

THE 'LIGHT INFANTRY OF CAPITAL': THE MIGRATION OF MINERS FROM SOUTH WEST BRITAIN TO LATIN AMERICA IN THE EARLY NINETEENTH CENTURY AND THE RISE OF THE MODERN GLOBAL MINING ECONOMY

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Over the last 25 years, British involvement in the nineteenth-century development of Latin American mining resources--particularly in Mexico, Brazil and Chile--has received the attention of historians who have focused on, among other things, capital investment, economic re-structuring and industrial modernization.¹ Many works have explored the evolution of British migrant communities across Latin America yet, so far, there has been scant research that addresses the regional contribution to the expansion of British industrial prowess in nineteenth-century Latin America.²

Situated at the extreme south west of Britain, Cornwall is a peninsula surrounded on three sides by the Atlantic Ocean and bounded from neighboring Devon by the River Tamar in the east. It covers an area no more than 1,365 square miles and at no time during the first half of the nineteenth century could boast a population greater than 375,000. Yet, its size is disproportionate to the influence the Cornish people have exerted upon the world in the field of metalliferous mining and engineering.³ For by the late

¹ Marshall Eakin, *British Enterprise in Brazil: The St John D'el Rey Mining Company and the Morro Velho Mine, 1830-1960*, (Durham and London: Duke University Press, 1989); Marshall Eakin, "The Role of British Capital in the Development of Brazilian Gold Mining", in *Miners and Mining in the Americas*, Thomas Greaves, and William Culver, eds (Manchester: Manchester University Press, 1985), 11-30; Marshall Eakin, "British Imperialism and British Enterprise in Brazil: The St John D'el Rey Company, Limited, 1830-1960", *Hispanic American Historical Review*, 66/4 (1986), 697-741. John Mayo, "Before the Nitrate Era: British Commission Houses and the Chilean Economy, 1851-80", *Journal of Latin American Studies*, 11/2 (1979), 283-302. John Mayo, "Britain and Chile, 1851-1886: Anatomy of a Relationship", *Journal of Interamerican Studies and World Affairs*, 23/1 (1981), 95-120. John Mayo, *British Merchants and Chilean Development, 1851-1889* (Boulder and London: Westview, 1986). John Mayo, "Commerce, Credit and Control in Chilean Copper Mining before 1880", in *Miners and Mining in the Americas*, 29-48. John Mayo and Simon Coliver, *Mining in Chile's Norte Chico: Journal of Charles Lambert, 1825-1830* (Boulder and Oxford: Westview, 1998). Robert W. Randall, *Real del Monte: A British Mining Venture in Mexico*, (Austin: Texas University Press, 1972); Robert W. Randall, "British Company and Mexican Community: The English at Real del Monte, 1824-1849", *Business History Review*, 59/4 (1985), 622-644. Barbara A. Tenenbaum and James N. McElveen, "From Speculative to Substantive Boom: The British in Mexico, 1821-1911", in *English Speaking Communities in Latin America*, Oliver Marshall ed. (London: Macmillan Press Ltd, 2000), 51-79.

² Some examples include: John E. Baur, "The Welsh in Patagonia: An Example of Nationalistic Migration," *Hispanic American Historical Review*, 34/4 (1954), 468-492. E.G. Bowen, "The Welsh Colony in Patagonia 1865-1885: A Study in Historical Geography," *Geographical Journal*, 132/1 (1966), 16-27. Alexander Graham-Yooll, *The Forgotten Colony* (Buenos Aires: L.O.L.A. Literature of Latin America, 1999). Oliver Marshall ed., *English Speaking Communities in Latin America*, (London: Macmillan Press Ltd, 2000). Hilda Sabato and Juan Carlos Korol, *Cómo fue la inmigración irlandesa en Argentina* (Buenos Aires: Editorial Plus Ultra, 1981). Patrick McKenna, "Nineteenth Century Irish Emigration to, and Settlement in, Argentina, unpublished MA thesis, National University of Ireland, Maynooth, (1994).

³ Due to the significant migration of Cornish labour to the mines of west Devon around Tavistock and the Tamar Valley that were mainly managed by the Cornish and operated in a manner identical to mines further west, this area has been included in the Cornish Mining Landscape World Heritage Site (inscribed in 2006). Mineworkers from South West Britain therefore include Cornwall and west Devon.

nineteenth century there was barely a hard rock mining field anywhere in the world where Cornish labor or management was not to be found, that gave Cornwall an international profile that persists to this day.

Since the 1970s scholars have become increasingly aware of the benefits of studying regions when looking at the process of industrialization. This shift in spatial focus has uncovered combined and uneven regional patterns of industrialization in Britain and drawn attention to Cornwall's leading role in the British industrial revolution. Sidney Pollard was among the first to identify Cornwall, an early center of metal mining and steam engineering, as one of Britain's ten earliest industrial regions.⁴ Building on Pollard's work, Eric Richards, calling for "a better taxonomy of the regional paths adopted during industrialization," identified Cornwall as one of the regions on the margins of industrialization.⁵ More recently, Pat Hudson's work on the "really important spatial units of the industrial revolution" – distinct and specialized regions with extra-regional commodity exports - has placed Cornwall at the forefront of early British industrialization and structural adjustment.⁶

Important advances have also been made in the field of area studies.⁷ Instead of viewing the world as being divided into a set number of large, quasi-continental regions, new, less rigid models of global scholarship are re-framing area studies around oceans and sea basins.⁸ There is an increasing emphasis on looking at the world as not being divided into knowable, self-contained "areas" but as part of an inter-linked whole in which people, ideas, capital, and technology are connected across great physical divides. The fact that the prevailing *Zeitgeist* is moving away from amorphous or artificially constructed geographical entities to areas that have been previously overlooked as significant sites in and of themselves, has particular resonance for littoral societies, as it enables them to be viewed not as peripheries of nation-states or territorial civilizations, but as communities in their own right.⁹ Moreover, littoral societies, by virtue of maritime trade and commerce, participate in particular ways in processes of cultural interchange¹⁰.

⁴ Sidney Pollard, "Industrialisation and the European Economy," *Economic History Review*, 26 (1973), 14. Although in the very early nineteenth century, Cornish mining was restricted almost entirely west of Truro, and a small area in the Tamar Valley, as the century progressed the dynamic mining sector expanded, and new mining areas were developed in the centre and east of Cornwall.

⁵ Eric Richards, "The Margins of the Industrial Revolution" in *The Industrial Revolution and British Society*, Patrick O'Brien and Roland Quinault eds (Cambridge: Cambridge University Press, 1993), 225.

⁶ Pat Hudson ed., *Regions and Industries: a Perspective on the Industrial Revolution in Britain* (Cambridge: Cambridge University Press, 1989).

⁷ Toby Volkman, "Crossing Borders: the Case for Area Studies," *Ford Foundation Report*, 29/1 (1998). Since 1995 Volkman has been responsible for the Ford Foundation's work in area studies and has developed a new \$25 million initiative, "Crossing Borders: Revitalizing Area Studies."

⁸ Martin Lewis and Kären Wigen, "A Maritime Response to the Crisis in Area Studies," *Geographical Review*, 89/2 (1999), 161-68. The authors were engaged in a five-year research project entitled "Oceans Connect: Culture, Capital, and Commodity Flows Across Basins" at Duke University, funded by the Ford Foundation, that concluded in summer 2002.

⁹ Heidi Slettedahl Macpherson and Will Kaufman, eds, *New Perspectives in Transatlantic Studies* (Lanham: University Press of America, 2001), xiv.

¹⁰ See for example K. N. Chaudhuri, *Trade and Civilisation in the Indian Ocean: an Economic History from the Rise of Islam to 1750* (Cambridge: Cambridge University Press, 1985); Anthony Reid, *Southeast Asia in the Age of Commerce, 1450-1680*. 2 vols. (New Haven: Yale University Press, 1988, 1993); Sally M. Miller, A.J.H. Latham, and Dennis O. Flynn, eds, *Studies in the Economic History of the Pacific Rim*

With this advance in area studies and the new epistemological approach to understanding the role of overseas trade and the role of regions in the British industrial revolution, it is now timely to investigate the role of *regional* contributions to the overseas expansion of British industrial prowess in the early nineteenth century, in much the same way that Catherine Hall has done by focusing on the activities of Baptist missionaries in Jamaica and the socio-cultural, economic and political impact this had on both Jamaica and the midland city of Birmingham in England.¹¹

In the early decades of the nineteenth century, many of the important mining centers of colonial Latin America were suffering from years of under-capitalization, civil conflict and shortages of labor and modern equipment. Britain stepped in to aid in the renaissance of hard rock mining by providing large amounts of capital and technical know-how, in the process gaining access to markets and trading routes that had long been denied her, whilst broadening the frontiers of her informal empire. But this was not an even process. The British-backed mining companies achieved their highest profile in countries such as Argentina, Brazil, Bolivia, Chile, Colombia, Cuba, Mexico, and Peru, where there was a need for deep lode mining skills, and a more limited presence in British Guiana, Paraguay, Uruguay and the countries of Central America that had either a poor floor in metalliferous minerals, or where mining was small-scale or mainly of an alluvial nature.

This essay challenges the accepted homogeneity of the process, invariably described as British, by concentrating on the pioneering exportation of metalliferous mining skills and steam technology to Latin America in the first half of the nineteenth century by Cornish miners, or “Cousin Jacks”, as they were colloquially known.¹² The argument this essay advances is that even amid the momentous scale of internationalized mass migration and transnational industrial exchange, local and regional identities assert themselves, as immigrants contest and negotiate their roles as social actors. For it was in the mines of Latin America, particularly those of Mexico, Chile, and Brazil, that the coveted crown of mining excellence was contested between both immigrant and native Amerindian ethnic groups, each competing to achieve a hegemonic position in the rapidly expanding global mining labor market.¹³ This essay demonstrates that Latin America, as an early recipient of British capital and industrial technology, was the birthplace of the modern integrated global mining economy with its attendant capital and labor markets.

The transatlantic connection with Latin America meant that Cornwall came to occupy a transverse space, at once complex and fluid, positioned as it was between powerful global imperatives dictated by Westminster politics and City of London capital on one side of the Atlantic, and the Creole oligarchies’ policies of economic reconstruction on the other. From this time on, Cornwall has looked both inwards – to the heart of the European and British polity – and outwards – via global connections forged

(London and New York: Routledge, 1998); Fernand Braudel, *Les mémoires de la Méditerranée: préhistoire et antiquité* (Paris: Editions de Fallois, 1998).

¹¹ Catherine Hall, *Civilising Subjects: Metropole and Colony in the English Imagination 1830–1867* (Chicago: University of Chicago Press, 2002).

¹² Sharron P. Schwartz, *The Cornish in Latin America: ‘Cousin Jack’ and the New World* (Cornubian Press, Dublin 2012 in print).

¹³ Sharron P. Schwartz, “The Making of a Myth: Cornish Miners in the New World in the Early Nineteenth Century” in *Cornish Studies* 9, Philip Payton ed. (Exeter: University of Exeter Press, 2001), 105-126.

during its historical experience and via the north-south links of the Atlantic Arc, reflecting its importance as a littoral society at the heart of the transatlantic world.

Cornwall: Engine-house of the Industrial Revolution

Mining in Latin America has a long and illustrious history, primarily in silver production, but also in gold, mercury and copper. Centuries of mining had brought the industry in Latin America to levels of sophistication comparable to many mining centers in Europe, enriching Habsburg Spain and Portugal in the process.¹⁴ Yet by the early nineteenth century the once great mines of the Habsburg Empire were in decline, struggling with financial difficulties, engineering problems and labor shortages, in areas ravaged by war.

Cornish mines, by contrast, were booming. By the late eighteenth century Cornwall had emerged as a center of technological innovation in deep lode tin, copper, and lead mining and engineering. Roger Burt, describing the marshaling of large quantities of fixed capital, the rise of semi-joint stock forms of organization with a brisk informal share market and the development of a hierarchically structured labor force, has emphasized the pioneering and dynamic role played by non-ferrous metal mining in eighteenth century industrialization in regions such as Cornwall.¹⁵ It is claimed that by the early nineteenth century, Cornish copper mines were comparable in size, scale and capitalization to any industrial or commercial enterprise in Britain and probably Europe, as copper ore production soared.¹⁶ With its powerful capitalized industry and organized labor force, Cornwall had established a clear comparative advantage in metal mining in a similar way that Lancashire had in cotton textile manufacture.¹⁷ This phase of early industrial sophistication belies the current popular perception of Cornwall as parochial and peripheral, part of the “Celtic fringe”, the playground of tourists and the retired.

Advances in the field of steam technology facilitated deep lode mining. These had allowed the development of the huge engines used primarily to dewater Cornwall’s deepening mines, attracting many of the leading engineers, innovators and scientists of the time. Cornwall was a region devoid of coal reserves, so it was vitally important to keep fuel consumption, and therefore costs, as low as possible, which challenged the minds of contemporary engineers and scientists who migrated to work on the Cornish mines. These included Matthew Boulton, Scottish-born William Murdoch from the Soho firm of Boulton and Watt, and the Hornblower brothers from Shropshire. Together with Cornish-born engineers--the most famous of whom was Richard Trevithick, inventor of the world’s first practical steam carriage in 1801 and the high-pressure steam engine and Cornish boiler--they ushered in a period of creativity that commenced in the late

¹⁴ Carlos Prieto, *Mining in the New World* (New York: McGraw-Hill, 1973). The first concessions occurred in 1810, when the British government negotiated preferential trading privileges with Brazil in return for supporting the Portuguese royal family during the Napoleonic wars.

¹⁵ Roger Burt, “The Transformation of the Non-ferrous Metals Industries in the Seventeenth and Eighteenth Centuries”, *Economic History Review*, 48 (1995), 42.

¹⁶ Roger Burt, *John Taylor: Mining Entrepreneur and Engineer 1779-1863* (Buxton: Moorland, 1977), 29. See also John Rule, *The Vital Century: England’s Developing Economy 1714-1815* (London: Longman, 1992).

¹⁷ Bernard Deacon, “Proto-regionalisation: The Case of Cornwall”, *Journal of Regional and Local Studies* 18/1 (1998), 27-41. Cornish copper grew faster than all other major national industrial sectors before 1770, and between 1780 and 1830 Cornish copper witnessed a steady growth outstripped only by cotton textiles and iron.

eighteenth century and lasted until the 1840s.¹⁸ During this time it was found that the type of steam engine being used to drain mines in Cornwall was performing much more efficiently than contemporary physics said was theoretically possible.¹⁹

Without significant advances in technology, the maintenance of this comparative edge in metal mining and steam engineering would have been impossible. Pat Hudson argues that successful industrial regions were those capable of generating a series of significant innovations in technology.²⁰ Moreover, she also asserts that the organization of work and work practice prevalent in successfully expanding industrial regions often comes to influence the methods of an entire sector.²¹ Latin American mine owners, alarmed at the decline of their once mighty industry, began to consider that the introduction of British-manufactured steam engines and mining techniques might hold the answer to a revival in their fortunes and looked to Cornwall to supply the technological expertise and labor.

The Peruvian Precedent: The Migration of the Industrial Revolution to Latin America

The unstable political and economic background in Latin America was the setting for the opening chapter that heralded a new epoch in Britain's relations with Latin America -- the export of Cornish engines to drain and make profitable the silver mines of Cerro de Pasco in Peru, under the management of the Pasco Mining Company formed in Lima in 1812.²² This marked a change in attitude concerning the sharing of industrial knowledge and expertise with foreign nations, arguably driven by Britain's desire to gain a legitimate commercial foothold in Latin American markets that had been previously barred by Spain and Portugal. In 1811, one of the directors had discovered and purchased a model of a Cornish engine in London that had been manufactured by Richard Trevithick. When this model engine was set to work at Pasco, it defied critics who claimed it would not function at over 14,000 feet in the rarified atmosphere of the Andes.

In 1813 the company contacted Trevithick to place an order for several steam engines and to recruit the workmen to construct them. A historic Anglo-Latin American transatlantic mining contract, the first of its kind, was signed on 8th January 1814, with shares in the company traded on the London Stock Market. In 1814, a trio of skilled Cornish workmen sailed out of Portsmouth bound for Peru with a consignment of machinery dispatched by Trevithick.²³ This machinery had been manufactured at the

¹⁸ Three of the best biographies of Trevithick are Francis Trevithick, *Life of Richard Trevithick* (London: Spon, 1872, 2v); Henry Winram Dickinson and Arthur Titley, *Richard Trevithick, the Engineer and the Man* (Cambridge: Cambridge University Press, 1934); Anthony Burton, *Richard Trevithick: Giant of Steam* (London: Aurum, 2000).

¹⁹ John Griffiths, *The Third Man: The Life and Times of William Murdoch 1754-1839* (London: Andre Deutsch, 1992), 239-242. John Kanefsky and John Robey, "Steam Engines in 18th Century Britain," *Technology and Culture*, 21 (1980), 176-177.

²⁰ Pat Hudson, *The Industrial Revolution* (London: Arnold, 1992), 23-24.

²¹ Pat Hudson, ed., *Regions and Industries* (Already referenced in footnote 5 Publisher? 1989), 23.

²² See Sharron P. Schwartz, "Exporting the Industrial Revolution: Trevithick and the Migration of British Steam-Engineering Technology to Latin America", *Journal of the Trevithick Society*, 28 (2001), 3-12. The company consisted of Pedro de Abadía, a prominent Lima merchant, his partner Joseph de Arismendi, and a Swiss gentleman, Francisco Uvillé.

²³ This included four Cornish pumping engines complete with pitwork, four winding-engines, a portable rolling-mill engine (for the Lima Mint), two crushing mills and four extra Cornish boilers.

Bridgnorth Foundry, Shropshire, and what became one of Cornwall’s foremost foundries, Holman’s of Camborne. These two companies were the manufacturers of the first machinery to leave British shores for Latin America, an event that marked the transatlantic migration of the industrial revolution in hard rock mining and steam technology to South America.²⁴ The scale of the operation, in an era that preceded modern communication and transportation systems, was truly remarkable. After a long sea voyage via Cape Horn to Lima and a tortuous twelve to eighteen month trek inland through difficult terrain over which no wheeled vehicle could travel, most of the equipment arrived at Pasco. The engines and boilers had been specially cast in sections to allow the parts to be transported more easily to the mines by mules, where they were to be assembled. July 1816 saw the dawn of the industrial revolution in Latin America when one of the engines drained a pit below adit level (beneath the level at which water will flow from a mine naturally) at the Santa Rosa Mine, astonishing a local official who described the innovation as “the most significant for the mining industry since the conquest of Peru.”²⁵



Fig. 1. Registered Silver Production for the Caja of Pasco, 1800-1824

Source, J.R. Fisher, 1977

The elation however, was to be short-lived, as component assembly and boiler problems prevented further progress, necessitating the travel to Peru in 1817 of Trevithick himself with a Cornish boiler-maker. With Trevithick’s arrival, the problems

²⁴ The first steam engine to have crossed the Atlantic was that constructed by Joseph Hornblower of Penryn (1729-1809), who on leaving Cornwall successfully erected a Newcomen steam engine at John Schuyler's copper mine in Belleville, New Jersey, in 1753. But at the time of the American Revolution, the eastern seaboard colonies possessed only three steam engines and no factories.

²⁵ John Robert Fisher, *Silver Mines and Silver Miners in Colonial Peru, 1776-1824* (Liverpool: Liverpool University Press, 1977), 115.

were eventually surmounted, aided in part by the discovery of a seam of coal in the vicinity of the mines. By the end of 1819 three engines were at work at the mines of Santa Rosa, Caya and Yanacancha. Figures for silver production at Cerro de Pasco (fig. 1) suggest that the application of Trevithick's steam engines had a dramatic, immediate effect on silver mining, enabling rich ore lying below adit level to be exploited for the first time.²⁶ Silver registration at Pasco rose by 350 per cent in 1820, an increase to the highest level since 1811, and the second highest figure ever recorded for Pasco, representing over 65 per cent of Peru's total registered silver production for 1820.²⁷

However, the bright prospects offered to the Peruvian mining industry through the introduction of Cornish skill and technology were severely retarded by battles that raged in the Pasco area for at least four years, and silver production dwindled to a virtual halt (see fig. 1.). During this time valuable machinery was smashed and the Cornish engineers and smelters fled to Lima. It was not until the mid 1820s that attempts to work the mines at Cerro de Pasco with steam engines and imported Cornish labor resumed under the Pasco-Peruvian Company. Trevithick's enterprise in the Andes has been described as a failure, but the figures for silver production at Pasco suggest otherwise.²⁸ Had it not been for the war, the introduction of British technological skill would doubtless have built upon these promising foundations. Yet this was merely a foretaste of what was to come in the 1820s, a period that witnessed a renaissance in mining in South and Central America, backed by large sums of British capital. This renaissance opened a new and exciting epoch in British-Latin American relations, as imperialism through trade culminated in the further exportation of the industrial revolution to South and Central America and the broadening of the frontiers of Britain's informal empire. In this process, the Cornish were the light infantry of capital.

A New World Order: The Migration of British Capital

By the 1820s, the volatile political situation had caused the Latin American mines that had been for three centuries the principal source of precious metals, and the envy of the world, to lie derelict. The mining infrastructure had collapsed; the apparatus was left to fall into decay, the capital withdrawn as financiers fled to Spain fearing reprisals, and the mining villages steadily depopulated. In Britain, the end of the Napoleonic Wars had witnessed deflation and depression, compounded by a lack of specie. A dwindling stock of precious metals, caused primarily by the collapse of mining in the New World, created a downward spiral of prices that had worrying implications for British domestic and foreign trade.²⁹

²⁶ Fisher, 122.

²⁷ Fisher, 144. Additionally, a party of Cornish lead smelters who arrived at Lima in 1819 appeared to have made a significant breakthrough in the recovery of lead, which was formerly lost in the native silver smelting process, successfully setting up a furnace at Pachachaca near Pasco. This looked destined for success until the wars of emancipation intervened. See John Miller, *Memoirs of General Miller in the Service of the Rep. of Peru* Vol 2 (London: 1829), 143-44.

²⁸ See M. J. Fenn, "British Investment in South America and the Financial Crisis of 1825-26," unpublished M.Phil. thesis, University of Durham (1969), 100. Trevithick left the Pasco mines after a dispute with one of the directors and attempted, with limited success, to work copper mines in Cajatambo and Chile. He ended up several years later prospecting for gold in Costa Rica and Nicaragua. See D.W. Davies "Richard Trevithick in Costa Rica" *Journal of the Trevithick Society*, 5 (1977), 7-26. Trevithick then returned to Cornwall penniless in 1827.²⁸

²⁹ Leyland Hamilton Jenks, *The Migration of British Capital to 1875* (New York: Knopf, 1927), 28.

Great Britain had long cast a coveted eye on Latin America, the markets of which had been jealously guarded by the Iberian empires. Desirous of gaining a legitimate commercial and trading foothold to replace years of piracy and contraband, Britain was excited at the prospect for overseas investments in markets freed from the tyranny of restrictive Iberian Imperialistic economic policies. Britain had an alliance with Portugal that dated back some 400 years and in 1810 signed the highly advantageous Treaty of Navigation and Commerce in return for military protection of the regent and Portuguese court that had fled to Rio de Janeiro in 1807 to escape Napoleon. This opened Brazilian ports to British ships and unlocked the lucrative markets of Brazil to British merchants. Brazil became Britain's third most important foreign market at that time.³⁰

British relations with Spain were less clear-cut. Britain had been the archenemy of Spain that from 1804 was allied to the empire of Napoleon; the Spanish transatlantic fleet had been fair game for the British navy. But following Spain's revolt against King Joseph Bonaparte in 1809, attitudes changed and Britain became the ally of Spain and remained so during the rest of the Napoleonic wars. Even after 1814 Britain maintained friendly relations with the Spanish government. However, her neutral stance was placed under considerable strain when in 1817 British volunteers went to fight in the army of Simón Bolívar, forcing the government to pass the Foreign Enlistment Act of 1819 in order to placate the Spanish.

Yet, however much Britain wanted cordial relations with Spain, the question of formal trade with Latin American markets was of even greater importance and to achieve this, political stability was required. Britain's foreign policy was increasingly driven by a desire to curtail French interests in the New World, particularly after France had restored despotic rule to Spain in 1823 at the request of the Spanish king following its brief flirtation with a constitutional regime. The threat of a Spanish army crossing the Atlantic under French naval escort to crush the militants in Spanish America prompted Britain to declare a thinly veiled threat of war.³¹ In 1824 Britain recognised three South American republics and more followed³².

While Spain languished in the misery and inertia of post war economic depression caused largely by the displacement of her historic transatlantic trading system, the Latin American Creole oligarchies vigorously sought access to the North Atlantic trading system and with it, the power to shape their newly independent societies. Seeking connections to a wider capital market in the postcolonial era, they approached the burgeoning international capital markets of north-western Europe in search of funds, for their fledgling governments seeking to establish security and infrastructure, and later for their private sectors in search of development finance.

As Alan M. Taylor notes, this was a time of "fortuitous coincidence of wants" as the borrower was capital scarce, with funds needed for nation-building and economic development. The lenders on the other hand, were increasingly capital abundant, as modern economic growth generated increasing savings, accumulation and diminishing

³⁰ Boris Fausto, *A Concise History of Brazil* (Cambridge: Cambridge University Press, 1999), 65-76.

³¹ Foreign Secretary George Canning was later to refer to this in a famous address to parliament during 1826: "I was resolved that if France had Spain, it would not be Spain with the Indies. I called in the New World to redress the balance of the Old."

³² See J.E. Rodriguez, *The Independence of Spanish America* (Cambridge: Cambridge University Press, 1998).

returns at home.³³ The most significant European investors were the British and many of the newly independent countries courted Britain with the promise of trade, albeit with duties, for as Collier *et al* detail, the absence of a strong and protected market did not induce principal owners of capital in Latin America - Church and merchants - to invest in industry. It was deemed preferable to allow British manufacturers and industrialists to fill the vacuum left by Spanish decline, in developing and supplying national needs.³⁴ This led to the opening up of parts of the interior of Latin America to trade, ownership, management, and above all, investment, the first great wave of which appeared in the 1820s and lasted into the 1830s, although as Leandro Prados de la Escosura details, this was by no means an even or welcome process across Latin America.³⁵

Some governments acted quickly to create the prerequisite conditions for foreign intervention in the mining industry. In 1823 newly independent Mexico rescinded those articles that had barred foreigners from the mining industry of colonial Mexico winning the praise of Lucas Alamán. He was perhaps the most prominent of a collaborating or mediating elite directly responsible for opening the Mexican mining industry to foreign penetration, believing the mines to be the touchstone of his country's prosperity and the basis on which foreign trade rested.³⁶ The Brazilian Government too, relaxed restrictions imposed on foreigners by its ancient laws.³⁷

The resulting investment "boom" in the early 1820s saw large-scale capital outlay in Latin American government bonds, and in joint stock companies. Latin American issues on the London Stock Exchange accounted for almost a third of investment in this period.³⁸ Of 127 new companies, over a third were mining companies and over 50 per cent of these were formed to work mines in Latin America (see Table 1); a significant fact, as practically none had existed before. They raised just over £3.5 million in capital, and gained authorization for just over a further £24 million, far exceeding investment in other parts of the world. This period can be said to mark the real commencement of British investments in independent and semi-independent foreign nations.³⁹

³³ Alan M. Taylor, 'Foreign Capital in Latin America in the Nineteenth and Twentieth Centuries' (*NBER Working Paper Series*, <http://www.nber.org/papers/w9580>, 2003).

³⁴ Simon Collier, Thomas E. Skidmore and Harold Blakemore eds, *The Cambridge Encyclopedia of Latin America and the Caribbean* (Cambridge: Cambridge University Press, 1992), 223.

³⁵ Leandro Prados de la Escosura, 'Assessing the Economic Effects of Latin American Independence', *Economic History and Institutions Series 07* (Universidad Carlos III Madrid, Working Paper 03-12, 2003), 32-33. For example, in Mexico trade grew from 8.1 per cent of GDP to 12.3 per cent of GDP by 1845, but in Peru after an initial episode of trade expansion in the 1820s, a return to protectionism, fixed prices and taxation retarded economic activity for decades.

³⁶ Robert W. Randall, *Real del Monte* (1972), 28-9.

³⁷ Henry English, *A General Guide to the Companies Formed for Working Foreign Mines*, (London: Boosey and Sons, 1825), 11.

³⁸ Carlos Marichal, *A Century of Debt Crises in Latin America: From Independence to the Great Depression, 1820-1930* (Princeton: Princeton University Press, 1989), 13-14.

³⁹ Fred J. Rippy, "Latin America and the British Investment 'Boom' of the 1820s", *Journal of Modern History* (June 1947), 122-9.

Name of Company	Country of operation	Capital	
		£ Authorised	£ Paid Up
Anglo-Chilean	Chile	1,500,000	120,000
Anglo-Mexican	Mexico	1,000,000	750,000
Anglo-Columbian	Colombia	1,500,000	75,000
Anglo-Peruvian	Peru	600,000	30,000
Bolaños	Mexico	200,000	87,500
Bolívar	Venezuela*	500,000	50,000
Brazilian	Brazil	2,000,000	20,000
Castello and Espirito Santo	Brazil	1,000,000	50,000
Catorce*	Mexico	?	?
Chilian	Chile	1,000,000	75,000
Chilian and Peruvian	Chile & Peru	1,000,000	50,000
Colombian	Colombia	1,000,000	150,000
Famatina	Argentina	250,000	50,000
Guanajuato	Mexico	400,000	6,000
General South American	Primarily Brazil	2,000,000	100,000
Haytien	Haiti	1,000,000	50,000
Imperial Brazilian	Brazil	1,000,000	200,000
Mexican	Mexico	1,000,000	150,000
Pasco-Peruvian	Peru	1,000,000	150,000
Potosí-La Paz & Peruvian	Peru & Bolivia	1,000,000	50,000
Real del Monte	Mexico	400,000	325,000
Río de la Plata	Argentina	1,000,000	75,000
Tlalpuxahua	Mexico	400,000	120,000
Tarma	Peru	200,000	5,000
United Chilian	Chile	500,000	50,000
United Mexican	Mexico	1,240,000	775,000
United Provinces	Central America*	1,500,000	15,000
TOTAL		24,190,000	3,508,500

Table 1. British Mining Companies formed to operate in Latin America in the years 1824-25.

Source: English, 1825.⁴⁰

Highly inflated prospectuses were issued by companies set up to work mines across Latin America, containing claims based more on the myths of their colonial past than on fact or scientific grounds. Many prospectuses drew on the reports of German explorer Baron von Humboldt (who had traveled extensively in South and Central

⁴⁰ * Venezuela was then a part of the state of Gran Colombia; the activities of the United Provinces Company were focused on the *Provincias Unidas del Centro América* - Guatemala, Honduras, El Salvador, Nicaragua and Costa Rica. The Catorce Company, Mexico, was a private company.

America and was considered something of an expert).⁴¹ They contained two basic points: first, that the mines worked in colonial Latin America had been profitable, but had been hampered by a lack of modern machinery and a dearth of geological knowledge; and second, and more importantly, that the transfer of British capital, technology and skilled labor would be able to overcome any difficulties in developing a modern metalliferous mining industry in Latin America, ushering in huge profits.

In Search of “El Dorado”: The Migration of Cornish Skill

In order to fulfill such claims, the operators of the new companies looked, as the Pasco Mining Company had done, primarily to Cornwall. British people were familiar with the mechanized and highly organized Cornish system of mining that had witnessed success in the lead mines of Wales and northern England and the copper mines of Ireland before the 1820s and therefore fully expected it to prove successful in improving existing methods in the Americas. Although miners from other parts of Britain, such as Wales, Cumberland, and Scotland, were recruited, as well as men from America, France, Hungary and Germany, those from Cornwall far outnumbered them. The head offices of the mining companies were situated in London, but the metropolis was actually quite peripheral to the logistical arrangements of the transatlantic enterprises. Cornwall featured strongly in the direction of the mining enterprises, the recruitment and subsequent transportation of skilled labor, the manufacture and export of technical and other equipment and also in financial backing.⁴² Cornishmen, and those with long-term business connections in Cornwall, featured on the board of directors of almost a third of the Latin American mining companies set up in 1824-5.⁴³

These men were representative of some of the most prominent and well connected mining and merchant families in Cornwall. John, Michael and William Williams, sons of *nouveau riche* John Williams of Scorrier, Gwennap, were the owners of extensive mining properties throughout Cornwall and had acquired an unrivaled business empire that stretched from Cornwall to Northern England, Wales, and Ireland. Michael Williams was associated with the Haytien, Imperial Brazilian and Pasco-Peruvian Mining Companies. His brother John was connected with the Chilean and the Río de la Plata Mining Associations and William with the Chilian Mining Association.

The only family with business interests to rival the Williams' was the Quaker Fox family of Falmouth, prominent merchants, industrialists, and shipping agents. George C. and Alfred Fox were directors of the Chilian Mining Association. Truro man, T.F. Hornblower, of the United Chilian Mining Association, came from a long and illustrious line of engineers, and just over the River Tamar in Tavistock was John Gill, the proprietor of the Mount Foundry Iron Works, who became a Director of the Chilian and Peruvian Mining Association. Further afield was London-based C. Pascoe Grenfell; of Cornish descent, he was a Director of the Colombian and Brazilian Mining Associations. To this list must be added the name of John Taylor, a native of Norwich, England, who was the prime mover in the Bolaños and Real del Monte mining companies in Mexico,

⁴¹ See Alexander von Humboldt, *Political Essay on the Kingdom of New Spain*, 4 Volumes (London : Longman, Hurst, Rees, Orme, and Brown, 1811-1814).

⁴² For more on this see Sharron P. Schwartz, “Cornish Migration to Latin America: A Global and Transnational Perspective”, unpublished PhD thesis, University of Exeter (2003), 96-7.

⁴³ Schwartz, “The Making of a Myth” 109.

the precursors of many foreign ventures that were to be managed by the internationally known company of John Taylor and Sons. Although not of Cornish extraction, his association with the mighty Consolidated Mines of Gwennap, where he turned a failing copper mine into bonanza, and with other prolific producers, made his name synonymous with Cornish mining.

These men were connected with most of the leading figures in Cornish mining. Individuals known to John Taylor or the Williams' through links forged at local mines, or through kinship, were offered jobs in Latin America, the genesis of the global "Cousin Jack network."⁴⁴ John Rule, a native of Camborne and superintendent at the United Mines of Gwennap, then managed by Taylor, was hand picked by him to be the mine manager at Real del Monte, and Rule, in turn, recruited the most skilled and reliable miners and artisans known to him.⁴⁵ Cornish miners, with a prior propensity for moving about to gain the best wages and conditions, were attracted overseas by wages initially three times higher than those they were accustomed to, plus the security of a fixed-term contract with home pay made in regular quarterly disbursements for the maintenance of their families, and the opportunity of rising far higher and quicker up the mining hierarchy than had they remained in Cornwall.

In Cornwall the great foundries of Sandy's, Carne and Vivian, and Harvey's, both of Hayle, Holman's of Camborne, and the Perran Company Foundry of Fox-Williams, manufactured the Cornish steam engines, boilers, pumps and stamps (ore crushing machinery) for Latin American mines. Smaller manufactories made everything from specialist dialing apparatus to mining tools, equipment, and miners' clothing.

Men and machinery were dispatched from Swansea, Portsmouth, Plymouth, and Liverpool, but by far the most was exported through the port of Falmouth.⁴⁶ Home of the Packet Mail Service and the Royal Navy, with ships calling there for orders, it had always been one of Britain's most important ports. But in 1825, Falmouth assumed an even greater profile, as various mining companies sent thousands of men (some with their families) and unprecedented amounts of equipment to all parts of South and Central America and the Caribbean. Latin America was the first significant overseas destination for Cornish mining labor, beginning a process of labor migration from Cornwall that was to have a significant impact on the development of the global mining economy and for future British relationships with many mining regions throughout the world.⁴⁷ It was the Cornish who began the first deep lode mining in the lead regions of the Upper Mid West of the USA in the 1830s and enabled commercial mining to expand in the copper and gold fields of South Australia and Victoria in the 1840s and 50s. Migrating from Mexico and the Pacific Littoral, they were among the first hard rock miners to open up

⁴⁴ Sharron P. Schwartz, 'Migration Networks and the Transnationalization of Social Capital: Cornish Migration to Latin America, A Case Study', in *Cornish Studies* 13, Philip Payton ed. (Exeter: University of Exeter Press, 2005), 256-287.

⁴⁵ *Quarterly Mining Review* (1830), 438.

⁴⁶ Of thirteen ships recorded in the local press as leaving for Latin America carrying men and mining equipment between March and July of 1825, eleven sailed from Falmouth and one each from Swansea and Plymouth.

⁴⁷ Sharron P. Schwartz, 'Exporting the Industrial Revolution: The Migration of Cornish Mining Technology to Latin America in the Early Nineteenth Century', in Heidi Slettedahl Macpherson and Will Kaufman, eds, *New Perspectives in Transatlantic Studies* (Lanham: University Press of America, 2001), 143-158.

the mother lode of California in the 1850s followed by mining fields across western America, and in the late nineteenth century migrated to the gold reefs of New Zealand, the Transvaal, West Africa and India, and the tin fields of Nigeria and Malaya as the light infantry of British capitalized mining companies, including the famous John Taylor and Sons.

The bubble bursts: failures and setbacks

By the end of 1825, Cornish miners and other laborers, along with specialized machinery, had reached some of the most inaccessible parts of South and Central America, including the fever ridden copper mines of Aroa and silver mines of Santa Anna in Gran Colombia, copper mines in the arid hinterland of central Chile and silver mines at high altitude in the Sierra Madre at Real del Monte, Mexico, and Cerro de Pasco and Potosí in the Andes. Yet hopes entertained by British shareholders of a rapid and generous return on their investment were dashed in 1826, as a number of the mining companies failed when capital was suddenly withdrawn. One of the main reasons for this sorry state of affairs was the collapse of the London Stock Market. Rippy sees the flotation process of the Latin American Government bonds as the root cause of the malaise that allowed merchant bankers and swindlers to rig the market.⁴⁸ Only a fraction of the authorized capital for the mining companies was ever paid in (see Table 1) and Rippy estimates total losses probably amounted to over 3 million pounds sterling.⁴⁹

Among the casualties were the Anglo-Chilian, Castello, Chilian, Chilian and Peruvian, Famatina, Haytian, Pasco-Peruvian, Río de la Plata, Tarma, Tlalpujehua and United Chilian. And others might well have collapsed too had it not been for the fact that they were bound by contracts with Latin American mine owners to continue for a specified period. The Anglo-Mexican Mining Association was one such company that had to keep working, creating a headache for shareholders, who were forced to dig deeply into their pockets.⁵⁰

Although the stock market crash was undoubtedly the prime cause of failure, other factors also contributed. The sheer novelty of transporting heavily capitalized, mechanized enterprises to regions that had neither the economic, social, nor political infrastructure to cope led to problems. Many of the mines were situated in remote and inaccessible regions, poorly served by roads or even navigable rivers. In Colombia there was a shortage of wheeled vehicles to convey equipment, and miners arriving in Mexico in 1825 found that they had to construct a road over which the imported steam engines could be transported from the coast inland to the mines of Real del Monte. Climatic conditions and disease depleted imported labor that was costly to replace. Political instability did not help either; in Mexico and Chile, attempts to work mines were frequently hampered by the activities of bandits necessitating the construction of huge walls around mining establishments for protection.⁵¹

Moreover, information contained in the mining prospectuses was, in many cases, revealed to be little more than humbug. Mines were often situated at incredible distances

⁴⁸ Rippy, 125.

⁴⁹ Rippy, 129.

⁵⁰ Margaret E. Rankine, "The Mexican Mining Industry in the Nineteenth Century with Special Reference to Guanajuato", *Bulletin of Latin American Research*, 2/1 (1992), 29-48.

⁵¹ For a more detailed description, see Schwartz, "Cornish Migration to Latin America", chapter 5.

apart and were purchased at exorbitant prices by European Commissioners who knew little about their true geology. Agents and workmen were dispatched even before the ink was dry on contracts granting British companies mining rights. Misinformation abounded and was merely compounded by doing business in the cavalier atmosphere of Latin America, where corrupt local officials were apt to prevaricate, as the Río de la Plata Mining Association discovered in 1825. Upon arrival in Argentina, its workforce of Cornish miners was sent back home because the company had failed to secure the mines it had planned to work, due to a *volte-face* by the local government.⁵²

Yet another reason must also be considered – one that is explicit enough in mining reports and contemporary literature – and that is the suitability of the labor force selected by the mining companies both before and after the stock market crash. The Cornish were by far the largest ethnic group and therefore came in for the most criticism. But was this deserved?

The Cornish miner critically assessed

In order to avoid accusations of filio-pietism that has marred some discussions of ethnic immigrant groups in the past⁵³, it is necessary to critically assess the Cornish miners who arrived in Latin America. For those companies that survived the crash, including the Real del Monte, Imperial Brazilian, Bolivar, Colombian, Bolaños, and Anglo-Mexican, caution was the by-word. The same was true for the British-backed mining enterprises that rose phoenix-like from the ashes of failure in the early 1830s, including the Copiapó Mining Company in Chile, and new companies that also emerged that decade. Among these were the St John del Rey Mining Company in Brazil and those formed to work abandoned colonial copper mines in Cuba, including the Cobre Mining Company and the Royal Santiago Mining Company. For as noted by Taylor, “economies in the region suffered deep macroeconomic instability for decades, bond issues went into default, new lending dried up, and a resort to seigniorage ignited the inflationary fire that has raged or smoldered ever since”.⁵⁴ The investments in mining, canals, steamboats and a myriad other schemes were seriously affected and since so many shareholders had been stung by the crash, reports in the *Mining Journal* thereafter reveal a constant suspicion of managerial and/or company impropriety. This included fears of bogus assays, the issuing of inflated or misleading reports of the mineral potential of a mine, or managerial attempts to misinform shareholders by concealing the truth about the working of a mine or the competence and behavior of its workforce. As many of the mine managers and senior staff were Cornish, they bore the brunt of the criticism.⁵⁵

In the early 1820s Cornishmen’s suitability as “practical” miners was called into question when they were shown to be deficient in their knowledge of the geology of complex ore bodies of gold and silver. Former Royal Engineers officer Captain F.B. Head, one of the most vociferous opponents of Cornish labor, considered them to be insufficiently qualified, while Strasbourg-born Charles Lambert’s letter to the Directors

⁵² See the *Quarterly Mining Review*, (1830), 81-106.

⁵³ For example, Glanmor Williams, “A Prospect of Paradise? Wales and the United States, 1776-1914”, in Glanmor Williams, *Religion, Language and Nationality in Wales* (Cardiff, University of Wales Press: 1979), 233.

⁵⁴ Taylor, 5.

⁵⁵ For example, see Desmond Gregory, *Brute New World: The Rediscovery of Latin America in the Early Nineteenth Century* (London: British Academic Press, 1992).

of the Chilian Mining Association in London in 1825 noted that he thought the Cornish of little use until they had been in Chile for some time: “they are still misled by the different mineral deposits in this country.”⁵⁶ Moreover, he relates how a Cornish Mine Captain, presumably chosen by the company for his proven competence in this capacity prior to his migration, presented specimens that he thought contained tin ores, such as were found in Cornwall, only to discover that he was in error.⁵⁷

Here Lambert, educated at the École Polytechnique in Paris, where he had acquired an excellent knowledge in mining, metallurgy, and geology, had put his finger on a basic limitation of the Cornish miner. They were beyond doubt highly skilled practical miners, but few had obtained any specific schooling in the principles of geology, physics, engineering, or chemistry, providing them with the underlying theoretical knowledge enabling them to adapt readily to new circumstances such as those encountered in Latin America. For Cornwall was later than its European or even Latin America counterparts in developing schools to help develop mining-related theory.

In the New World, the inauguration of a Theoretical and Practical Academy and School of Metallurgy took place at Potosí, Bolivia, in 1779.⁵⁸ A College of Mines was set up in Mexico after a successful petition to Charles III of Spain by a miner named D. Joaquin Velez Cardenas y Leon, to found an institution where the sons of poor miners could receive a free education, board and lodging, with classes beginning in 1792. In Europe, the first recorded school of mines was established in Hungary in 1735 but the most famous mining school was undoubtedly the Academy of Chemnitz in Frieberg Germany founded in 1765 that reached its celebrity under the famous Abraham Gottlob Werner. Pupils came from as far afield as Brazil, Spain, Russia and even Cornwall, to take advantage of the classes for mine managers as well as those on arithmetic, geometry, art of mining, elementary mineralogy, grammar and drawing.

Cornwall had, in the intellectual ferment of the mining boom, pioneered scientific societies to develop mining related knowledge - the Royal Cornwall Geological Society at Penzance (1814), the Royal Institution of Cornwall at Truro (1818) and later, the Royal Cornwall Polytechnic Society at Falmouth (1833). Yet, the learned societies’ membership, structure and cost made it very difficult for the working miner or even a mine captain, to join. Noting this deficiency, John Taylor had suggested setting up a mining school in Cornwall in 1825 and in order to raise the necessary funds, had proposed to obtain about £200,000 in £10 and £20 annual subscriptions from the mining companies set up to work mines in Latin America.⁵⁹ The scheme seems to have come to nought, for apart from the opening of a private school with mining related curriculum at Trevarth Gwennap in 1826 for the sons of a group of mining entrepreneurs there were no serious attempts at education for miners until the 1840s.⁶⁰

Moreover, reports of the poor temperament, propensity to insubordination, and lawlessness of Cornish miners cropped up on numerous occasions. Former officer and Scotsman Captain James Vetch of the Real del Monte Mining Company, Mexico, came

⁵⁶ John Mayo and Simon Collier, *Mining in Chile's Norte Chico* (1998), 15.

⁵⁷ Claudio Veliz, “Egaña, Lambert, and the Chilean Mining Associations of 1825,” *Hispanic American Historical Review* 55, (1975), 637-663.

⁵⁸ Carlos Prieto, *Mining in the New World* (New York: McGraw-Hill, 1973) 126.

⁵⁹ *West Briton*, 5 August 1825.

⁶⁰ Sharron P. Schwartz, and Roger Parker, *Lanner: A Cornish Mining Parish* (Tiverton: Halsgrove, 1998), 213.

to dislike the Cornish intensely and even proposed replacing them by drafting in laborers from Ireland, Scotland and Northern England. In his estimation the Cornish were not the “steady and submissive” workers he had hoped for, but “the most difficult we have to manage...and the most ungrateful.”⁶¹ More damning still were the comments of yet another military man, Captain Andrews, of the Chilian and Peruvian Mining Association, who wrote scathingly of the Cornish. As a consequence of their constant squabbling with a group of London laborers and Welsh miners, he too wished to replace them, with Germans, whom he considered to be:

more hardy, patient, and enduring, and far less nice and punctilious about trifles. Cornishmen are intractable if put the least out of their way. They harmonize together “one and all”, but not with strangers; and their dispositions and habits by no means correspond with the tried, placid tempers and dispositions of the South Americans.⁶² Also, all these comments are anecdotal— were there positive reports about the Cornish, too? Yes, I come to these later in the essay]

This example serves to illustrate the nascence of inter-ethnic rivalries among immigrants from Britain as the Cornish sought to demonstrate their perceived superiority in hard rock mining. Yet this rivalry was by no means confined to groups from the British Isles. “The Germans are the first miners in the world,” a traveler through Minas Gerais, Brazil in 1830 was informed, “and we shall have our mine [near Catas Altas] surveyed by a [German] man who can do them justice.”⁶³ German immigrant labor, primarily from the Harz Mountains, was found in many Latin American mines, particularly in Mexico and Brazil. In the former they made their presence felt by setting up a rival enterprise to the British silver mining companies - the Eberfeld Mining Company - staffed by Germans. In Brazil, where much of the pumping, ore crushing and amalgamation was performed using waterwheel technology, they were highly visible, attributable to the fact that Baron von Eschwege, had been instrumental in introducing cheaper, waterwheel technology as an alternative to costly steam engines that were associated with the Cornish.⁶⁴ Although the two groups worked peaceably side by side for enterprises such as the St John del Rey Mining Company of Brazil, and various British-backed companies in Mexico, ethnic rivalry with the Germans persisted into the twentieth century on Latin American mines, as will be demonstrated below.

Centuries of successfully working the mines in Cornwall on a system akin to self-employment had conspired to give the miner of the West of England the “frank and blunt manners” attributed to him by the 1842 Children’s Employment Commission,. A “character of independence - something American,” therefore existed amongst the

⁶¹ A.C. Todd, *The Search for Silver: Cornish Miners In Mexico, 1824-1947* (Padstow: Lodenek Press, 1977), 36.

⁶² Captain Andrews, *Journey from Buenos Ayres through the Provinces of Cordova, Tucuman and Salta, to Potosi, thence by the Deserts of Caranja to Arica, and subsequently, to Santiago de Chili and Coquimbo, undertaken on behalf of the Chilian and Peruvian Mining Association 1825-26* 2 Vols, (London, 1827), Vol. 1, 209-210. “One and All” is a sarcastic allusion to this motto that appears on the Cornish coat of arms.

⁶³ *Quarterly Mining Review* (1830), 407-408.

⁶⁴ Eschwege, active in both gold and iron ore mining and author of *Pluto Brasiliensis* (1833), arrived in Minas Gerais in 1811 is considered to be the father of Brazilian geology.

Cornish population.⁶⁵ Used to working largely on their own terms in their native land, in ways handed down from father to son over generations, Cornish miners were not as proletarianized as their counterparts in the collieries or mills of northern England and the Midlands in the early nineteenth century. They therefore did not react well to new labor practices where the hours and nature of their work were strictly regulated in the mines of Latin America, particularly by military men who often knew very little about mining. Traditionally their own bosses, they had migrated to move higher up the mining hierarchy and many were accused by the management of British mining companies of having ideas above their station, an attitude reinforced when they were given jobs supervising black slaves and native labor as Captain Munday of the Brazilian Mining Association observed in 1830:

I would recommend in future, if any more [men] are sent out to this country, that there should be a little discrimination between men, in consequence of some of the last party not being so civil as could be wished for. In fact some come out under the wrong ideas, expecting to be captains instead of workmen.⁶⁶

Much the same criticism was made of the Cornish in Mexico, Vetch complaining to John Taylor of “the ridiculous notions with which a great number of the company’s agents...come here with, respecting their importance - this is very lamentable and requires some time to reduce them to their true dimensions”.⁶⁷

It is difficult to judge what many of the native miners thought of the Cornish as they appear to have left no written accounts. Their actions perhaps speak louder than words. The Cornish were initially welcomed by the inhabitants of the mining towns in Mexico as heralds of economic rejuvenation and progress. However, the adulation was short-lived; the indigenous Otomi Indians of the Sierra Madre Mountains wrecked one of the massive mine pumps erected at Real del Monte out of fear and ignorance, and the Cornish soon encountered more serious resistance from local miners whose refusal to accept innovative changes to the labor structure frustrated their plans for improvements. The murder of Cornish miners was not uncommon. In some instances this was attributable to religious differences.

However, in other cases their Non-Catholic background was not the only factor leading to murder. For example, a young Cornish miner employed at the Santa Gertrudis Mine, Mineral de la Reforma, Pachuca, was stabbed to death in 1899 after his successful invention of an apparatus for simplifying the method of treating silver ore that resulted in a reduction of local manpower.⁶⁸ Particularly contentious in Mexico was the introduction of the Cornish *tribute* system for working mines. This meant abandoning long-established

⁶⁵ British Parliamentary Papers, “Report of Commissioners for inquiring into the Employment and Condition of Children in Mines and Manufactories (Report by Charles Barham on the Employment of Children and Young Persons in the Mines of Cornwall and Devonshire. And on the State, Condition, and Treatment of such Children and Young Persons”, (1842: 380.), 15/1, 759.

⁶⁶ Quarterly Mining Review, 1830, p. 356.

⁶⁷ Vetch to Taylor, 24 October 1825, quoted in Todd, 54.

⁶⁸ *Mexican Herald*, 5 March 1899; *Cornish Post and Mining News* 6 July 1899 and 3 August 1899.

traditional modes of operating, in this instance the *partido* system.⁶⁹ Mexicans customarily chose what area of the mine in which they wanted to work. To the British mine directors and managers alike the *partido* was responsible for a loss in profit to the mines and gave the native miners far too much freedom. As it resulted in a maze of unstable tunnels and galleries, it also militated against mine safety. Regulation of working practices and regimentation of the workforce was therefore required to raise productivity and profit. However, J.W. Williamson, the Director of the Anglo-Mexican Mining Association, wisely foresaw that all which could be reasonably expected was a modification of Mexican practice by European methods.

He was proven right when native miners were provoked into strike action in defense of their customary rights in the 1820s and 30s at the mines of Real del Monte, Zacatecas and Guanajuato upon the abandonment of the *partido*. Troops had to be called in to restore calm at Real del Monte, proving a stark reminder to the British management and their Cornish mining captains of the danger of trying to graft a foreign system of mining onto an industry equally as old and proud as their own. Otis Young notes in his authoritative account of western mining that neither the Saxon or Cornish experts appeared able to convey many of their technical refinements to the Mexicans who seemed content to do things their own way.⁷⁰

In Chile, the introduction of Cornish labor-saving haulage devices such as ‘kibbles’ (large iron buckets) and windlasses erected over shafts were fiercely resisted and were dismantled by local miners. With cheap locally available labor, the time-honoured method of raising ore by *apires* (workmen hired to convey the ore) was preferred.⁷¹ Indeed, apart from the Cornish miners’ habit of fixing candles to the brim of their hats when going underground, which was copied by their Chilean counterparts, Mayo stresses that technical diffusion by Cornish miners in Chile was limited, as a report from the *Chilean Times* confirms:

Steam power had not even been dreamed of then [the 1850s], and even whims, or horse-power drawing machines, were looked upon as costly and probably wasteful innovations, recently introduced by Cornish Mining Captains: what might answer very well in *Inglaterra* they thought might not answer in Chile at all.⁷²

As will be discussed more fully below when considering the suitability of steam engines to Latin American mining fields, this had much to do with the efficacy of a heavily financed, highly mechanized system of mining with a hierarchical labor structure that did not always answer well in areas where mining had been established for centuries.

⁶⁹ *Tributers* contracted with the mine captain to work a pitch for a previously arranged price. The pitch was an area in the mine that had been previously inspected by the Mine Captain to ascertain its worth. *Tributers* received a proportion of the value of the ores raised. The Mexican system of mining was ancient and complex. Put simply, *buscones* mined the ore wherever it looked promising, and hired *tenateros* to carry it to the surface. Mexican miners received half the ore – the *partido* – raised in this way.

⁷⁰ Otis Young, *Western Mining: An Informal Account of Precious-Metals Prospecting, Placering, Lode Mining, and Milling on the American Frontier from Spanish Times to 1893* (Norman: University of Oklahoma Press, 1970), 85.

⁷¹ William Jory Henwood, “On the Mining District of Chañarcillo in Chili”, *Transactions of the Royal Geological Society of Cornwall*, 8/1 (1871), 169-153.

⁷² John Mayo, “Commerce, Credit and Control” (1985), 30-45; John Mayo, *British Merchants and Chilean Development*, (1986), 131.

Mining methods had evolved to suit the climate, availability of fuel, and a labour structure built on locally negotiated social networks, and in parts of Peru and Bolivia, a reliance on the *mita*. This was a form of mandatory public service by society in pre-Columbian South America and which the Spanish adopted to press men to work in their mines. Indeed, in the post colonial era it was only through the use of slave labor that the mines of Colombia, Venezuela, Cuba and Brazil remained profitable, a system the British companies were loathed to see disappear.

The passing of the Aberdeen Act in 1845 prohibited the purchase of slaves by British citizens, yet as the *British and Foreign Anti-Slavery Reporter* of 1846 notes, there was a chasm in theory and practise. This forced companies such as the St John Del Rey of Brazil into embarrassing confrontation with British foreign policy; her board of directors lobbied successfully to include a provision allowing British citizens to keep slaves purchased before the passage of the law and to strike a clause prohibiting the renting of slaves, allowing slaves from failed mining companies to be rented.⁷³

“What the government does, her subjects undo,” commented the *British and Foreign Anti-Slavery Reporter* with respect to the 5,000 hired slaves that were estimated to have been at work day and night at the Cobre Mines of Cuba in 1846. “We have the remarkable fact that a number of Englishmen and a very large amount of British capital are employed in the Island of Cuba in the encouragement of slavery”.⁷⁴ This double standard was aptly summed up by a letter in the *Mining Journal* penned by ‘S.I.’ of Saltash in Cornwall. He did not advocate slavery, but defended it with respect to Brazil as he believed if it were abolished, the mines would had to have to been abandoned as it was too expensive to operate them without the use of slave labour.⁷⁵

Brought up as they were within a social system that championed the greatness of the British Empire and its tacit privileging of whiteness, received notions of superiority were further complicated for the Cornish, refracted as they were through the prism of ethno-occupational prowess within the global hard rock mining industry. In common with ‘S.I.’ of Saltash in 1841, the economic realities of mining in Latin America caused many Cornish to overlook the inequality and brutality of slavery as they wished to protect their own jobs.

The activities of the British companies in Guanajuato Mexico, “contributed no glorious page to British history,” according to de la Fosse.⁷⁶ Money was recklessly spent, machinery inefficiently utilised and then abandoned, and there was complete ignorance of conditions and an inability to adapt to more economical, existing machinery and methods which had proven effective under the Spaniards. According to German, Mr. Debercken of the National Brazilian Mining Association, stubborn adherence to Cornish methods also led to the failure of the Coaces gold mine in Brazil:

The reason why [the company] had not been rich and made fortunes like the former proprietors was [because] the English miners were too proud to take a lesson from the Brazilians, who were used to work the gold mines.

⁷³ For more on slavery and the St John Del Rey Mining Co., see Marshall Eakin, 1989, 33-35.

⁷⁴ *British and Foreign Anti-Slavery Reporter* (2nd Series) 1:3, 2 March 1846.

⁷⁵ *Mining Journal*, 20 and 27 March 1841; 8 and 22 May 1841.

⁷⁶ K de la Fosse, *Los Primeros Cien Años, Industria y Comercio Británicos en México: 1821-1921* (México City: n/d).

They [the English] worked the Brazilian mines as if they were tin [or] copper...⁷⁷

(Although his comment might be given less credence in light of the ethnic rivalry discussed above).

In the field of amalgamation and smelting of silver ores, the Cornish had little success. The traditional Cornish mode of dressing ores had failed with the silver ores at Real del Monte, Mexico, where they could not improve on the tried and tested Ibero-American *patio* system of silver amalgamation, introduced by the Spanish centuries before. It was not until the introduction of the cyanide treatment of ores by American companies at the beginning of the twentieth century that any significant advances were made in silver ore refining. In Mexico in particular, the Cornish encountered stiff opposition from German refiners and smelters, who were experienced in the metallurgy of silver ores and who introduced many incremental changes that were “found to be superior to those before practiced in Mexico.”⁷⁸ Germans were engaged in most of the silver concentration departments in Mexico and kept their ethnic rivals the Cornish largely out of this occupation. For example, the British-backed United Mexican Mining Association employed Theophilus Seyffert of Silesia as a smelter and mentions that Thomas Widder, who had received a regular education in Germany as a miner and metallurgist, had been appointed to a managerial position overseeing the reduction of silver ores at the company’s hacienda.⁷⁹

However, the Cornish failure with silver ore dressing was somewhat compensated by their successful innovations in gold and copper refining. In the Colombian gold mines in the 1830s for instance, Captain John Carthew had introduced a new system of dressing in a Cornish *tye* (a long trough to separate roughs from slimes by washing). This had “succeeded beyond expectation,” resulting in a reduction of gold loss from 60 - 70 per cent to approximately 37 per cent. “It is now certain that that dressing in Cornish *tyes* offers decided advantages over every other method hitherto employed”, commented Mr Bodmer in the London published *Quarterly Mining Review*, “and that it must be introduced without delay.”⁸⁰ At the Aroa copper mines of the Bolívar Mining Company, Cornishmen in the copper ore reduction department made significant advances in the calcination process and in 1838 were attempting to sell this idea to the British-operated Cobre Mining Company in Cuba.⁸¹

Yet by the 1850s, the *Mining Journal* periodically raised doubts as to the competence of Cornish miners and geologists, illustrated by the acrimonious correspondence that appeared in 1853 concerning the Veraguas Gold and Silver Mining Company of Panama, whose Cornish workforce was dismissed and replaced with “superior” miners from Freiburg, Germany, after the Cornish Mine Captain had delivered a report recommending the mine be abandoned, advice that later proved correct. “Inaccurate reports would not trouble the Cornish mine captain, for he is well aware that

⁷⁷ *Mining Journal*, 22 August 1841.

⁷⁸ *Quarterly Mining Review* (1830), 477. This was the verdict of the Real del Monte Mining Company’s Director in Mexico.

⁷⁹ *Quarterly Mining Review*, 1830, p. 319.

⁸⁰ *Quarterly Mining Review* (1830), 516.

⁸¹ HJ/1/17, Alfred Jenkin Letterbooks, Royal Institution of Cornwall, Truro. Calcining refers to the roasting of ore to remove impurities, particularly arsenic.

as soon as the present bubble bursts there is always some scheme afloat in which they can row together,” noted a London correspondent with the pseudonym “Fair Play”. For from the late 1820s the Cornish began to assiduously promote themselves as hard rock miners *par excellence*, informally recommending people known to them in Cornwall for positions in Latin American mines, thereby edging out their ethnic rivals. This comment from the *Mining Journal* represents one of many examples intended to tarnish the reputation of Cornish miners and to prevent them from gaining an undue stranglehold on the international mining labor market.

Assessing the Impact of Steam Technology in Latin American Mining

There can be little doubt that Cornish with their traditional disdain for ‘booklearned’ theorists were severely criticized in Latin America in the early nineteenth century for their lack of scientific knowledge, some observers suggesting that well-schooled German miners from the Harz Mountains were inherently superior. And yet, with the weight of British imperialism behind them, the Cornish miners began to craft their cult of superiority in the New World, working alongside native miners to acquire the necessary mining skills and geological formations, and applying steam power - one area of clear advantage - to the problems of deep lode mining.

Harnessed to drain workings hundreds of fathoms deep, or to operate machinery that dispensed with animal or human labor, steam power could result in significant financial savings and revolutionized mining in some Latin American mining fields, but not all. The fuel-hungry engines were not suitable in areas where there was difficulty in obtaining coal or a shortage of alternative fuel such as timber or peat. Here, age-old Iberian techniques persisted, with ores being raised on laborers’ backs, unwatering effected by *malacates* and the crushing of ores by *arrastres*.

Mexico provides a classic example, where steam technology was introduced on its deep and flooded mines with mixed results. At the Bolaños mines, 44 *malacates* employing 2,000 mules (50 to each *malacate*) overseen by 384 drivers, stable boys and others had cost, between 1791 and 1798, £79,552 each year. By the late 1820s the mine was being drawn by one steam engine and one waterwheel. At Real del Monte, the number of *malacates* had been 32, employing 1,380 horses and 288 men, the expense of which had amounted to nearly £70,000 annually. But the cost of drainage by steam was about £8,000 a year, effecting an annual saving of £62,000, although the mine was being worked at far greater depths.⁸² The companies of Tlalpujahuá, Anglo-Mexican and Mexican followed that of Real del Monte in importing steam engines. In fact, Dupont maintained that had it not been for steam, the mines of Fresnillo could not have been

⁸² *Quarterly Mining Review* (1836), 359. What must not be forgotten however, is the enormous cost of buying and then transporting these engines across the Atlantic. In 1829, a 36-inch cylinder engine for Bolaños was lost off the coast of Mexico, and although the company was insured, this incident incurred an additional £3,600.⁸² Maintenance was also problematic. Repairs to engines were often delayed for several months because orders to Cornwall for additional components were complicated by distance, taking a long time to arrive in Mexico. It was only with the construction of better roads in Mexico, the opening of coal fields, the introduction of railways in countries such as Brazil and Chile from the mid-nineteenth century, the advent of steam ships across the Atlantic and the coming of the telegraph, that the tyranny of distance between the foundries in Cornwall and the mines of Latin America was in part surmounted. But parts of the continent, particularly the Andes, remained remote and inaccessible throughout the nineteenth century.

worked at all.⁸³ However, after installing steam engines in 1825 at their Guanajuato mines when there was a shortage of mules to work *malacates*, the Anglo-Mexican Company was forced by a lack of good timber and a division of opinion in the company, to become primarily dependent on Mexican methods.⁸⁴

The mines of Cuba utilized steam on a large scale, the engines for the copper mines of the Cobre Mining Company, Royal Santiago Mining Company and the San Jose being cast at Harvey's Foundry, Hayle, the Fox-Williams Foundry at Perranwell and Sandys Carne and Vivian (Copperhouse) respectively, and the coal being imported from south Wales. But in Chile, the role steam engines could play was curtailed by a scarcity of water and they were of little practical use in mines worked on shallow copper deposits; only one mine in 23 was worked by steam in the 1870s, it being far cheaper to use *apires* (workmen hired to convey ore).⁸⁵ When Cornishmen introduced steam engines to Bolivia in the late 1860s, they encountered considerable logistical difficulties in obtaining and then transporting sufficient water across the Atacama Desert to maintain the engines' boilers.⁸⁶

In Brazil, Colombia and British Guiana⁸⁷, steam technology also made very little impact, as much of the unwatering, stamping and amalgamation was affected through a sophisticated system of waterwheels. However, harnessing the power of water to drain mine workings and operate surface machinery had also been perfected over centuries in Cornwall and coexisted with steam engines on many mines in the early nineteenth century. As Eakin has commented, although water technology was not new (being well known in European mining regions), it was its application by the British "on a rational, large-scale and systematic basis" that was.⁸⁸

The Cornish therefore achieved a very visible presence at the surface of many Latin American mines. The steam engines, some exceeding cylinder sizes of 80 inches, accommodated in their characteristic masonry houses were a symbol of British industrial prowess. Moreover, the workmen to erect, install, and thereafter maintain these engines were usually Cornish and they jealously guarded this position to keep out rival ethnic groups, arguing that only they had the necessary skills to operate such complex and complicated machines. In 1862 in the Coquimbo District of Chile, there were 13 'British' engine drivers, as opposed to only one Chilean, and in the nearby Guayacan District, there were twice as many 'British' performing this job than Chileans.⁸⁹ As late as 1908 the rivalry between German and Cornish miners was evident in the mines of Bolivia, where the Santa Barbara property was staffed by Germans and using German machinery. The appointment of a mining engineer from Camborne, Cornwall, resulted in the Germans being substituted for nine Englishmen, seven of whom were Cornish, six of

⁸³ S.C. Dupont, *De la production des métaux précieux au Mexique* (Paris, 1843), 387-8.

⁸⁴ Newton R. Gilmore, "British Mining Ventures", (1956), 80. Margaret E. Rankine, "The Mexican Mining Industry" (1992), 29.

⁸⁵ Leyland R. Pederson, *The Mining Industry of the Norte Chico, Chile* (Evanston: Northwestern University, 1966), 191-92.

⁸⁶ Sharron P. Schwartz, "The Cornish in Latin America" (2003), 159.

⁸⁷ The Cornish made very little impact in British Guiana as mining there was mainly of an alluvial nature. In Paraguay, which had a very poor floor in metalliferous minerals, the Cornish were largely absent. Small numbers were found in Uruguay, Nicaragua, Guatemala, British Honduras and Costa Rica.

⁸⁸ Marshall Eakin, "The Role of British Capital" (1985), 13.

⁸⁹ Mayo, 1986, 130-131.

them from the Camborne district. The German machinery was replaced with plant made by Holman Brothers of Camborne.⁹⁰

The Making of a Myth

But it was the Cornishman's great experience of deep lode mining, immortalized in the naming of countless shafts, winzes, lodes, adits, and cross cuts on Latin American mining plans and their ability to organize and finance large mining concerns employing hundreds of workmen that made the Cornish rise above their ethnic rivals.⁹¹ On arrival in Latin America, the Cornish were confronted with what appeared to be a confused and chaotic method of mining very different from the organized concerns with which they were familiar at home. Captain Thomas Garby, described as a "miner of judgement and experience" by John Diston Powles, inspected the Valenciana Mine in Mexico in 1824. He found it was not possible to put a barrow through a single level, a shortage of shafts and no method of extending levels or driving adits. In addition, there was a lack of mechanization compounded by the fact that the Mexican miners "work where they can find metal, without any regard to any other circumstance."⁹² In fact, Simonin writing in 1869, drew attention to the striking difference between the Cornish miners and the Ibero-Americans:

The Spanish Americans do little work compared with the Anglo-Saxons...the Cornishmen have not their equals in blasting a vein of quartz, and can earn by the work from ten to fifteen shillings a day, while the earnings of the Spanish, Chilean, or Mexican miners scarcely exceed four to eight shillings.⁹³

In 1830 the *Quarterly Mining Review* noted that a Cornish miner could raise three times the quantity of ore of a Mexican *barretero*.⁹⁴ "English labourers are less expensive in proportion to the work performed," commented Captain Cotesworth of the Cata Branca Mine in Brazil, "and preferable in every respect to other nations or Negroes."⁹⁵

Echoing this sentiment was the mine manager of the Colombian Mining Association. He had introduced the Cornish tribute system finding that the Cornish miners could work hard and difficult stopes far more cheaply and efficiently than native labourers, who were "but inferior miners, being but little accustomed to blast and break the ground."⁹⁶ The Cornish, used to working through the hard granite of their native land, were able to mine through rock hundreds of fathoms underground with sophisticated drilling techniques in relative safety, introducing the miner's safety fuse to Latin

⁹⁰ *Cornubian*, 24 December 1908.

⁹¹ For example, the Imperial Brazilian Mining Company's Gongo Soco mine sank three new shafts in 1839 that were named Bray's, Collins' and Blamey's in succession, according to the seniority of the Cornish mining captains there.

⁹² John Diston Powles, *A Letter to Alexander Baring Esq. M.P. on the Subject of Some Observations Reported to Have Been Made by Him in the House of Commons on the 16th March, 1825, in Relation to the Foreign Mining Associations* (London, 1825), 13.

⁹³ Louis Simonin, *Underground Life of Mines and Miners* (London: Chapman and Hall, 1869), 467.

⁹⁴ *Quarterly Mining Review* (1830), 458. A *barretero* is a miner who works with crowbar, wedge, or pick.

⁹⁵ *Mining Journal*, 22 July 1837.

⁹⁶ *Mining Journal*, 22 July 1837.

American mines following its invention and patenting by William Bickford in 1831.⁹⁷ At the Imperial Brazilian Mining Association's mines at Gongo Soco, G.V. Duval agreed that the native workforce "cannot supersede the necessity of a supply of good miners from England."⁹⁸ His conclusion--"I am afraid that it will never be possible to render you entirely independent of English labour and of home engagement"--conveys how important he considered his Cornish workforce to be to the success of his company.⁹⁹

By 1854, following the discovery of gold in California and the development of mines in Australia and elsewhere and with such new enterprises holding out very inviting prospects for would-be workers, it was becoming harder to recruit Cornish miners, as the Royal Santiago Mining Company found when it required fresh hands to develop its copper mines in Cuba.¹⁰⁰ It appears that the cult of Cousin Jack, hard rock miner *par excellence*, had begun to take effect. This was a tremendous coup for the Cornish who were not slow to see the global benefits of creating their mythological status in the mines of Latin America and then vigorously promoting this fame as the international mining labor market expanded.

Latin America, Birthplace of the International Mining Labor Market

Although some of the early mining ventures failed, the test of time proved the effectiveness of the combination of British capital and Cornish skill, allowing a renaissance in mining in many regions that had been abandoned during the wars of emancipation. Indeed, Veliz has concluded that had it not been for the financial disaster of 1826, the mining companies in Chile would have prospered.¹⁰¹ Ward concedes that if the British had been able to hold out for a little longer in Mexico, their efforts would have been rewarded and their reputations perhaps vindicated.¹⁰² Kathleen de la Fosse concludes that the British companies were harassed by difficulties with the mine owners, labor troubles, thievery and banditry. There were accusations of bad faith, litigation ensued, and contract conditions were probably unfavourable to the Companies and had been accepted with over-optimism.¹⁰³ And although the British mining venture in Real del Monte, Mexico, has been described as a failure, Randall invites another interpretation. By arguing that the modern, structured company which reverted back to Mexican ownership in 1849 was unrecognizable from the run-down enterprise that the British had acquired a quarter of a century before, he concludes that the British company with its Cornish miners ultimately did permit the expansion and development of mining in the Real del Monte region. Ironically, soon after the end of the British period of management, one of the mines they had controlled went into bonanza.¹⁰⁴ Incompetence was not the reason for failure in Mexico, argues de la Fosse, but inflexibility "and those who followed them [the British] benefited by their mistakes".

⁹⁷ Known as "single" or "double jacking" the Cornish used reinforced iron rods that were sharpened at the centre of one end, the former method undertaken by one man, the latter a group of men, striking the drill known as a "boryer" with sledge hammers.

⁹⁸ *Mining Journal*, 24 June 1837.

⁹⁹ *Mining Journal*, 29 July 1837.

¹⁰⁰ *Mining Journal*, 15 July 1854.

¹⁰¹ Claudio Veliz, "Egaña, Lambert, and the Chilean Mining Associations of 1825," (1975), 644.

¹⁰² H.G.Ward, Vol. 2, London, 1829.

¹⁰³ Kathleen de la Fosse,

¹⁰⁴ Robert W. Randall, *Real del Monte* (1972), 219. The company still continued to recruit Cornish labor.

Crucially, metalliferous mining helped to pave the way for further British investment opportunities in other industries, including engineering, foundries, railway construction, nitrates, coal, shipping, banking, trade and commerce in the 1850s, a decade that witnessed renewed interest in Latin America by the London capital market. Despite the stormy years of 1826, Britain gained the foothold in Latin American trade that had eluded her for so long, successfully extending the frontiers of her “informal empire” through trade stimulated by the expansion of metalliferous mining that promoted British settlement, and Cornish miners were at the cutting edge of this process.

As one of Britain’s earliest industrial regions the migration of capital and labor meant that Cornwall began not only to export its skilled workers, but also developed a world class export trade in mining machinery and technology, a process begun by Richard Trevithick in Peru. And it is this development that is crucial to the understanding of the complex relationship that connected Cornwall, Britain, and Latin America. Without the initial migration of British capital that resulted in Cornish domination of the boards of directors, mine management, and labor structure, it is doubtful whether the Cornish, although already good practical miners, would have been in such a strong position to dominate the mining market as they did. The mines of Latin America acted as a training ground for the Cornish. Janus-like, they were able to look back to traditional mining methods perfected in Cornwall while blending this with unfamiliar mining methods they had encountered in the New World.

Indeed, many miners who remained in Cornwall were backward in comparison to the “Cousin Jacks” who ventured overseas. Those who returned brought back useful human capital and their input into the Cornish mining industry became increasingly important and necessary, as acknowledged William Thomas C.E., the secretary of the Mining Association and Institute of Cornwall in 1896, who stressed that methods needed as much attention as the appliances used, supervision in particular judged to be inadequate.¹⁰⁵ Able to understand and work the most complex mineral bodies anywhere in the world, this hybridized Cornish miner was well placed to respond to changes in the global labor market as the nineteenth century progressed. “Whatever the predilection for foreigners, the English miner has not only held his own against foreigners at home, but has successfully exerted himself in Spain, in Norway, and in various points of Europe,” sounded the *Mining Journal* in 1853:

If the Spaniard began the exploration of the Americas, the Englishmen and his tribe have now carried it out. In our mining districts; Cuba, Jamaica, Mexico, Colombia, California, Brazil, Peru and Chili, are now as familiar as Redruth, Swansea or Alston.¹⁰⁶

In these new mining areas, the Cornish commanded key positions, moving from one country to another, as the fortunes of the international mining economy waxed and waned. Cornwall became a major migration center for a skilled and mobile work force that gave rise to numerous Cornish transnational communities around the globe by the early twentieth century, where miners became the “flag bearers” of Britain’s empire, both

¹⁰⁵ Herbert Thomas, *Mining Interviews* (Camborne: 1896), 155.

¹⁰⁶ *Mining Journal*, 4 June 1853.

formal and informal.¹⁰⁷ The existence of such enclaves of Britishness became a matter of great importance for the British Empire, as, for example, in the Transvaal in the years leading up to the Anglo-Boer War, where over 25 percent of the white mining workforce were Cornish miners.¹⁰⁸ As markets became increasingly interdependent, an integrated labor market emerged. Cornwall, far from being the peripheral region it is often perceived to be within Britain today, provided the most visible imported workforce from the very beginning of the global mining market in Latin America, and thereafter dominated it. Looking back on this exceptional period of history, America's most distinguished mining expert, Thomas Arthur Rickard, was moved to state: 'Outside the rock-ribbed peninsula of Cornwall, all over the world, he [the Cornishman] has taught men how to dig the ore'.¹⁰⁹

The migration of Cornish mineworkers, as the light infantry of British capital, resulted in the international recognition of a small, yet unique, region of the British Isles marked as much for its migration as for its skills in hard rock mining:

*Some say of the Cornish miner
His home is the wide, wide world,
For his pick is always ringing
Where the Union Jack's unfurled.*¹¹⁰

¹⁰⁷ Sharron P. Schwartz, *Mining a Shared Heritage: Mexico's 'Little Cornwall'* (Cornish Mexican Cultural Society 2011).

¹⁰⁸ Quoted in Gillian Burke, "The Cornish Diaspora of the Nineteenth Century" (1984), 59.

¹⁰⁹ Thomas A. Rickard, *A History of American Mining* (New York, 1932), 246.

¹¹⁰ Herbert Thomas, *Mining Interviews* (Camborne, 1896), 350.