UNDER THE SURFACE IN ST IVES

Jim Hodge is 79, still a man broad of shoulder. It comes as no surprise when he talks of playing rugby with the men, the miners and other underground workers, who feature in his remarkable story. John Toman is in his mid-seventies. Jim and John share a mutual respect. John, after all, served for a time as a stand-in mine captain during his life in mining as a surveyor. Both are men who have achieved success in their professions. Jim grew up with the pull of the sea; fishing would have been his first choice but his father wanted him to learn a trade and plumbing won the day. Fish might have been plentiful in the quota-free 1920s but the price was low and livings hard-won. When Jim retired, he did so as the Area Manager for South West Water in south Cornwall, responsible for water supply from Portreath to Redruth across to Falmouth and all places south-west, including St Ives. His father might have had a point.

I was first introduced to John by his son-in-law, Mark, a St Ives policeman, who is married to Belinda, one of John's daughters. Mark and Belinda live across the road from us in a 1960s housing development up the Stennack. And here with this name we reach the heart of the matter. The steep incline – the Stennack - that runs from south-west/ north-east down into St Ives is the name of a road that takes its name from the river Stennack that flowed down this course, sometimes in full flood torrents, and which now the attentive pedestrian can hear under their feet or glimpse as a channelled stream by the roadside to the east. The Stennack has been tamed for now but the name remains as a passport into one of the three livings for St Ives folk in the past: fishing, farming – and our focus, mining. All this before the burgeoning of the tourism industry of today and the arrival of the 'emmets' which, in Cornish dialect, is a term for the sun-burnt tourists who mill around like ants in the summer season. When the Romans came, not to holiday, but to stay in 43 A.D., they brought their language of Latin. The Latin name for tin is *stennum* from which comes the chemical symbol for tin: Sn. Stennack means tinny. The river Stennack follows the line of one of the lodes of tin-bearing ore, cassiterite, that were formed around and within the granite masses some twenty million years after their initial raising. Tin was first found on the surface in the river gravels, as it is now in Asia. When that has been exploited, you have to go underground and mine for it, often – but not always - under the copper-bearing lodes that penetrated the granite in these geological upheavals. We inhabit a landscape that still echoes to the sound of the thud of miners' boots if you have the ears to hear.

Control of the international tin trade was very likely part of the Roman agenda. Those parts of Cornwall that were domed by granite had gravel-deposits of tin ore that had already been discovered by Phoenician traders. No mining was needed then, unlike the practice in the last three centuries in Cornwall. Today the price of tin may be rising but 80% of the world's supply comes from low-grade gravel deposits in Malaya, India and Thailand and the exploitation of these reduced the price of mined Cornish tin in the 1980s and 1990s below the point of profitability. Cornish mining ended then, other than as a tourist exhibit. But in and through the tales of men such as Jim and John the soul of Cornish tin mining is

glimpsed. This is my account of their tales when they came together in our living room to talk about the mines under the Stennack on Monday morning, September 30th 2013.

The prize exhibit of the morning lay on our table. It was a survey plan of the lode that runs underground the length of the Stennack showing where the main shafts are located that served the two main mines that worked this lode: St Ives Consolidated (known as Consols) towards the top of the incline and Trenwith lower down. Our house rests between the western edge of the Trenwith mining area and the eastern edge of St Ives Consols We bought it less than a year ago and as happens these days we had a Mining Search carried out. We had learnt from this that the available abandoned mine plans of St Ives Consols are poor and do not show the full extent of the underground workings. Not until 1872 did it become a legal requirement for metal mines to keep accurate survey plans of workings and lodge these the Mining Record Office upon abandonment. However, this legislation did not require mines to survey any older workings that were inaccessible or unused after 1872. Nor did it apply to mines employing less than 12 people working underground. As a result, most of the older workings and smaller mines are poorly recorded.

What became ever clearer listening to Jim and John was the sheer magnitude of the mining enterprise that had been a way of life for the best part of four generations of St Ives families on and under the ground covered by the Stennack and its valley flood-plain from the early nineteenth century before the final closure of St Ives Consols in 1915. John, the professional surveyor, is still astounded at the geological rarity of the Great Carbona shown on the survey plan resting on our table. “Look! Can you see, running at right-angles to the direction of the lode … It extends for 900 feet and is 600 feet in depth - and between 50 and 70 feet wide! It’s unlike anything else I’ve seen elsewhere – and there are smaller carbonas marked too!” Carbonas are large and unusual ore formations, in this case of cassiterite, the tin-bearing ore, which when excavated, produced large caverns whose roofs had to be supported by massive timbers. Cyril Noall, the St Ives historian of the last century, explained what happened: ‘In April 1843 a workman’s lighted candle stuck against a beam in the fabulously rich ‘Great Carbona’ caused a disastrous fire which burned for six weeks and led to the destruction of that section of the mine.’ [1] Today, nothing of the Consols mine remains above ground; the St Ives fire station off the Stennack road is one landmark building that indicates where the old site used to be.

John Halse had developed St Ives Consols from the 1820s and 1830s and the total recorded returns down to 1892 were valued at £1,024,467 with tin production (1827-92) amounting to 16,400 tons. These figures indicate astounding profits from underground ore. By comparison, the Gwennap area of copper mining on the edge of Redruth, twenty miles away, was said to be the richest square mile in the world in the 1820s and 1830s. The Consolidated Mines in Gwennap, owned by John Taylor, with its 19 engine houses for pumping, winding and crushing alone yielded over 300,000 tons of copper ore in 1819-40 which sold for over two million pounds. [2] John Halse’s fortune may not have been quite on a par with John Taylor’s but it was still enormous and the Great Carbona must have been the foundation for it. Around 1830 James Halse laid out the mining village of Halsetown on the eastern edge of his mine to house his miners and their families. The Stennack industrial

landscape above ground can be viewed in a few old photographs dating back to the late Victorian period but the real feel of early nineteenth century Cornish mining life is best conveyed by this report of a visitor in the 1790s to what became John Taylor's mine in Gwennap: 'The dismal scenes of whims [winding engines – steam engines used for haulage], suffering mules, and hillocks of cinders, extends for miles. Huge iron engines, creaking and groaning, invented by Watt, and tall chimneys, smoking and fuming, that seemed to belong to 'Old Nicholas's' abode, diversify the prospect'. [3]

One all-important dimension in this landscape is, nevertheless, missing. Where in the description are the women and children working above ground, where are the men working below ground? It is as if they have been airbrushed out of the picture. The wealthy and powerful had reasons to fear the masses and distance themselves from that world; the shadow of the guillotine and the events of the French revolution at the end of the eighteenth century cast a long shadow over Europe in the first half of the nineteenth century as industrialisation and the exponential increase in population reshaped the world. It was not until the mid-nineteenth century that the social conscience of a few enlightened reformers within the Westminster elite led to such eye-opening documents as Edwin Chadwick's *Report on the Sanitary Conditions of the Labouring Population* (1842) and the slow acceptance of the need for reform. But only with the advent of the Edwardian age at the beginning of the twentieth century did a new kind of sensitivity develop within the ranks of the Westminster elite and the urban and rural elites from which it was drawn. For the first time, those with wealth and power began to vote through legislation that raised taxation centrally from their own pockets to pay for the amelioration of the social hardships that unregulated market forces inflicted upon three-quarters of the nation: the labouring poor. In 1910, in Norwich on the other side of the country, Sir Peter Eade, a physician, and still, in his eighties, one of the leading members of the urban elite having served as councillor, sheriff and mayor, captured this change in outlook: *'"Socialism" as it is called, undoubtedly demands better conditions for the poorer classes of all classes and the result of investigation into the present condition of any of these fully justifies many of the ends for which socialism is aiming and agitating … The rapid increase of population (and) the growing scarcity of work and employment, are intending the poverty of large numbers of the working classes with the necessary consequences of home privation and enfeebled health to all, but especially to the young.* [4]

The fabulous wealth of men such as Taylor (who came to Cornwall from Norwich to make his fortune) and Halse was made through the sweat and labour of fellow human beings, labouring under the ground in appalling conditions with their heads filled with the constant fear of death or injury. A.K. Hamilton-Jenkin, in his seminal work on the Cornish Miner (1927), noted that one writer in 1847 calculated that nearly one out of every five Gwennap miners incurred a violent death to produce the copper that made such a contribution to the wealth of the country. Descending and ascending the mine shafts for hundreds of feet by rope ladders was fraught with peril, to name one particular hazard. Medical authorities calculated that in the 1850s, in and around the St Just mining area, the average age of a miner was in the late twenties; the average death age was around the late forties. A miner who escaped the perils of a premature death faced a future of light surface work or at worst

nearly twenty years of unproductive life as a result of accident or disease. The installation of steam-powered man-engines, the first in the 1840s, to drive a series of interconnected small platforms that were raised or lowered twelve feet in the shaft at every stroke of the engine, saved many lives.

However, the development later in the century of the machine drill turned out to be deadly for the miner underground. In 1904, a Government inquiry into *The Health of Cornish Miners* established that there had recently been "an enormous increase in the death-rate from lung diseases, in miners particularly between the ages of twenty-five and forty-five". The death-rate among Cornish miners was eight to ten times higher than that for coal-miners. The explanation lay in the machine-drilling of granite that produced clouds of dust containing fragments such as quartz that were inhaled and over time effectively punctured the lungs – the medical condition known as phthisis was the new killer. Ameliorating the effects of dust inhalation, particularly through water spray, became a twentieth-century priority. [5]

The labouring mass of humanity that worked the Cornish mines over the last three centuries were sustained not through the benevolence of the mine owner; the money the miners earned when the markets were paying good prices was more than they could have made from farming or fishing but amounted to a risible fraction of the profits made by the owners. They were sustained by other means, perhaps above all by their own camaraderie in the face of accident and death. Drink provided an acceptable social release of working pressures. Many embraced the salvation offered in this life and the next by the good Lord as revealed through the Methodist evangelism that the Wesleys brought to Cornwall in the second half of the eighteenth century. John Wesley preached 18 times between 1762 and 1789 at Gwennap Pit, a hollow formed by the subsidence of old copper mine workings on the edge of what was described as the richest square mile in the world. Christianity and Mammon have always had an uneasy relationship.

As Jim and John told their stories of life under the ground, Jim with his focus on water drainage and supply, John from his mining perspective, an undercurrent of danger, fear and death was never far from the surface of the tale. Sometimes, it burst through to harrowing effect. They shared an account of a young miner they knew who on the spur of the moment decided he would get his tea break early and attempted to hitch a lift on a kibble – a large bucket – that was being raised up through the vertical shaft to the surface. He misjudged the move and was left hanging on by his fingertips. The men at the top of the shaft saw him come into view as he and the kibble neared the surface. His last words were: 'I can't hang on anymore. Goodbye.' It took the other half of the day to get his body back to the surface.

Fear and the closeness of death; the sheer peril of going underground surfaced in Jim's account of an adit inspection that very nearly cost him and his miner companion their lives. Adits are drainage channels, generally at a relatively shallow depth, inclined gently towards the outside to allow passive drainage. The survey map on our table showed clearly the course of the adit for the Stennack lode, intersected at intervals by the vertical shafts excavated through the rock to reach the lode. Jim had determined that this adit needed a clearance and maintenance inspection. Ankle deep in water, Jim and a local labourer

entered the adit through a shaft in the town itself. Jim had his measuring instruments, the labourer his tools; a telephone system had been set connecting Jim with a water board architect at the top of the shaft ready to plot the information, the measurements and bearings, passed on by Jim through the telephone. Jim and the labourer began to thread their way through the tunnel that measured around five feet by three feet for most of its length, around two hundred feet beneath the surface.

After an hour or so when they were more than half way up the Stennack Jim noticed that the water level had reached his calves. The phone line connection had begun to crackle and was then lost. 'I think it's time to turn back', he said to the labourer who had scarcely noticed the rising water. Their return journey in that dark, low narrow tunnel became a race for survival as the waters rose steadily around them towards the top of the five feet high ceiling in the tunnel. They just made it to their entry shaft before the waters covered them completely. A white-faced architect met them with the news that there had been a cloud burst over St Ives and the Stennack was awash.

Jim spoke with pride of the engineering achievements of H.E. Phillips, the man in charge of the mains water supply for St Ives from the 1930s. In 1935, Phillips oversaw the construction of a project to use the waters gathered in the now disused Trenwith mine area to supplement the town's water supply, specifically to supply the Downalong area of central St Ives. Effectively, 200 million gallons of water were contained by an underground dam, controlled by a penstock, a valve or sluice gate, which in the course of time Jim through his rising seniority was able to operate. He quickly learnt to fasten himself to a nearby structure to stop himself from being washed away in the surge of thunderous water released as the valve opened.

The Trenwith mine had yielded both copper and tin in the first half of the nineteenth century but falling international prices forced its closure in 1856 as a copper producer. However, in 1908 Trenwith reopened as a radium mine under the control of the German-owned British Radium company, with some of its output being used by Madame Curie in her experiments. It had been in the 1840s that some of the Trenwith copper ores had been found to be mixed with pitchblende, a mineral then of little perceived value, but later to be worked as the source of radium. The Company had plans to turn the Great Western Railway Tregenna Castle Hotel in St Ives into a health resort – a Cornish spa - utilising the supposed curative properties of the water but these ideas came to nothing and the mine itself was forced to shut down with the outbreak of war with Germany in 1914. [6] Jim told the tale passed down to him of a rich German who bought at some expense measures of radium to cure his illness and died of a radiation overdose soon after – but evidently the radium content of the water supplied to Downalong residents from 1935 was safe enough. Both John and Jim drank it as children in Downalong as did tens of thousands of others. Those who implemented European health and safety legislation in the 1970s perhaps erred on the side of caution when it was decided that Trenwith water was no longer suitable as a source.

One last story remains, a warning perhaps for the future since so many in St Ives live above the industrial mining landscape buried beneath the surface. Jim told the tale of the lady in one house in Trenwith Place towards the bottom of the Stennack who was awakened one

night over fifty years ago by an alarming sound from downstairs. Fearful, she descended the stairs and looked round the living room. Nothing out of place. She opened the kitchen door, hesitated before entering the room, reached for the light and lo! Before her stretched a gaping hole, a sixty foot drop into the world beneath her feet. The kitchen floor had disappeared into an old, unmapped mine shaft. The shaft infill had collapsed.

To have had the opportunity to listen to the stories of Jim and John and see the survey plans, to have seen the jar containing almost pure tin extracted from the ore, is to have experienced the wonder of recapturing the past. All who value the understanding of those things that have shaped us will appreciate what we were gifted. A Cornishman, Nicholas Johnson, who played an instrumental part in the inscription of the Cornwall and West Devon mining landscape in the UNESCO list as a World Heritage Site (WHS) in 2006, has stated that overall there was little recollection of mining's eighteenth- and nineteenth-century heyday among the Cornish: '… *once* [the memory of mining] *passes beyond your grandfather, it almost passes out of mind.'* [7] I hope this short essay can play some small part in keeping the past alive.

Dr Rob Donovan (2013)

End Notes for Under the Surface in St Ives

1 Noall, Cyril [1977] 2011, *The Book of St Ives – A History of the Town*, Baron Books of Buckingham, pp. 94-95.
2 Noall, *St Ives,* p.95.
3 Schwartz, Sharron P. 2008, *Voices of the Cornish Mining Landscape,* Cornwall County Council, p.60.
4 Eade, Sir Peter, 1916, *Autobiography*, Norwich, p.191.
5 Hamilton Jenkin, A.K. [1927] 2004, *Cornish Miner*, West Country Books, pp. 263-5, pp. 333-6.
6 Noall, *St Ives*, p.94.
7 Schwartz, *Voices*, p.8.