possible from time to time to record the week the ships came in from say Chile, the total tonnage offloaded how they were then batched for ticketing and the price for each batch. This allows comparison of the richness of the ores

coming in from abroad. Such tends to dry up after 1851 and news of shipping disappears altogether. However, the survival of a run of copies of the *Swansea Shipping Gazette* for 1859 allows a later insight into this ore trade.

There are shortcomings: some of what emerges makes little economic sense such as ships returning to Chile and Cuba in ballast. What sense did it make to bring in 47 tons of relatively low value ore from Cuba in Sept. 1835 or 30 similar tons from Chile in Sept. 1836 ? And what of the single ton from Spain that fetched a derisory two shillings and sixpence (August 1846)? There was also ore sold from Spanish-sounding mines with no known possibility of finding whether they were from Chile, Cuba or elsewhere. Samplings of scanned images from the *Cambrian* will be presented as well as listings, charts and tables summarising tentative conclusions. These can be made available for downloading.

Timothy J. LeCain, Montana State University

‘The World of Copper Pollution: The Environmental Effects of Copper Mining and Smelting Technologies in Japan and the United States’

From its beginnings in the Swansea copper mining and smelting operations, the human creation of copper metal has been a messy business. Yet, the global spread of the technologies pioneered at Swansea helped provide the abundant cheap copper that was essential to the modernization of both established and emerging world powers. This paper focuses on two intriguing examples: the development of large-scale copper mining and smelting technologies in the American region around Butte and the Japanese region around Ashio. Although these two regions of the world had very different sociocultural dynamics, they followed strikingly similar paths of technological development and environmental damage, suggesting that the material “weight” of the copper mining production technologies pioneered in Swansea and elsewhere exerted a powerful influence around the globe. By adopting a “new materialist” analytical frame, I argue that when Japanese and Americans imported Swansea copper technologies, they also imported some part of the Cornish and British cultural values that were embedded in these material technologies. This culture-material nexus, I argue, was so powerful that it was able to overwhelm earlier more traditional cultural-material systems, such as American cattle ranching and Japanese silkworm

growing. This process, I conclude, continues in the present as large-scale low-grade copper mining technologies continue to spread around the globe.

Manuel Llorca-Jaña

‘Huth & Co. of London: the copper connections of a global merchant-banker, 1820s-1840s’

This paper deals with the copper connections of Huth & Co. during the 1820s-1840s. Huth was an important London merchant-banker during this period, ranking close to the mighty Baring Brothers and the Rothschilds. Differently to any other merchant-banker before 1850, Huth decided to go global as well as to diversify importantly in the products they traded or helped others to trade. Amongst these products was copper, about which Huth’s expertise became notorious, in part due to the opening of a branch in Chile during the 1820s. Thus, the paper shows all the complex copper connections built by Huth from Chile but supported by the London headquarters thanks to its impressive global networks.

Manuel Llorca-Jaña

‘Chilean copper exports to Wales during the nineteenth century: their impact on the Chilean and Welsh economies’

The purpose of this paper is to bring more statistical precision to the assessment of the impact of Chilean copper exports to Wales on both the Chilean and Welsh economies during the nineteenth century. Despite the important contributions of other scholars, there were still some blurred areas which call for clarification. My main conclusions are: *c.*1800-1830s, the Welsh copper connection was unimportant for the Chilean economy; during the 1840s-1870s although Wales was not an important market for Chilean copper bars, the Welsh connection was quite important for the Chilean copper industry as a whole and for the entire Chilean economy too; during the 1880s-1890s this importance declined importantly. Regarding the relative importance of Chile for the Welsh copper industry, although Chile was an important supplier of copper ores for Wales, Cuba was more important during the 1840s-1850s. In the 1860s Chile was the top ore supplier for the Welsh market, but there was a greater diversity in supply, with little dependence on Chile. Likewise, Chile became far less important during the 1870s-1890s as supplier of ores for Wales. As far as regulus is concerned, Welsh copper refiners relied heavily on Chilean

regulus during the 1850s-1870s, but this position was taken by Spain and the USA during the 1880s-1890s.

Denis Morin, University of Toulouse Le Mirail

‘XIXth Century French Mining engineers reports and drawings on Swansea industry: industrial espionage or technological exchanges?’

The history of mining and metallurgical techniques during the nineteenth century is often hampered by the lack of documentation: we know today the chronology of inventions or statistics of overall production, much less the technical reality, operation, tooling, processes as administrative archives are often silent on the matter.

The Paris National School of Mines (Ecole des Mines de Paris) preserves a unique collection of manuscripts of mining and metallurgical travels range from 1825 to 1909. Hundred folio collections remained inaccessible and completely untapped while school students travelled with their sketchbook, all around a great part of Europe, and sometimes in America, specifically to get all this documentation. A few part of these precious documents have been published in the well-known “Journal des Mines” then becoming the “Annales des Mines”. Most of them are nowadays an exceptional unpublished source of information about mining, ore dressing and metal processes and machineries.

Were they espionage or were they dissemination of ideas and technological concepts as required by invention and innovation? Some of these exceptional detailed manuscripts concerns Wales mining and metallurgy and of course Swansea copper and steel industries and trade. As the world of industrial international relationships was marked by many forms of spying, the study of some XIXth century Swansea reports and drawings raises again the question of technological exchanges and the origin of European industrial take off set up by these global enterprises.

Robert Protheroe Jones, National Museum Wales

‘Smelters, shippers and statistics: attempting to quantify the Welsh dimension of the nineteenth century global trade in copper’

The evolving sources of the range of copper bearing raw materials imported into the UK in general and south Wales / Swansea in particular, emphasising the global breadth of raw materials sources and significantly modifying the simplistic 'Cuba -> Chile -> Australia & USA' model invoked in many secondary sources, placing Swansea more securely as the focus of a trade that grew in the mid nineteenth century to be truly global. Sub-themes: the evolving nature of the imported cupriferous raw materials imported to south Wales; the distinction between tonnages of raw materials (traditional focus of maritime historians) and contained copper content, which is suggested as a potentially more meaningful measure of importance to smelters; the correlation of copper content with economically viable distance for importation and changes over time; the neglected place of pyrites within total UK imports; the changing roles of various importing ports in conjunction with the somewhat neglected role of coastwise trade in transporting raw materials from port of initial importation to smelters; speculation upon the possible agendas of the principal originators of the Swansea ticketings; the changing roles of the various public ticketings compared to smelters' private purchases and smelting on commission.

Inés Roldán de Montaud, Consejo Superior de Investigaciones Científicas, Spain

‘A forgotten producer: copper mining in eastern Cuba during the nineteenth century’

Copper mining in Cuba experienced significant development during the second third of the nineteenth century as the demand for copper expanded with the Industrial Revolution and shortly the Spanish colony became one of the major world producers. In 1836 Britain imported 19,466 tons of copper ore, 6,425 of them came from the mines of Santiago de Cuba. The amount produced was so small by today's measures that anyone seeing the output can take a dismissive attitude, but in terms of mid nineteenth century the figures for Cuban output were of undeniable importance. Nevertheless, copper mining in Cuba has been largely neglected. Cuban and Spanish historians, and scholars in general, have been more interested in the study of sugar production and in the slave trade, as this activity became central in the Atlantic. British scholars have referred to Cuban copper experience mainly in relation to smelters in Swansea or trying to establish its connection to slavery. Drawing from first-hand accounts in Cuban and Spanish

archives, our purpose is to present a picture of the development of the sector from 1830 to 1870 when Cuban copper production came to its peak, with special attention to sources of capital and the formation of companies, the volume of ore production, the problem of processing and marketing the mineral. The chronological scope refers to the late eighteenth twenties when the mines in El Cobre area were rediscovered after having been abandoned for over a century, to 1870 when several years of dropping copper prices and of increasing production costs gave rise to a gradual decline of exports and profits plunged the sector into outright crisis after forty years of intense exploitation.