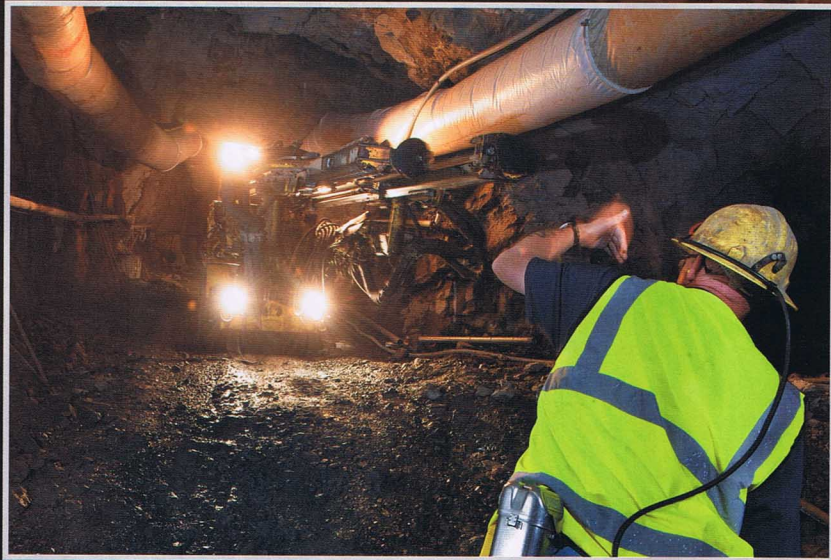


Keeping the seam alive

TWO THOUSAND YEARS OF CORNISH MINE ENGINEERING, AND IT'S NOT OVER YET

Words by **Jessica Milln**, photographs by **Bernie Pettersen**



Old Cornish mines are labyrinthine in nature. Cut out in the early 1800s, they twist, following the fault lines in the rock, and weave through the levels to open out in precipitous 60-degree sloping caverns where the ore lodes were painstakingly worked. Miners would descend in rattling cages to the murky depths, and walk the narrow tunnels, chilling and mud slopping underfoot, sometimes no more than five feet in height. These precarious, airless, subterranean voids could so easily be torture chambers to labour in but perhaps it was the proximity to "hell" which shaped the camaraderie that old miners fondly spoke of.

Closure of the last mines in Cornwall spelled catastrophe. After the collapse of the International Tin Agreement in the mid 1980s, Brazilian traders dumped large quantities of cheaply produced concentrate on the market, and tin prices fell dramatically. Finally, on an unbearably sad day in March 1998, the management at South Crofty, the last working tin mine in Europe, reached the conclusion that it could no longer continue to operate at a loss. At that point, Cornish mining as →

we knew it came to an undignified end.

Cornwall's miners had worked for generations under harsh and frequently hazardous conditions. They were paid on 'contract' and a good one might be able to break out as much as 40 tons of rock in one shift. However, they were paid on the amount of ore brought to the surface, and out of this was taken the cost of their boots, drills, steels, candles, explosives and fuses. Undoubtedly they skimmed on safety to make savings.

When the yield was good, a miner would be laughing; but other times he'd have to accept shifting tons of waste ground for very little ore. Accidents were not uncommon, and early deaths too frequent. Silicosis caused by the fine dust particles of quartz and mica produced by dry-drilling and explosives affected men right up until the 1930s, and miners were often old men by the time they were 40.

It might be difficult to imagine why mine closure caused such consternation or that Cornwall mourned its loss. In spite of all the hardship, the earnings were comparatively good and mining areas

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became prosperous communities. Just before the collapse of tin prices in the 1980s, mining was contributing more than £20 million a year into the local economy, and its death spelled economic disaster to certain areas of Cornwall. Local news reports predicted that the loss of mine-related jobs would send to the county's unemployment level rocketing to more than 30%.

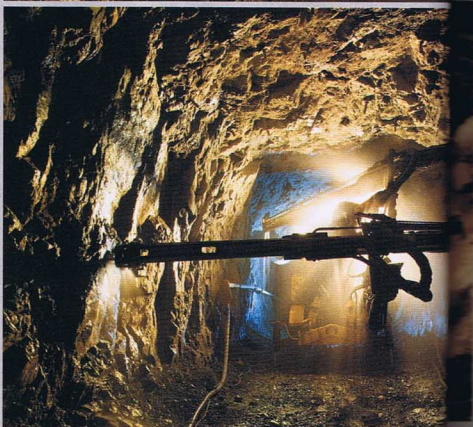
It was believed that Cornish mining had ended for ever. Once the pumps stopped and the mines filled up with water there'd be no going back. But today, Western United Mines Limited (WUM) is dedicated to bringing full-scale mining back to Cornwall.

This might appear to be the reopening of South Crofty, but not everything is always as it appears on the surface. The mining district of Camborne and Redruth is one of the most densely mineralised areas of Cornwall, and a decision to begin mining again is not solely due to the rise in tin prices; WUM maintains that by managing the mine more efficiently and effectively, mineral extraction will continue to be profitable even if tin prices were back at their lowest.

Senior underground supervisor Mike Sampson escorted me through the old South Crofty workings. We paused for a moment at a narrow descent down a wet ladder. The shock of a thunderous rumble of trucks passing below barely prepared me for the surprise I was about to see. I'd just stepped out of the past into the future. I was now looking at a massive inclining subway fitted out with electrical sub-stations and air-conditioning systems to remove diesel fumes and blast particles.

Mike explained how the introduction of modern mining methods used to re-establish mineral extraction in the area has enabled the development of a new area of the mine. "In the old days, mining was often a gamble. When the copper ran out at the higher levels, should they abandon the mine or continue to dig deeper?"

In 1986, just after the tin crash, South Crofty had started to dig the Tuckingmill Decline with the aim to bring big machinery into the mine, but digging the tunnel was suspended within two years. Over the past two years, WUM has branched away from this tunnel mining a vast drive, five metres wide and four metres tall; and recently mining deeper



with the aim of creating five kilometres of a 1 in 6 decline, reaching depths of 3,000ft. This operation will take in an area of some 15 old mines concentrated around the old Dolcoath workings, where rich lodes of tin are found at depth.

Cornwall's mining legacy was never relinquished. The Camborne School of Mines, now merged with Exeter University, has always kept Cornwall at the pioneering forefront of its field and held its international reputation for mineral engineering expertise. Through its teaching, research and the CSM alumni network, the School held its strong presence in the global mining industry.

A recent post-graduate of the School, Dr James Jobling-Purser has developed a Remote Surveying Vehicle (RSV), which to the uninitiated looks like a robot on caterpillar tracks, for his doctorate. "The idea came from an off-the-cuff remark to a lecturer," James said. "I said it was ridiculous there were no machines to do the surveying work. He replied by challenging me to invent one. I'm not sure if he was serious."

I witnessed how the RSV uses laser scanning technology to measure the rock surfaces and all features within the mine to a very high level of accuracy. "Its main advantage," explained James, "is that it can be operated 200m from the operator by using the radio control. It allows inaccessible or unsafe areas of the mine to be surveyed at a safe distance. It speeds up the surveying process and produces a complete three-dimensional model of the mine."

The RSV has taken five dedicated years to perfect, test and fine-tune before being commercialised for general sale. South Crofty managers used it recently to gather vital information over a three-day period, a process that would have taken weeks using traditional surveying techniques. Alan Shoesmith, chief executive officer of Western United Mines, said: "The amount of detail derived by the scanning technology of the RSV far exceeds any conventional survey methods and really suits our working environment."

Such modern mining methods are eradicating the old hit-and-miss approach. Drill cores 500 metres long are taken at intervals which allow the mineral values to be minutely analysed. Scooptrams can pick up 10 tonnes of rock in a single load. Each blasting moves 250 to 300 tonnes of rock at a time and advances the tunnel by four metres. They are mining, but still at the development stage.

Investors have spent £10 million to date, with an expected cost in excess of £50 million to get the mine back into production. Tin production may still take a year or two, but when it does, the initial processing will take place underground. This means the area taken above the ground will be much reduced, freeing up 27 acres of old surface mine operations area for regeneration.

Perhaps, 2,000 years of mining never actually came to an abrupt end after all. Cornish mining just took study leave and will come back for sure: better, stronger and more productive as a result. 