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**Cornwall and West Devon
Mining Landscape**

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Communities and culture - overview

The Cornish Mining World Heritage Site is based on the landscapes of Cornwall and west Devon, but it is also very much about its people. At a time in which thousands of Cornish miners, industrialists, foundrymen and farmers were reshaping their landscape to meet the challenges of a rapidly-evolving world, they, too were being changed forever. The society which emerged in Cornwall during this period was unlike anything seen in the region before and was typified by the young men from Lanner, Gunnislake or St. Just who took ship thousands of miles from home to work in lands whose geography, language, and customs were unfamiliar and where little might await them but hard work and an early grave.

Life was undoubtedly tough in those days. Mineworkers were often considered old men by their forties and death through illness or accident was commonplace. Dust, fumes, hard work deep underground and a poor diet since childhood presented significant challenges. And all the family had to contribute. Young women took work as bal maids, and even though they took pains to protect the faces from the sun, wearing cardboard hoods to shade their complexions, contemporary writers usually noted their rough, chapped hands. Fancy gloves bought from the chapman weren't a luxury for these women, but a way of trying to stay young and attractive.

Children were soon involved in the world of work. By eight or nine, a miner's son or daughter was old enough to make their contribution to the family's meagre income, shovelling, hauling, and doing menial poorly-paid tasks, working alongside brothers, sisters, uncles, fathers, learning the world of work and the skills they would need to survive. Mining was frequently a family affair. Eventually these practices were outlawed by legislation. Women and children were replaced by machines and only the men kept their jobs.

Home life was almost always a struggle. Mining was a precarious occupation, subject to the vagaries of international metal prices, to world politics, to accidents of geology, to the evaporations of shareholder confidence. If anything was guaranteed for a miner, it was uncertainty about the future. Homes were often small, cramped and unsanitary, rented on terms that guaranteed no promise of security, and were quickly relinquished when the need arose. Miners and their families soon learnt to be mobile and adaptable, and to cope with hard work, unemployment, poor health and an infant death rate we would find shocking today. Diseases like cholera and typhoid stalked many of the new mining villages and towns with their lack of sanitation, uncertain water supplies and overcrowded homes, preying on the most vulnerable - the young, the undernourished and the elderly.

But life was not ubiquitously 'nasty, brutish and short', whatever the local tombstones suggest. These conditions bred a strong sense of self reliance, whilst shared experience built strong communities. Feasts and celebrations emerged - many marked by drinking and fighting, games, fireworks and singing; often also a joyous

sense of local identity. For the more abstemious, there were new roads to self-improvement - Miners and Mechanics Institutes, reading rooms, music and poetry, and above all, Methodism.

Migration was always an attractive proposition for young men seeking the best wages and conditions. 'Cousin Jacks' were not slow to seek their fortunes wherever skilled miners were needed and as the mining fields of the New World began to give up their riches and the old mines of Cornwall stopped paying dividends, so young men and their families - miners, foundry workers, carpenters and farm boys alike - took ship to the Americas, Australasia, Asia and Africa. Such were the numbers that migrated in this way that entire communities of Cornish men and women soon became established in Mexico, Australia, the Rand - the list of countries is long. With them they took their way of life - one based on mining and non-conformism - a tight-knit culture which worked hard and played hard and in which people kept in touch, not only with the traditions of their homeland, but with those they had left behind. 'Home pay' from the Rand or South Australia kept many wives and children from the workhouse and sustained an economy whose mainstays were rapidly falling away as mines were abandoned by the hundred in the closing years of the nineteenth century.

So it is that pasties are eaten from Mexico to Queensland, magnificent, but indubitably Central American Methodist chapels are to be found in deepest Mexico, rugby was spread the world over, brass bands and choir singing are heard in the outback and the veldt. Whole communities of Australians, Africans, and Americans still count themselves Cornish at heart and celebrate that fact.

And what of the small group of men whose foresight, inventiveness, business acumen or plain luck made them fortunes or reputations during this period? They were few in number, but it would be a very different place without John Taylor, Richard Trevithick, the Wesleys, William Murdoch, Arthur Woolf, Humphrey Davey, Sir Charles Lemon, 'Guinea a minute Daniell', Francis Oates, John Williams or the Daubuz, Grenville and Basset families. Some were working at the boundaries of technologies so new that only a handful of people in the world could appreciate their discoveries, some saw opportunities for riches, grasped and pursued them, building fortunes which made them the new elite of their societies. Some like Captain Thomas of Dolcoath could make or break a mine, others like Billy Bray the preacher changed hearts and minds. All played their part in Cornwall's transformation.

Most of all, however, this is the story of the lives and experiences of thousands of ordinary Cornish men, women and children who made it work, whatever the difficulties, and whose character, moulded during this period, helped to make possible our modern world.



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Communities and culture - a socio-economic view

Cornwall has been described by historians as being one of a handful of early dynamic, thrusting regions which lay at the margins of the British industrial revolution, and noted for its culture of ingenuity, particularly in relation to the development of steam technology (Hudson, 1981, 1989; Pollard, 1973; Richards, 1993).

Copper was to Cornwall what cotton was to Lancashire. Its production grew phenomenally during the eighteenth century, and by 1770 the value of the copper industry had outstripped all other national industrial sectors. Huge fortunes were made, so much so that in the early eighteenth century Cornwall probably had more newly rich than most other English counties. Banking and commerce were stimulated, Cornish 'capitalists' developing risk-sharing and cartels, within the copper industry, before many other industrial regions (Rule, 1992; Deacon, 1998).

By the early 1800s, Cornish mines were among the largest enterprises anywhere in Europe and very much in the vanguard of the industrial revolution, not simply in terms of technological development, but also in capitalisation, the promotion of joint-stock companies, the development of an increasingly structured workforce including specially paid senior management, and the sheer numbers of people involved (Burt, 1995). Cornish investors rapidly began to diversify their capital into smelting and other industries, both at home and abroad, heralding the migration of the technology and labour of the region, initially to other areas of the British Isles, but rapidly thereafter overseas. Cornwall was quickly becoming the hub of a rapidly expanding global metalliferous mining economy (Schwartz, 2001).

Copper mining had mainly been confined to the area west of Truro during the early nineteenth century, but the industry was dynamic and spread rapidly to east Cornwall and the Tamar Valley during the following decades. By 1851 over a century of specialisation in mining had resulted in an occupational structure dominated by extractive industries, Cornwall having a higher degree of occupational specialisation than industrial areas such as the coal mining region of South Wales or the north west of England textile region. In 1861 the Redruth Registration District had the second highest percentage of men in any English or Welsh Registration District for employment directly in mining (Deacon, 1998).

Such economic specialisation, together with regional labour and capital markets, gave rise to distinctive regional cultures and complex yet fluid identities. During the early nineteenth century, Cornish miners had constituted a semi-independent proletariat with significant access to smallholdings held under the three lives system, by no means a common form of land tenure in Britain, and to non-commodity methods of production (Deacon, 1997). These helped to subsidise the real costs of mining by keeping tribute wages low. Occupationally homogenous communities of 'independent' mining families co-existed with the webs of deference woven by the old landed classes and a rising merchant bourgeoisie that had made their

money through and because of mining, but whose dispersed interests obscured their role as a capitalist employing class.

The importance of mining to a burgeoning sense of regional identity is exemplified by the growth of dialect literature, which gave Cornwall the work of J.T. Tregelles, a mine purser, and the evocative poetry of W.B. Forfar and John Harris. It is also exemplified in the widespread allegiance to Methodism in all its schismatic hues, in particular by miners and its popular Revivalist nature was perceived as quintessentially Cornish (Rule, 1971; Burke, 1981; Deacon, 2001). By 1824, one in nineteen of the county's inhabitants was a Methodist member and the high number of surviving chapels bear witness to the impact of Methodism on the region.

As the nineteenth century progressed, Cornwall and west Devon became more exposed to the practises and cultures of other industrial regions. The tribute system was increasingly being abandoned in favour of more strictly regulated tutwork with fixed contracts. Reduced access to smallholdings, a result of pressures placed on the finite resource of land through enclosure of common land, coupled with the potato blight of the late 1840s, helped to accelerate the breakdown in a traditional way of life that had underpinned the early phase of Cornish industrialisation. Families, progressively more dependent on the formal wage economy, became increasingly proletarianised, urbanised, and like their counterparts in other industrial regions of Britain. Trade unionism and strike action became more common. During the late nineteenth century, cultural forms introduced from mature industrial regions such as the Welsh valleys and the north of England were wedded to 'traditional' Cornish forms to produce a culture of mine and chapel, an identity centred on industrial pride which prized thrift, hard work and respectability, fostered by Methodism in particular. New cultural forms included spectator sports such as soccer and rugby, male voice choirs and brass bands, and a hybridised working class culture was forged which remains to the present day (Deacon, 1997, 1998, 2001; Deacon and Payton, 1993).

However, Cornwall and west Devon were not destined to progress from the margins to become one of the core industrial regions of Britain, but became increasingly peripheralised. The absence of economic diversification into other industries such as copper smelting, or the ability to maintain a competitive edge in heavy engineering and metal manufacture produced an economy that was overspecialised and over-dependent on mining (Payton, 1992; Perry, 2001). The decline in mining could have had far more serious repercussions for a region that was not witnessing population loss caused by migration, as mine after mine closed in the 1860s and 1870s throwing thousands out of work. One could speculate that had Cornwall and west Devon not lost a significant proportion of its population - up to a third of the youngest and most dynamic people in some communities between 1871 and 1881 - a critical mass might have been achieved that would have kick-started an economy that was attempting to diversity into horticulture, food processing, china clay manufacture and tourism. Deprived of population growth, the towns of Cornwall and west Devon did not expand as did those in other industrial regions and none could boast a population greater than 10,000 by the late nineteenth century. No single urban centre of regional dominance emerged as a result, and Cornwall's small towns remained the focus of their immediate locality, politically and culturally fragmented and often locked in bitter inter-town rivalries (Perry, 2001).

These profound economic changes were mirrored by equally profound cultural ones, as lost industrial pride and prowess were followed by introversion as communities relied on the remittances from overseas which helped to prevent widespread poverty. However, some of this money was wisely invested in economic diversification, community regeneration schemes and municipal building, but it did not hide the fact that an economy reliant on remittances for future growth coexisted uneasily with an emerging culture of fatalism, of getting by and making do (Schwartz,

2002). Stoicism in the face of adversity was only leavened by the vague but persistent hope that Cornish mining might yet revive.

The frailty of an economy that was incomplete, overspecialised, and so linked to a single industry, has been held responsible for the deep socio-economic depression that spanned much of the period from the late nineteenth century to the inter-war years of the twentieth century (Payton, 1992). Yet although mining was never again to dominate the region's economy, it has left an indelible mark on the people of Cornwall and west Devon, aspects of whose identity are closely allied to the culture which evolved during industrialisation. Brass bands, male voice choirs, rugby, Methodism and the icon that is the Cornish engine house, remain markers of pride in the modern Cornish identity, particularly amongst Cornish communities abroad.

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Working conditions

Mining, particularly for copper, was a labour intensive process and in the early nineteenth century many of the region's mines were huge employers. In 1836-37 Tresavean employed over 1,300 men, women and children while Consols and United employed over 3,000, East Wheal Crofty and Wheal Vor over a thousand each, and Fowey Consols and Lanescot over 1,500.

Life at or just above subsistence level required a maximum of familial co-operation which meant that in the early 1800s women and children worked in the mining industry. The 1842 Children's Employment Commission noted that the mines from Dartmoor to Land's End employed about 19/20ths of the region's young people. The total number of persons employed in the mines of Cornwall in 1842 was approximately 28,000 - 30,000 and those of Devonshire a further 1,500. By contrast the Alston Moor District in the North of England employed in the region of 5,000, Ireland, approximately 4,500 and Scotland around 400. Clearly the Cornubian ore-field was the key metalliferous mining region in the British Isles in terms of young labour, and it was not unusual to find children as young as 7 or 8 working at the mine's surface, and occasionally boys of this age underground. One of the first jobs he would be given would be operating an air machine.

However, in spite of this bad air remained a problem that had serious repercussions for miners' health. An analysis of 18 samples of air taken in Cornish mines in 1842 showed the average percentage composition of oxygen to be 17.076, carbonic acid gas 0.85 and nitrogen 82.848 (normal oxygen percentage is 21 and carbonic acid gas 0.05). Added to this were carbonaceous particles from miners' dips and blasting and mineral dust. The agent of Tretharrup Mine in Gwennap noted that for most of the time the air would be so thick with powder smoke that one could barely see one's hand. The air in Levant at the 130 fathom level was described in 1864 as "dry, dusty and hot" in which a candle would not burn properly. A miner who worked at the Consolidated Mines in Gwennap in areas where a candle could only be got to burn on its side, regularly spat up quantities of phlegm "as black as ink." At times it was almost impossible to see the shining end of the drill bit which miners had to strike to drive the holes in which to place the explosives.

In 1864 a former miner from Tavistock reported to the Commission that working in Wheal Maria in bad air had "shortened his breath." A period of further employment at Wheal Emma in a part of the mine in which no one else would work had led to his chronic lung condition, described as broncho-pneumonia, rendering him unfit for work. Mineral dust was to become more of a problem when pneumatic rock drills were introduced in the latter nineteenth century. These rapidly increased productivity and although the number of Cornish mines fell from 377 in 1870 to 138 in 1880, and the labour force contracted from 26,528 to 12,211, the amount of ore produced per person increased over the decade from £55.04 to £56.42. However, a terrible price was to be

paid by the miners for this increase in terms of output, as rock drills were seen to be the main culprit responsible for miners' phthisis, a chronic and fatal lung disease.

The early rock drills were based on the reciprocating piston principle, which bored dry and threw out clouds of dust and chippings. Cornish miners preferred to drill dry (a practise that they claimed was faster), resisting the use of a jet of water to dampen the dust. This in fact only made matters worse as fine globules of spray floating in the air acted as a most perfect conveyor of dust to the lungs. It was only when the axial feed water drill of the hammer type replaced the reciprocating piston drills did any improvement occur, over 40 years after the large scale introduction of the rock drill to Cornwall. It is well known that the fine mineral dust created by rock drills ravaged the lung cavities and caused the premature death of thousands of miners, particularly miners who had migrated to the Transvaal in their thousands and where by 1896 about 1,015 machines were in operation.

In the early 1900s, Redruth rock-drill operators who worked on the Rand had an average life expectancy of four years. For this reason the drill used to excavate the particularly hard quartz rock of the gold reefs in South African mines became known as "the widow maker." Yet miners in Cornwall's mines fared little better; the average life expectancy for men working with rock drills in 1911 was only marginally better at five years, and their average age was 39 (Burke, 1978). Sadly, employers were not at all keen to acknowledge the long-term damage to rock drill operatives' health, and little in the way of compensation was undertaken in Cornwall, in contrast to the Rand where in 1912 miners received a lump sum payment.

Surface workers too were not immune to the effects of mineral dust, particularly the bal maidens who crushed up copper ore into small fragments on anvils with large hammers. Conditions of work for those at the surface were not ideal, with women and children working in open sided sheds or on cobbled dressing floors that were exposed to the sun, wind and rain. As lots of water was used in the dressing of ores, surface workers' shoes and clothing were often wet and stained red from the iron oxide in the ore. Bal maidens wore large hats called 'gooks' to protect their head and face from flying stones and the elements, a coarse hessian apron and wrapped their legs in strips of material to protect them from the cold and damp.

Surface workers' tasks were sometimes arduous and many complained of the effects of over-exertion in the 1842 Children's Employment Commission, especially young boys employed at 'jigging'; being bent double over large sieves which they had to constantly shake, they often brought up blood after a prolonged period at this task. The Commissioner noted the poor physical condition of many of the children and women on the dressing floors who did not have sufficient nourishment to undertake hard, physical labour. Around half an hour was allowed for lunch, but the agent at Trethellan Mine, Gwennap noted that rather than eat communally, some of the bal maidens disappeared to eat their lunch behind a hedge embarrassed by the "meanness of their fare."

Miners carried their meal underground in a metal box called a dinner pail, which commonly contained a 'pasty' or 'hobban' – pastry cases enclosing scraps of meat or fish with vegetables. Water was taken underground in a small wooden barrel called an 'anker', and mealtimes were communal. But some of those questioned in the 1842 Children's Employment Commission remarked that it was not always easy to locate an anker when one needed a drink to quench a raging thirst in dry, dusty conditions.

Before the introduction of man engines and much later, mechanised skips or cages, miners often had to climb vast distances carrying their tools, supplies and dinner pails before and after working. Man engines were costly devices to install and

only the bigger mines were prepared to undertake the expense. Miners only got paid when they started work at their pitch and were grateful for any time saving device that also spared them the physical ordeal of climbing up and down numerous ladders. The first man engine in Britain was installed at Tresavean Mine in Gwennap in 1842 and the last to operate was at Levant, where a terrible disaster occurred in 1919 claiming the lives of 31 people when the cap that held the rod broke.

On the whole, the man engine had a fairly good safety record and doubtless saved many miners' lives, as countless accidents were caused by exhausted and malnourished miners falling from ladders, particularly at the end of shifts. The depth varied but could have been as much as 300-600 meters which was not always close to their place of work underground, often a cramped, hot tunnel end occasionally fouled by the stench of human excrement. In such damp, moist conditions, a disease named ankylostomiasis thrived, the symptoms of which were red skin blotches and anaemia, caused by contact with a parasitic worm that lived in human faeces. It was not until the early twentieth century that mines such as Dolcoath introduced pails to curb the spread of the disease.

In the United Mines, levels in the ancient workings did not exceed 5 feet by 2 feet wide, making it difficult to manoeuvre, whilst in some of the deepest mines high temperatures made working conditions appalling. In Cooks Kitchen Mine near Camborne, the temperature soared to above 100 degrees Fahrenheit below 350 fathoms and heightened by hot exhaust from rock drills. In 1884 the east end of the 335 fathom level had to be left to cool for two months before it was possible to work there. In such temperatures miners often worked virtually naked. Flannel trousers, heavy boots without socks and a strong, resin-impregnated felt hat with a convex crown onto which was stuck a lump of clay to secure a candle, was all that most could suffer to wear. In Tresavean, hot water issuing from a cross cut deep in the mine in 1855 was measured at 114° F, and burns from hot water were not uncommon (Schwartz & Parker, 1998). Men coming to grass after a shift encountered vast changes in temperature, sometimes exceeding 40° F, and had no proper facilities to wash and change into dry clothes. Miners sometimes left their clothing in the engine house and were forced to remove the worst of the grime at the end of their shift in the engine pool. To try and improve working conditions, some bigger mines introduced miners' 'drys' (changing facilities at the surface) where miners could wash and don dry warm clothing before leaving for home. Although primitive at first, these became more sophisticated eventually by the twentieth century containing heated lockers and bathing facilities. But arduous physical labour in poor conditions and on an often meagre diet - exacerbated by the onset of lung disease - made nineteenth century miners old men by their 40s.

Mining was a dangerous occupation, in which accidents from falling, blasting, drowning, rock-falls and entanglement in machinery maimed and sometimes killed. In 1846, thirty one men were killed in the mines of East Wheal Rose and North Wheal Rose by torrential rain that flooded the workings, while at Wheal Owles in 1893 miners inadvertently broke into the flooded workings of Wheal Drea. This caused a catastrophic run (subsidence) to surface and nineteen men and a boy were drowned. Accidents with explosives were common, even after the introduction of the miners' safety fuse, invented by William Bickford in 1831, through miss-timed holes or carelessness with charges. So dangerous was mining that the Gwennap Vestry Book of 1836 noted that "from the nature of the mines' occupation the average duration of male lives is from accidents and other causes, very materially shortened and in consequence, the number of widows with young families is very large."

The Health of Towns Association returns for 1841 showed that the average age of death of all those who died in the Redruth district at the heart of Cornish mining, was 28 years and 4 months, the lowest of any district in Cornwall. In 1851 over 19 per cent

of the adult female population were widows in the mining village of Lanner (Schwartz and Parker, 1998) and nearly 18 per cent in Kenidjack in Penwith (Sharpe, 1998).

Many mines operated a Miners' Club, a weekly levy to ensure a few shillings a week would be paid to the miner's family in case of accident or injury. Doctor's Pence usually covered surgical assistance only and medical provision was often primitive. The mine surgeon never ventured underground and injured men had to be hoisted to surface to receive medical attention. The time delay in doing so often proved fatal. There was clearly a need for proper medical care, highlighted as early as 1778 by Price in his *Mineralogia Cornubiensis*. The only hospital that existed was that at Truro opened in 1799. In 1844 mine adventurers set up a Practical Miner's Society to remedy the lack of a hospital, and E.W.W. Pendarves offered to turn a country house into one.

But these attempts were met with suspicion by the miners who threatened to tear down any buildings constructed, an attitude by no means unique among British workers at the time. With diseases and accidents so common in the mining districts, it took a concerted effort by the Rt. Hon. T.C. Agar-Robartes of Lanhydrock to initiate a successful scheme for a miners' hospital in the 1860s that resulted in a hospital at Redruth supported by Lady Basset of Tehidy, Sir Redvers Buller and Mr. Williams of Caerhayes Castle.

Despite the dangers, mining was the first choice occupation for many Cornish men and women in the nineteenth century. It created a tough group of people bound together with bonds of friendship and trust rarely paralleled in other branches of industry. Their work was arduous, the hours long and the rewards often little. But the Cornish took an intense pride in their work and carried the technology and achievements of their industry throughout the world.

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Living conditions - overview

Cornwall and west Devon possess many examples of relict mining landscapes dominated by impressive granite engine houses and mine stacks, for which industrial historians can provide much technical information. But what was life like for the people who depended on the 'bal' or mine, for their livelihood and where did they live?

Living conditions for many families at the time would today be judged shockingly hard. Mineworkers, whose families were often large and who frequently took in lodgers to supplement their incomes, generally lived in granite or cob cottages possessing only two or three rooms. In 1861 well over 60 per cent of the lodgers employed in the mining industry in Camborne and Redruth were accommodated in the houses of fellow miners (Brayshay, 1980). Some occupied cottages on smallholdings and had access to a few acres of land, some in terraces or rows of cottages which might have gardens where food for the table could be grown. The majority lived in towns, however, where gardens were small or replaced by courtyards offering little opportunity of supplementing the table with garden produce. The sleeping arrangements in many cottages were often complicated, several children sleeping in one bed. There would be no indoor water supply or bathroom, the lavatory being an earth closet outside, and the only heat being that from an open fire or later, an iron made Cornish range. Accommodating big families in damp overcrowded cottages with a lack of adequate sanitation meant a daily struggle to maintain standards of respectability - a challenge for even the most inventive housewife. An example of how overcrowded housing in mining communities was can be judged by the example of Mary Tavy, where in the mid 1800s a population of 1,500, mainly miners, was accommodated in just 66 houses (around 22 per house on average). But not all those connected to the mining industry found life so hard.

At the other end of the social spectrum were those who had made their money from mining – small businessmen, entrepreneurs and mine captains who were able to rent or purchase a more spacious residence, some boasting the labour-saving inventions of the modern industrial age. While upward social mobility meant that new money was able to move to more attractive areas of towns and villages, the landed classes, many of whom made huge fortunes from the mining industry, were keen to reflect their success and status. During the expansive period of industrialisation many new estates were built, such as that at Scorrier constructed by the Williams family and Carlew, the home of William Lemon. Older estates underwent elaborate transformations; Tehidy, the seat of the Basset family being such an example. The mansion was rebuilt by John Francis Basset in 1861 reflecting the fortunes he had made from local mines, his yearly income from the Basset mines, Dolcoath and South Frances, being about £20,000, a fortune even by today's standards (Tangye, 1984). These elegant mansions boasting well stocked libraries, music rooms and conservatories crammed with plants were shielded from the source of their wealth - acres of mine tips and industrial buildings that 'scarred' the landscape - with lavish ornamental gardens (see Pett, 1998).

The Cornish copper mining industry was expanding rapidly in the early nineteenth century with mines being opened up in rural areas remote from established settlements. As the mining industry gathered pace in mid and east Cornwall there was a marked movement from St Austell to Liskeard and St Cleer and longer distance movements of miners and their families from west to east, for example, from Gwennap to Calstock and Breage to Menheniot. Villages such as Pendeen, Lanner, Four Lanes, Menheniot and Mary Tavy grew up haphazardly around new mines, while older towns nearer the mines like Redruth, St Just and Tavistock grew rapidly to accommodate an influx in population. Between 1841-1861 Menheniot's population doubled; it rose from 1,221 to 1,944 a decade later, while Gwennap's population which stood at 4,594 in 1801 rose to 10,794 in 1841 and Redruth's from 4,924 to 11,504 between 1801 and 1861. In the Tavistock District, the population rocketed from 6,272 to 8,147 between the 1841 and 1851 censuses, an increase of 43 per cent. Camborne grew from a small village to one of the largest towns in west Cornwall, witnessing significant in-migration from eight other districts (Deacon, 2001). Such rapid industrialisation helped to create social problems similar to those encountered in other industrial areas of Britain, as the following description from the 1864 *Condition of All the Mines in Great Britain*, makes clear:

"In Camborne I was taken to a row of thatched cottages, each consisting of only two dark and low rooms, and all of which had no privies, and no system of drainage whatever, the inmates throwing everything either into a small back yard or common dust heap in the street."

In the mid-nineteenth century at Buller's Row, a long terrace of cottages built on the road leading from Redruth to Falmouth at the foot of the hill below the dressing floors of Wheal Sparnon and Trefusis mines, one cottage in 28 had a privy. At nearby Plain an Gwarry there were 133 houses and 11 privies, causing people to relieve themselves behind walls and hedges, making many suburbs of the town most offensive (Tangye, 2001). Moreover, the town's wells were sometimes contaminated with sewage from overflowing communal cess-pits sited uncomfortably close to people's doors. The evocative names of such Redruth housing - *Dung Pit Houses* (bottom of Fore Street), *Poverty Court* and *Dirty Court* (Plain an Gwarry) - reflect the poor nineteenth century conditions in this mining town.

In the Menheniot mining district in 1868 a mining family was found in a position of severe poverty brought to light by the death of a seven year old child through malnutrition and disregard, and fear was expressed for the remaining children. Their home contained one table, one form and one bed with very little covering. In the late nineteenth century between a quarter-to-one third of people living in the Liskeard district were estimated to have been at risk of falling into poverty (Deacon, 1989).

At St Just, the Commissioner of the 1864 Report found many defective cottages, overcrowded with inadequate ventilation and sanitary arrangements, which he considered the root cause of a fatal outbreak of typhoid fever. In damp, overcrowded cottages, diseases such as typhus were endemic, and typhoid, measles, smallpox and diphtheria were widespread. During the cholera outbreak of 1848/9, figures for the Cornish Registration Districts show that locality was strongly linked to the level of fatalities, which were usually highest in densely populated, unsanitary large towns and mining districts (Rowe and Andrews, 1974). The public outcry against the serious housing shortage and gross overcrowding in the Tavistock area was one reason which prompted the Duke of Bedford to construct purpose built accommodation for his estate and mineworkers.

Many rural areas were little better. At Wendron in 1864 the Commissioner discovered cottages housing large families in which the bedrooms of some were indecently overcrowded and utterly lacking ventilation. In Gwennap parish, St Day was

reported to be exceedingly unsanitary in places and Lanner's open sewer was periodically condemned as a breeding ground for disease. It was only with the increased public health legislation of the late nineteenth century that conditions began to improve, but it was not until the mid twentieth century that most mining villages received piped water or sewage systems. This did not occur in some of the former mining villages of the St Just and Gwennap districts until the 1960s.

What was life like in the mining communities? Many of Cornwall and west Devon's mining towns and villages were rough, uncompromising places where rioting, fighting and heavy drinking were commonplace. Rioting was noted in Redruth market in 1785, 1793, 1795, 1801, 1812 and 1847 as miners appealed to the 'moral economy' in times of hardship, demanding for example, lower prices for goods. Miners often met in a one of numerous local pubs or 'kiddleywinks' (beer shops) to split the monthly earnings of their 'pare' or team of workers. Gambling, singing and heavy drinking often ensued, leading to 'Maze Monday', when men were still too inebriated to turn up for work. Too much drink on pay day was often the cause of disturbances as an incident that occurred at Liskeard in 1842 relates. The success of the mines in the neighbourhood had led to the commencement of several new works, and in consequence, an extraordinary increase of the mining population. Several hundred miners congregated at Liskeard on pay day one Saturday night. The *West Briton* of 13th May 1842 relates that at about eleven o'clock, a party who had been drinking in one of the local pubs were refused any more drink, attempted to force the Landlord to supply them, and a disturbance arose in consequence. The police were then called in, when several of the ring leaders were taken into custody; upon this a general cry of "one and all" was given, and a party of nearly 200 speedily gathered around the house, which they attacked, demolishing the doors and windows, in an attempt to rescue their companions. The police and some of the inmates were ill-treated and the whole neighbourhood kept in a state of fear and tumult until nearly six o'clock the following morning. The disturbances caused by insobriety and its connection to poverty led to Temperance Societies in some towns setting up Coffee Taverns as an alternative to the pubs or kiddleywinks, that of Redruth being built in 1880.

Prostitution flourished in many mining towns. The row of stones opposite Wheal Betsy engine house at Mary Tavy earned the sobriquet "Annie Pinkham's Men", an echo of the former prostitution in the village, while passengers leaving the railway station at Redruth in the late nineteenth century were said not to be safe from the prostitutes and pickpockets employed about their evil trades. Desperate times often called for desperate measures and reports of concealment of births by women who had become pregnant out of wedlock made their way into the nineteenth century press with depressing regularity.

But episodes of crime, rioting and prostitution were only one side of life in mining communities. Mining towns and villages were also places where people could forget their worries and problems by attending events organised by local chapels, such as improvement societies, bazaars, penny readings and even choral ensembles. The music of Bach and Mozart were not unfamiliar in towns such as Redruth! The annual Sunday School Tea Treat, parish feast day and annual harvest were keenly awaited events in the social calendar. Lamp societies were inaugurated to raise money to put up gas lighting in mining villages such as St Day and Lanner in the late nineteenth century and women were involved in charity organisations such as the Dorcas Society to raise money for clothing and bedding for the most needy. Later in the nineteenth century, civic pride resulted in towns such as Liskeard, Truro, Redruth and Camborne, making great attempts to outdo each other erecting grand municipal buildings and elaborate shop fronts, as well as improving facilities such as public parks and gardens.

Clearly not all mining families lived in squalor in crime ridden settlements. Although residing in humble surroundings, pride and thrift, qualities encouraged by

Methodism which was popular in most mining villages, meant that the miner's home was usually clean, his children as well fed as possible and their clothes, although old, were laundered and neatly patched. Although many had a reputation for roughness, Cornish mining villages were usually close knit places where people were often related and looked out for one another. Relationships with the gentry, although sometimes strained, were not always bad. Appeals to them by the most needy for help during periods of economic hardship seldom fell on deaf ears, with the local squire usually willing to get up a subscription to raise money for food and fuel. Miners took an immense pride in their work and - for better or worse - life was the mine and the mine was life, as captured in the verse of Gwennap poet, William Francis in 1845:

"A vast population increasing around
Depend for subsistence on work underground;
'Mines are nor productive of fruit or of grain'.
True - but they yield work and do myriads maintain."

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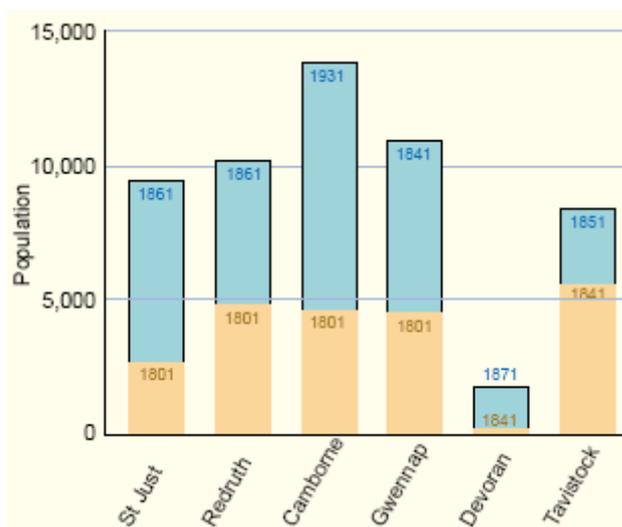
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Mining settlements

Mineworkers generally lived in two or three-roomed houses built of granite or 'cob', a mixture of straw and mud. Their families were often large and they frequently took in lodgers to supplement their incomes. Keeping a big family in a damp over-crowded cottage without adequate sanitation meant a daily struggle to maintain respectable standards. In 1861, well over 60 per cent of the lodgers employed in the mining industry in Camborne and Redruth were accommodated in the houses of fellow miners. Some occupied cottages on smallholdings and had access to a few acres of land. Some lived in terraces or rows of cottages which might have gardens where food could be grown. The majority lived in towns, however, where gardens were small or replaced by courtyards offering little opportunity of supplementing their diet with garden produce. Mining radically changed the population distribution within Cornwall.

The industry and its ancillaries were employers of vast amounts of labour. Around 25 per cent of the population were employed in the mines alone. Throughout the eighteenth century nearly all Cornish copper - more than one-third of the world's production at the time - came from the region between Truro and Hayle, and much of it in rural areas remote from established settlements. So until the 1840s, every parish west of Truro experienced rapid population growth. Numbers rose dramatically as 'sojourners' followed the fortunes of the mines. There was a constant movement of miners across Cornwall as the fortunes of mines and mining districts waxed and waned. In 1801, the great mining parish of Gwennap had a population of 4,594. By 1841 it had mushroomed to 10,794. Copper was discovered and mined in the St Austell district on a large scale after 1812. The Caradon mines north of Liskeard were opened up around 1835 and became among the richest in Cornwall some fifteen years later. The Tamar Valley, already an old producer, saw renewed activity in the 1840s especially with the discovery of the richest copper mine of them all - Devon Great Consols. Between 1845 and 1866 the Duke of Bedford built 268 model industrial workers' cottages in the Tavistock area. Lead mining districts such as St Newlyn East, Menheniot and Herodsfoot joined these 'magnets' of the 1840s.



As the mining industry gathered pace in mid- and east Cornwall, there was a marked movement from St Austell to Liskeard and St Cleer and longer distance movements of miners and their families from west to east, for example, from Gwennap to Calstock and Breage to Menheniot.

Villages such as Pendeen, Lanner, Four Lanes, Menheniot and Mary Tavy grew up haphazardly around new mines, while older towns close to the mines like Redruth, St Just and Tavistock grew rapidly to accommodate an influx in population. Redruth's population grew from 4,924 to 11,504 between 1801 and 1861. In the Tavistock District, the population rocketed from 6,272 to 8,147 between the 1841 and 1851 censuses, an increase of 30 per cent. Camborne grew from a small village to one of the largest towns in west Cornwall, witnessing significant inward migration from eight other districts. Such rapid industrialisation created social problems similar to those encountered in other industrial areas of Britain.

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Mineworkers' smallholdings

Around a fifth of the Cornish landscape - over 80,000 hectares - is in upland rough ground, commonly treeless, exposed, and very wet, with thin acid soil. This ancient landscape was once heathland, then the site of prehistoric farmland and, subsequently, the upper margins of the medieval farming zone. Until the late eighteenth century it was largely uncultivated and used for common grazing.

In west Cornwall the best arable land had probably been enclosed by the seventeenth century. Mineral lords, such as Francis Basset, allowed settlement for miners provided they cleared upland areas of waste. These smallholdings were held under the 'three lives' system.

Over 50,000 hectares were taken into cultivation during the eighteenth and nineteenth centuries and the impact on the landscape was considerable, especially between areas of concentrated mining.

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Entrepreneurs and mine owners

Cornish mining and its ancillary industries made considerable fortunes for a small number (less than 0.5 per cent) of those engaged in the industry. This new-found wealth was often expressed in the highly visual form of grand houses, gardens and parkland, a feature common in industrial landscapes elsewhere in Britain, but perhaps more densely represented in Cornwall. These great houses represented the nodes of a series of integrated networks of power, society and commerce; their rise, and sometimes fall, can be closely correlated with the mining economy.

The eighteenth century

In the early eighteenth century Cornwall probably possessed more newly rich than most other English counties and until the nineteenth century local private capital was virtually the only source of finance for the industry. Alliances between a small number of Cornish families led to risk-sharing and cartels earlier than many other industrial regions. This was an organisational feature of the tin- and copper-smelting industries in particular which generally proved to be more lucrative than mining.

By the end of the eighteenth century all of the principal tin mining districts had been discovered and, particularly in west Cornwall, mines were being exploited at ever increasing depths using new steam technology; Polgooth and Great Hewas near St Austell were the exceptions in mid-Cornwall where three Newcomen engines worked. Most of the copper output came from west Cornwall (principally the mining districts of Gwennap, Tregonning and Gwinear, and Camborne and Redruth) and this led to important houses and estates in the area being remodelled and enlarged by landed families such as the Bassets, Boscawens and St Aubyns. Mineral rights to base-metal ores and the royalties (dues) that flowed from them - traditionally charged as a percentage of the value of ore production - were mostly the prerogative of the small number of prominent mineral lords. They provided the core wealth that agriculture alone could not provide.

The nineteenth century: the rise of Cornish gardens

William Lemon's son Sir Charles (1784-1868) inherited Carclew House (Perran-ar-Worthal) in 1824. He was a Cornish MP for nearly 50 years (1807-1857) and was the leading Parliamentary spokesman for the Cornish mining interest during the first half of the nineteenth century. His statistical survey of Cornish copper mining is one of the earliest and most comprehensive ever written. He was also a pioneer advocate of regional mining education and an outstanding amateur gardener who founded the Royal Horticultural Society of Cornwall in 1832. He nurtured gifted plantsmen at Carclew such as the Lobb brothers (William 1809-1864 and Thomas 1811-1894) who went on to work as plant hunters for the Veitch nurseries of Exeter, Devon and Chelsea. He was also a personal friend and sponsor of Sir Joseph Hooker (1817-1911) who in the mid-nineteenth century collected plants in the Himalayas; magnificent 'Hooker rhododendrons' were to enrich a number of Cornish gardens following their

introduction. Exotic conifers, rhododendrons, camellias and 'jungle' flora such as palms and tree ferns were introduced and flourished; even stranger was the sight of oranges, lemons and bananas growing outdoors.

During the early nineteenth century the increasingly dispersed interests of a distinct entrepreneurial group obscured their role as a class of capitalist employers. In the copper and tin-plate industries of south Wales, and in mining fields such as those in the newly-emergent Latin American countries, Cornish capitalists laid the foundations of major economies. Ironically these were the ones that challenged and finally destroyed the metalliferous pre-eminence of the 'Old Country'. As the nineteenth century progressed the new industrial society within Cornwall was growing fast and was increasingly part of a significant integrated industrial economy.

It was not just in west Cornwall that houses, estates, parkland and gardens were enriched by mining money. Spectacular copper deposits were discovered further to the east during the nineteenth century. Those found near Charlestown in 1810 at mines such as Crinnis and Pembroke brought considerable royalties to the Carlyon family of Tregrehan (as did tin mining at Charlestown United Mines and Wheal Eliza Consols). Edward Carlyon used his great wealth to become a renowned plantsman, a Carlyon family tradition that continues to this day. Many of Cornwall's great industrial families followed suit, such as the Bolithos of Penzance who were ship-owners, dealers in tallow (for miners' candles), tin smelters, mine owners and bankers. They created their great gardens at Trengwainton and Trewidden.

J. C. Williams created his at Werrington and Caerhays, and George Johnstone at Trewithen. They all became remarkable and nationally distinguished gardeners. The wealth that mining brought them enabled them to indulge in horticulture on a very grand scale indeed. The climate and geology of their gardens is also unquestionably distinctive and suited to many exotic introductions.

Perhaps their affinity for natural resources also spurred their interest, as most of them were also keen amateur mineralogists. Whatever the reason behind the trend, their activities changed the face of the Cornish landscape and influenced garden development throughout Britain.



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The role of religion - Methodism

Of approximately 700 chapels that survive in Cornwall today, over 80 per cent are Methodist in origin, many of which were built relatively early and then re-built in the nineteenth century (Lake et al, 2001). Charles and John Wesley's arrival in Cornwall in 1743 was a part of a broader evangelical awakening that included widely separated 'revivals' in parts of Wales and the North American littoral in the 1730s and Scotland in the 1740s. Wesley's message was keenly accepted by Cornish communities and by 1750, societies had been established in 30 of the mining communities in the west and there were four societies in north-east Cornwall. The widespread support for Methodism is exemplified, for by 1798, the membership figures for the Redruth and St Austell circuits were the 4th and 7th largest of those in British Methodism, containing over 5 per cent of the country's Methodists. This represented a membership density higher than the 4 per cent peak reached in England in the 1840s. By 1851 Cornwall was the only county outside of north Wales where attendees at Methodist chapels were in the majority (Deacon, 2001). By the mid-nineteenth century the Vicar of Crowan was forced to concede that the Church of England had lost the people, "the religion of the mass is become Wesleyan Methodism" (Brown, 1946).

Methodism, initially a movement to invigorate the Church of England from within, eventually drifted apart from it mainly because the Church of England's institutional rigidity did not allow it to respond to evangelism. Wesleyan Methodism was closest to the established church, but a series of schisms occurred, caused in part by lay members desire to govern their own societies. This resulted in numerous factions, including the Wesleyan Association and the Wesleyan Reformers, the Bible Christians (born in west Devon) and the Primitive Methodists. By 1856 non-Wesleyans comprised over 40 per cent of all Methodist members in Cornwall, a proportion retained for the remainder of the nineteenth century (Shaw, 1967).

How did Methodism come to dominate Cornish religious life? The Anglican Church has been held partially responsible for the remarkable growth of Methodism. Its inability to control large parishes, the burgeoning rural industrial settlements with occupations that gave them a sense of independence and freedom, were geographically isolated from the parish church; these factors were exacerbated by pluralism and absentee clergy (Rowe, 1993). But other forces were also responsible. In the early years class meetings in barns and cottages gave Methodism a popular accessibility ideally suited to the close-knit groups found in Cornish metal mining. These small groups of early Methodists were closely bound together by a network of gossip and rumour and the constant movements of itinerants and lay preachers who connected communities in ways denied to Anglican clergy tied to the church building itself. Huge crowds were drawn to open air meetings, Wesley preaching to hundreds at a time in places such as Gwennap Pit. Wesley therefore introduced a new itinerant ministry that had not previously existed in Cornish communities (Deacon, 2001).

And then there was the message of Methodism itself with its simple doctrine of justification through faith and instant salvation. This important message brought

comfort, hope and security to a population that faced daily dangers in the hazardous environment of metal mines and increasing uncertainty in a world being rapidly reshaped by industrialisation. The use of charismatic lay preachers, such as Billy Bray who preached to the people in the dialect they spoke, gave a sense of social inclusion. Methodism was very much a people's faith; early meetings were held in cottages and barns, the domestic setting allowing a symbiosis of Methodist spirituality and rationality and pre-existing Cornish indigenous folk beliefs. Methodism translated such folk-beliefs into a religious idiom, acting as a bridge between old and new, ancient and modern (Luker, 1986, 1987).

Moreover, the outburst of cottage religion from the 1780s to the 1830s allowed women to actively aid the spread of the Methodist message at grass roots level, taking place as it did within the domestic sphere. Female preachers and itinerants - certainly among the Bible Christians and Primitive Methodists before 1840 - formed a sisterhood of reciprocity seeking solace in the message of the Gospel as the focus of work migrated from the domestic sphere to the public sphere of the mine (Schwartz, 1998). Over 56 per cent of the West Cornwall circuit were women in 1767, showing the significance of their early involvement in its spread in Cornish communities. Hugely popular, cottage religion was entrenched in Cornwall before its appearance in other rural parts of England and was responsible for the indigenisation of Cornish Methodism, particularly in west Cornwall, where local control, particularly by lay members, made connectional direction (centralised control) and circuit organisation more difficult. Methodism therefore spoke to the Cornish people in the language of the people and helped them to make sense of a rapidly changing world. These factors all served to make Cornish Methodism a religion that uniquely allied evangelism to popular culture by the 1840s (Deacon, 2001).

The growth of Methodism in Cornwall with its periodic surges was markedly different than that in England. The really distinct thing about Cornish Methodism was its revivals, periodic upsurges of religious fervour that swept through communities which saw chapels remain continually open for days. Revivals were the means by which all the Methodist chapels gained members, and the great revivals of 1799 and 1814 undoubtedly helped to make Methodism the popular established denomination in Cornwall as they had become part of local custom (Rule, 1998). Revivals remained a popular form of control within Cornish Methodism long after it had declined in other parts of England as Methodism became increasingly subject to connectional control. This marked Cornish Methodism as increasingly 'divergent' within England but more akin to that experienced in other 'Celtic' regions – Wales, Scotland and Ulster (Deacon, 2001).

The link between mining and Methodism was strengthened by the role played the newly emerging entrepreneurial and merchant class within communities where the influence of the Anglican Church was in decline. Numerous mine captains were also Methodist preachers who ministered to their communities the powerful message of respectability and self-improvement, thus helping to ensure that Methodism became the most relevant institution for labouring and working class communities. Due to the integration of Methodism into Cornwall's regional identity, and what has been termed its 'culture of conversion', the working class concentrated on religious issues and not secular issues for much of the nineteenth century. This resulted in demands for greater democracy in Methodism and the rejection or neglect of secular parliamentary agitation such as Chartism. Consequently, on the whole, Cornish people in the mining communities could be described as 'radical Methodists', but 'political moderates' (Milden, 2001).

Importantly, Cornish Methodism was also carried overseas, to areas such as South Australia, Canada and the American Upper Mid West, where Cornish communities flourished, their Methodism being seen as a badge of their unique cultural

identity (McKinney, 1998). Many of the most well known names in Cornish Methodism were from mining backgrounds. These include political leaders such as Michael Foote, popular evangelist Bible Christian preacher Billy Bray, miner poet John Harris and organist and choirmaster, Thomas Merritt (Newman, 1994, Kent, 2001, McKinney, 2001). Merritt's carols are not only performed in contemporary Cornwall, but carried to the gold fields of western America and the copper triangle of South Australia, are still performed in overseas communities today, a continuing reminder of the symbiosis of mining and Methodism.

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WWW links

<http://www.williamhaslam.org/>: William Haslam was an Anglican clergyman who became an evangelical preacher in 1851 while he was vicar of Baldhu. He is often

known as "*the parson who was converted by his own sermon*". He became a good friend of Billy Bray.

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Mining schools and institutes

The organisation and vastly increased capitalisation of the industry was accompanied by a movement from philosophy to science. Cornwall, during the eighteenth and much of the nineteenth century was somewhat remote in terms of communication with 'England' and under-developed in education and public services. By 1800, however, it had become a scientific and intellectual powerhouse, with no less than five Fellows of the Royal Society: Philip Rashleigh (1729-1811), John Hawkins (1761-1841), Sir Humphry Davy (1778-1829, President Royal Society 1820-1827), Joseph Carne (1782-1858), and Robert Were Fox (1789-1877). Mining had become established as the cornerstone of Cornwall's prosperity and assured its place in British and world industrial history. New institutions characterised a new culture:

The second oldest geological society in the world was founded in Penzance in 1814 as the Royal Geological Society of Cornwall. The Royal Institution of Cornwall in Truro was co-founded by Sir Humphry Davy in 1818. In 1833 The Polytechnic Society was founded in Falmouth by Robert Fox and his two daughters Anna Maria and Caroline. This marked the establishment of the first polytechnic in England, partly '*...to stimulate the ingenuity of the young, to promote industrious habits among the working classes, and to elicit the inventive powers of the community at large*' and partly to promote the ideas and inventions of the Fox family's Perran Foundry workforce.

Robert Were Fox (1789-1877) proved that the temperature within the Earth increases with depth, a phenomenon now known as the geothermal gradient. This was made possible by direct observation in some of the deeper mine workings in Cornwall. The Royal Cornwall Polytechnic Society devoted most of its energy to the improvement of the mining industry, particularly the welfare of its workers. It held annual exhibitions and awarded premiums or prizes for inventions.

Perhaps the best known was that for Captain Michael Loam's 'Man Engine', finally installed at Tresavean Mine in 1842. It proved an immediate success and 391 miners wrote to the Polytechnic thanking them for '*...the best day's work ever done for them.*' Alfred Nobel gave the first demonstration of the use of nitro-glycerine as an explosive in 1865, the year of his patent.

The technical education of miners was facilitated by a number of local organisations such as the St Agnes Miners' and Mechanics' Institute, the St Just Miners' Institute and the Carharrack Institution.

On a more regional scale there were organisations such as the Miners' Association of Cornwall and Devonshire (1859), the Mining Institute of Cornwall (1876) and the Mining Association and Institute of Cornwall (1885).

The Camborne School of Mines and its influence on the world-wide mining community

Camborne School of Mines began life in 1896 at a time when the mining industry saw the need for well instructed miners with both theoretical and practical skills to improve the efficiency of the mining process. Many unsuccessful attempts had been made to establish such a school. However, by the end of the nineteenth century three full-time mining schools had been established in the prominent mining areas of the day; Redruth, Penzance and Camborne. By the early 1900s it had been decided to amalgamate the three schools under one name: the School of Metalliferous Mining.

Camborne was by 1890 the largest of the schools. Mr Pendarves, a local mineral owner, was able to report that the school had '*...a total of 189 students, and the whole of the other mining schools of Cornwall could not come up to anything like that, if they were all put together.*' At the time of the amalgamation, the Camborne School had several facilities at its disposal that included classrooms, offices, chemical and metallurgical laboratories and a geological museum plus lecture rooms. King Edward Mine had been acquired by 1897 for practical training in both underground and surface work. Many of the facilities had been paid for in part by local mineral owners such as the Bassets and the Pendarves'; this patronage by respected local families continued up to the twentieth century. Mining engineers and surveyors who learnt their trade in Cornwall were to be found worldwide.



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United Nations
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Cultural Organization



**Cornwall and West Devon
Mining Landscape**

inscribed on the World Heritage List in 2006

Mining migration

*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*

This lofty verse, penned by journalist Herbert Thomas in 1896, captures the truly global magnitude of migration. For by then many thousands of Cornish miners and their descendants were spread throughout the world and there was barely a hard rock mine anywhere that did not have a 'Cousin Jack' as a miner or captain, as these Cornish emigrants were dubbed.

Alone of the counties of south western England, Cornwall witnessed significant migration in the period dubbed The Great Migration (c1815-1930), losing some 20 per cent of its adult male population overseas in every decade from 1861-1901; three times the average for England and Wales. With a population that never exceeded 500,000 in the nineteenth century, Cornwall lost anywhere between a quarter to half a million people, making it an emigration region comparable to any in Europe. Today there are over 6 million people of Cornish descent worldwide.

The extraordinary story of Cornish migration is inextricably linked to the rise and subsequent decline of its mining industry. Skilled Cornish miners had been migrating from the 1700s within Cornwall and then to other parts of the British Isles. This was a mere foretaste of what was to come, for in the early 1800s the expansive, dynamic industrial region of Cornwall and west Devon possessed the best contemporary European mining know-how and had begun to export its technology, capital and skilled labour.

Industrial giants - the Vivians and Grenfells - had acquired a strong stake in mining and smelting in South Wales before 1815, but it was the export of high pressure steam engines perfected by Trevithick and his contemporaries to the silver mines of Peru in 1814-18 that marked the transatlantic migration of the industrial revolution. This heralded the beginning of a modern, integrated global mining economy with its attendant financial, labour and technological markets. It paved the way for British capital investment in overseas mining enterprises from the early 1820s. This expanded the frontiers of the British Empire, both formal and informal. The introduction of the latest technology in areas devoid of industrialisation necessitated the export from Cornwall of everything from steam engines and boilers to ropes and crucibles together with the staff to mine, process, organise and administer these enterprises. As a result, the global mining industry was heavily influenced by Cornish miners for almost a century.

The Cornish rehabilitated abandoned mines across Latin America in the 1820s, and were the first real hard rock miners in the USA. They worked lead deposits in Wisconsin and Illinois and copper and lead deposits in Norway and Spain in the 1830s, as well as copper fields in South Australia and in Michigan in the 1840s. Without the introduction of the Cornish engine, deep lode mining in California after the 1849 gold rush (e.g. Grass Valley and Nevada City) would have been considerably delayed. Further mineral strikes across the Americas (e.g. at Bisbee and Tombstone in Arizona and the Cornish town of Virginia City in Nevada) and Australasia followed, as well as in the Caribbean, northern England, India, Malaysia and Africa. The discovery of diamonds in South Africa in the late 1860s followed by the Transvaal gold rush a decade later created opportunities for significant migration from Cornwall in the three decades following the 1880s. In 1905 there were some 7000 Cornish miners on the Rand in South Africa.

The Cornish did not just export their technology they also took their culture with them. Distinctive Cornish communities with their nonconformist chapels, traditional food and leisure activities - such as Cornish wrestling - flourished on virtually every continent. The Cornish even brought football to Mexico, playing the first game in Pachuca in 1900. The Yorke Peninsula became known as Australia's 'Little Cornwall', with the Cornish constituting over 42 per cent of migrants to South Australia by 1865. In 1894 it was noted that over 60 per cent of the 6,000 population of the gold mining town of Grass Valley, California, was from Cornwall. In the Transvaal, prior to the Boer war, an estimated 25 per cent of the white workforce was Cornish. By the late nineteenth century migration had resulted in a pronounced population decline in many Cornish parishes which were only sustained by financial remittances from miners abroad; a sum close to a £1,000,000 a year was flowing into Cornwall around 1900 from the Transvaal alone. Some of this money was used to build or extend places of worship, municipal buildings and housing, as well as to diversify an economy stricken by mining decline. Foreign house names given to the homes built or bought by return migrants may still be seen across the region. The region's connection with the wider mining world did not automatically decline with the failing fortunes of its own mining industry. Investment by Cornish entrepreneurs in Malaysian mining was responsible for the opening of the Malaysian Tin Dredging Company's headquarters at Redruth in 1891.

The First World War disrupted migration networks and marked the beginning of the end for significant migration as Cornish miners were increasingly replaced abroad by native labour.

The Cornish in Latin America: <http://www.ex.ac.uk/cornishlatin>

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