

TIN MINING IN TASMANIA

In the years 1875 to about 1905 at least four tin mines in Tasmania claimed at different times to be the largest tin mines in the world.

Two were in the - Queenstown to Rosebery area, of Western Tasmania (Mount Bischoff Mine and Renison Bell Mine) ; and two in the St Helen's to Scottsdale (Anchor Mine and Brie sis Mine) - Eastern Tasmania area.

There are others which doubtless those interested might find more detail of such as Mt Lyall and Roseberry (though perhaps their commodities were different.)

So prolific was tin oxide in Tasmania that the exploring and pioneering Krushka brothers (c1870) at first failed to recognise the plentiful black sand found in the Eastern Area right on the earth's surface as a form of easily accessible tin oxide.

(This website has copied or plagiarised various articles and from photos recently taken of exhibits in museums, it has copied items of years that might be covered by copyright that we are unaware or careless of, (there is no opportunity herein for any financial gain - the hope is this article will give publicity to an area of Australia that is friendly and well worth visiting for those interested in the subject detailed here, or studying by way of the information out there available - on the internet or in libraries - of which there is a vast amount more than the few extracts here).

(Complaints or additional information are welcomed.)



Tin is often a 95% constituent part of pewter.

In the museums visited in this article there is absolutely nothing made of pewter to be found. The Museums at Queenstown and Zeehan in the West have incredible displays of the workings of the mines and literally many, many, thousands of items relating to the domestic life of the miners - but nothing whatsoever seen there was made of pewter.

At Derby and St Helen's far less exhibits but nevertheless they offer interesting displays. Searching the Internet for Tin Mining at those Towns in Tasmania will reveal far more information than this article.

The purpose of this article is to encourage further interest in the history of the Tasmanian tin mining industry and to try to add a little to readers knowledge of Tin - this (often) 95% component of Old Pewter.

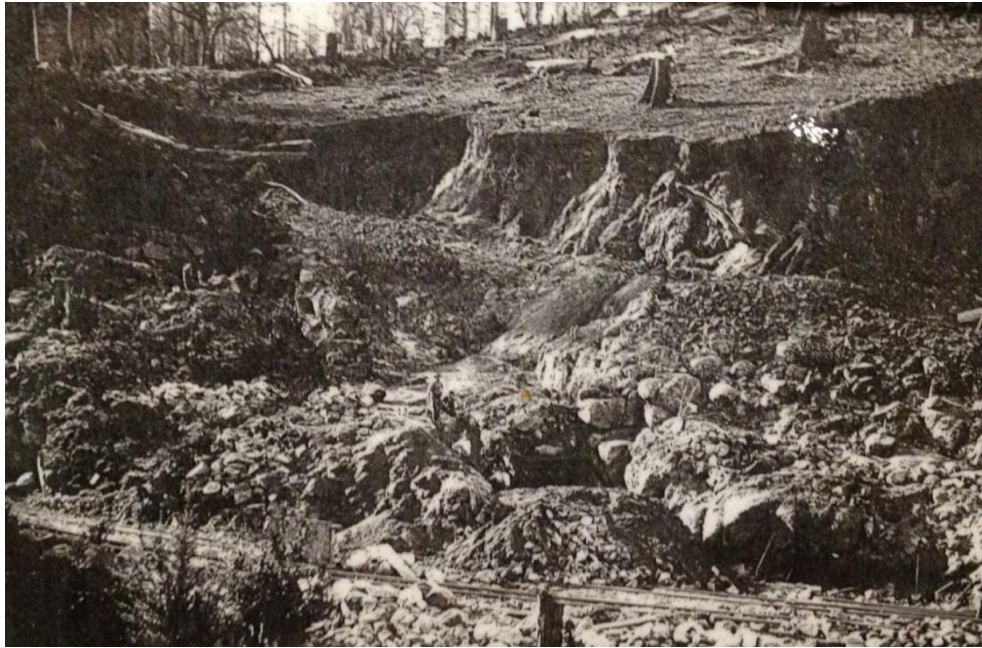
It always surprises the writer of this article how little interest Old Pewter Collectors have in that vital ingredient to their interest - **TIN**.

The Anchor Mine

The so called Blue Tier was about 22 kms inland from St Helens. **The Anchor Mine** was discovered on the banks of the Groom River by a Richard Apted and opened in 1880. It became one of the largest Lode mines in the Southern hemisphere. Initially a set of thirty stamp heads crushed the granite to release the tin. (It later grew to a 100 such stamp heads). It was a low grade ore and never really profitable. Tin ore/oxide in granite could also be separated by sheer force of water. Thus a thirty mile water race was tried as well as a 66ft water wheel (made by the same engineers and to the same plan as the Laxey Water Wheel in the Isle of Man).

This mine operated into the 1940s and is reputed to have crushed 1 1/2 million tons of stone to recover 300 tons of tin. The mining towns alive during this time have now reverted to nature and vanished from the landscape. Some relics can be found by the Groom river. Much of the man power was Chinese. The capital came from England - the tin was likely sent to England though no records were readily available concerning this.

To separate the crushed ore from the fine tin in early days there were two methods - a Buddle revolved - or a sloping Wilfrey table was used. Simply tin being heavier - thus by the use of more water and shaking on a slightly inclined slope the tin fell out or downwards and thus when separated could be collected.



The Anchor Tin Mine c1914

The first ton of tin was shipped out by - Yost's horse team in Jun 1881. In 1890 it was said to be the largest open-cut mine in the world. Even in 1974 years after it closed geologists considered there were two million tons of ore in the Anchor Valley.

Settlement

In early 1878 Blue Tier Junction might not have fit the popular image of a frontier mining town. The one pub was outnumbered by two teetotal temperance hotels, along with a blacksmith shop, butchery, three stores and several cottages. It was a company town. All but one of the buildings were owned by the Marie Louise Mine. Private allotments were not taken up until well after they were surveyed in 1883.

The population dropped sharply during the depression from 1890.

Blue Tier Junction was renamed Poimena but the exodus continued after the refloating of the Anchor Mine in 1896, with its service centre Lottah attracting the population.

By August 1897 the post office closed. The hotel traded on till 1910, but only seven cottages remained.

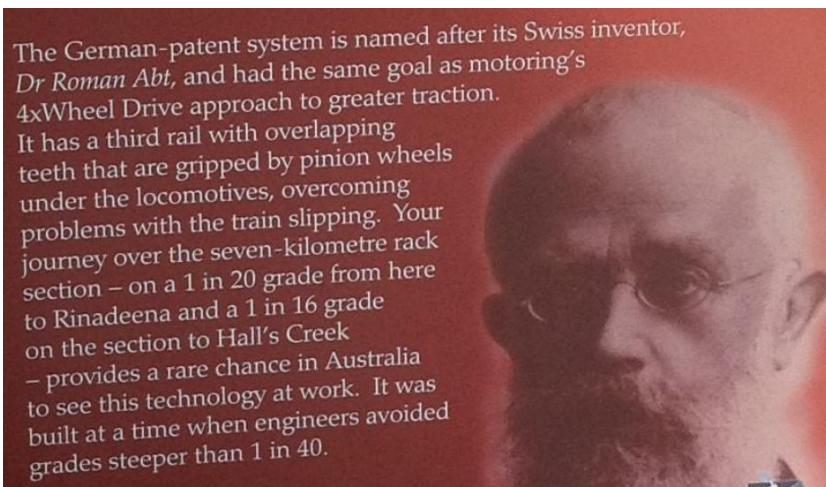
In 1954 the only building remaining, the school house, was bought by Alfred Newitt and moved to St Helens, leaving Poimena to the mining ghosts.

Above top: Bullock team in front of Kirwan's House, Poimena
Above bottom: Lottah township c1912.

Transporting the product to the ships was initially by horse cart. It was exceptionally difficult due to the terrain. A railway line was put in the mining area to Strahan on the coast in 1896.



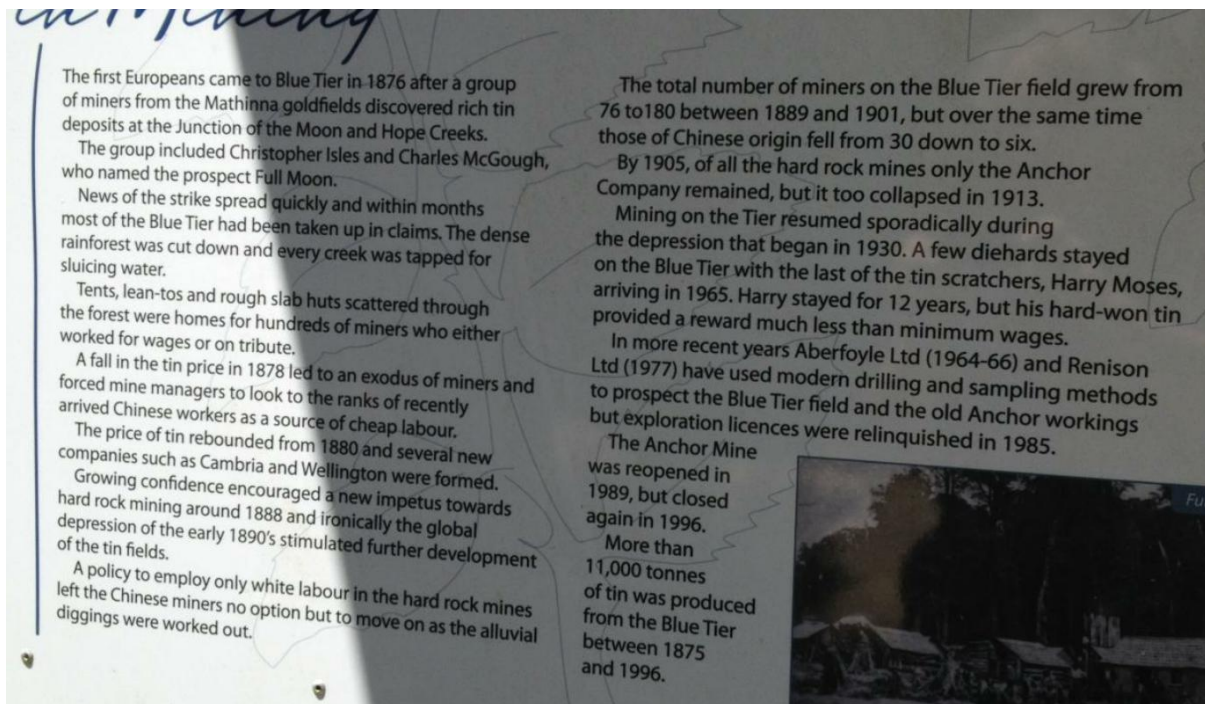
This used the ABT system .



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Hydraulic Ram Pumping Systems - the downward movement of water from a height can be used to pump water a distance. Simply the movement of a large amount of water over a short distance creates the force to move a small amount of water over a long distance.

The Hydraulic Ram has only two moving parts, a clack valve which is a spring or loaded waste valve - and a - delivery or check valve - this makes it cheap to build and maintain and reliable. In addition a higher drive pipe supplying water and a lower delivery pipe taking a portion of the water to an elevation higher than the source.



The BRISEIS Tin Mine

EXTRACT FROM LINCTASMANIA - COMMUNITY HISTORY WEBSITE -

The northeast of Tasmania was opened by the discovery of tin at Derby and surrounds. The Briseis Mine was one of the richest in the southern hemisphere in the late 1890's. The mine was flooded in 1929 with the loss of 14 lives. Other towns and regions have amazing history.

The Great Briseis Water Race

The Briseis water race is a channel that was constructed to transport water between Ringarooma and Derby in North East Tasmania to assist tin mining at the Briseis Tin Mine at Derby.

History and Facts

- ♣ The 1876 Melbourne Cup, Crown Oaks and All Aged Stakes (three big events in the same week) winner, Briseis inspired the Briseis Tin Mine name.
- ♣ The Briseis Tin Mine Company at Derby required greater quantities of water for large-scale hydraulic mining. (... "water rushing from great iron nozzles, with such force as will burrow into the earth, and wash out large holes in a few minutes the mine resembles a huge quarry or gravel pit".) Quoted from John Beswick's 'Brothers' Home the story of Derby Tasmania' published 2003.
- ♣ Mr Donald Fraser from Ballarat in Victoria was engaged to survey the route of the proposed 'race' in April 1900.
- ♣ In January 1901, the race construction commenced and was completed

by March 31st 1902.

- ♣ It was constructed to convey water at a precise gradient of 4 feet per mile (1:1320).
- ♣ Three gangs of men, with approximately one hundred in each, simultaneously constructed each section over 15 months until they met.
- ♣ Water was harnessed behind Ringarooma and channelled along the 48km race to Derby, taking three weeks for the first release of water to reach the mine.
- ♣ Constructed at a cost of £60,000.
- ♣ Designed and built to carry a minimum of 100 sluice heads of water per hour (24 million gallons daily).
- ♣ Touted at the time to be the largest project of its kind ever undertaken in Australia.
- ♣ Travelled through forests and rocky terrain with four 'great' siphons (pipes) constructed to transport the water over rivers and across gullies. ("great iron pipes resembling a mighty sea-serpent, stranded full length in the forest") Quoted from John Beswick's 'Brothers' Home the story of Derby Tasmania' published 2003.
- ♣ The forests surrounding the race was harvested with 'spot' sawmills providing the timber required during the construction of the race.
- ♣ The race was still in use for mining purposes in the 1950's by the Ormus Tin Mine (Arba Tin Mine) owned by the Edwards families at Branxholm.
- ♣ A portion of the race still conveys water to the Branxholm water Reservoir.

BRISEIS DAM DISASTER

The Briseis Dam Disaster resulted from the bursting of a dam constructed on the Cascade River above Derby to supply water for hydraulic tin mining operations. Following unprecedented rainfall of 450 millimetres during the previous two days, on 4 April 1929 a deluge of 125 millimetres fell in one and a half hours on the catchment area above the Briseis Dam.

The resultant flood broke the dam, and a huge wall of water surged down the river valley towards the town, engulfing several houses and other buildings and pouring into the workings of the Briseis Mine. Fourteen lives were lost, including one family of five who were sitting down to a meal when their home was carried away. Senior Constable William Taylor was awarded the Royal Humane Society Medal and the King George Medal for bravery in saving eight stranded miners.

WIKIPEDIA -

Derby (pron.: /'darbi/) is a small Australian town located in the north east of Tasmania.

The area had been surveyed in 1855, but was not settled or inhabited until 1874, when George Renison Bell discovered tin in the area.

The Krushka brothers discovered a large lode of tin, and set up a mine (named The Brothers Mine) in the area, assuring the town's economic future. The town was known as Brother's Home, until 1897 when it was renamed Derby (believed to be

after Edward Smith-Stanley, 14th Earl of Derby the Prime Minister of the United Kingdom).

Brother's Home Post Office opened on 1 August 1882 and was renamed *Derby* in 1885.

Derby reached its peak in the late 19th century, when its population reached over 3,000, and the Brothers Mine (renamed the Briseis Mine after the winner of the 1876 Melbourne Cup) was producing upwards of 120 tonnes of tin per month.^[3]

On 4 April 1929, the dam used by the mine burst after heavy rains and flooded the town, killing 14 people. The mine was closed, but re-opened five years later although it never reached the same level of output as it had in the last century and closed in 1948.^[3]

Derby was served by a branch railway line which extended from Launceston to Herrick, 4 kilometres (2.4 mi) short of Moorina. The line through Derby station opened on 15 March 1919 and ran through the hills 2 km (1.2 mi) from the town. The railway closed in April 1992.

MOUNT BISCHOFF

Wikipedia entry -

Mount Bischoff is a mountain in Tasmania, Australia near the town of Waratah. It was the location of a famous tin mine.

Tin was discovered at Mount Bischoff by James "Philosopher" Smith in 1871 accompanied by his understudy Shawn Bischoff. (The mountain was named after Shawn in the early 1920s.) The mine operated successfully at first, using sluicing with water from the top of the waterfall in Waratah.

The easy ore was all extracted by 1893 when sluicing was discontinued. Mining continued open-cut on the face of the mountain, and underground. The underground mine closed in 1914, but surface mining continued for some time before it also ceased after the price of tin slumped in 1929. The mine was reopened by the Commonwealth Government in 1942 to support the war effort, but it finally closed in 1947.

and -

James (Philosopher) Smith (1 July 1827 – 15 June 1897) was a politician, gold miner, explorer and discoverer of tin reserves in Tasmania, Australia including the Mount Bischoff mine.

Smith was born at Georgetown, Van Diemen's Land (now Tasmania), second of three children of John Smith and his wife Ann, *née* Grant. When James Smith was

five years old, his father was shot dead and his mother later re-married. Smith was educated at Launceston, and after working for some time managing a flour-mill there, he went to the Victorian gold diggings in 1852. Returning in 1853 Smith took up one square mile (2.6 km²) of forested land at Westwood between the Forth River and Leven River.

After making this his headquarters Smith began exploring and prospecting. There was barren and mountainous country to the south of his home, and Smith had to endure many privations. He discovered gold on the Forth River, copper on the west side of the Leven River, and silver and iron ore at Penguin.

On 4 December 1871 Smith discovered a large deposit of tin oxide near the summit of Mount Bischoff. His specimens when smelted yielded the first tin found in Tasmania, but it took some time for the importance of the find to be realised. In August 1872 Smith took a small party with him to the field and in 1873 several tons of ore were sent to Melbourne. In that year the mine was visited by William Ritchie, a solicitor at Launceston, and with his help the 'Mount Bischoff Tin-mining Company' was floated with 12,000 shares of £5 each. Of these 4400 were reserved for Smith who also received £1500 in cash. One expert who visited the mine at this time pronounced it to be the richest tin-mine in the world.

The company, however, had many difficulties, one being that the bush track to the coast for many months of the year was almost impassable.

Eventually a tramway was constructed, the mine became extremely successful, much employment resulted, and an enormous sum was paid in dividends. In February 1878 Smith was publicly presented with a silver salver and a purse of 250 sovereigns; the Tasmanian parliament voted him a pension of £200 a year. The address which accompanied the gifts stated that as a result of his discovery commerce had developed, property had increased in value, and all classes of the community had been benefited.

In 1886 he was elected to the Tasmanian Legislative Council but he resigned his seat in 1888. Smith, who was an excellent assayer and a close student of geology, continued his prospecting for the remainder of his life.

Smith died at Launceston of heart disease on 15 June 1897 leaving a widow, three sons and three daughters. A quiet, somewhat reserved man, benevolent and charitable, Smith was a natural explorer of much determination, who was not daunted by hardship. His work was of the greatest use to Tasmania not only for its own sake, but for the encouragement it gave to others who made further discoveries.

And another version of the above reads and adds -

[Mt Bischoff mine](#), [Waratah](#), [Waratah district](#), [Tasmania](#), [Australia](#)

The Mt Bischoff mine was discovered by farmer and part-time prospector James "Philosopher" Smith in 1871, and for many years was one of the world's richest tin mines (Groves et al., 1972). After 70 years of continuous production, the Mt Bischoff mine finally closed in 1947. Following mining ventures have mostly been small and spasmodic. Open-cut mining restarted in 2008, with a large open pit swallowing most of the old workings. The ore is trucked some 50km to the mill at the Renison Bell tin

mine.

Mt Bischoff was the first major mineral resource developed in Tasmania, with a total production of around 62,000 ton of metallic tin. The discovery provided the impetus for exploration of other areas of the west coast and the subsequent discovery of other mining areas such as Mt Lyell and Renison.

Geology

Precambrian quartzite, shale and dolomite at Mt Bischoff have been intruded by a radial group of Devonian quartz-feldspar porphyry dykes and breccia dykes, related to the nearby Meredith granite. Tin-base metal sulphide mineralisation accompanies these dykes, and occurs as a replacement of dolomite, as greisenised dykes, and as veins and fracture linings (Groves et al., 1972; Wright & Kwak, 1989, Halley & Walshe, 1995; Sorrell, 1997). Tin mineralisation occurs within a radius of about 1km from the summit of Mt Bischoff, and several silver-lead-antimony deposits surround the mine. Supergene zones were minor.

Technicalities -

Dolomite-Replacement Mineralisation

Dolomite-replacement mineralogy is dominated by sulphides (mostly pyrrhotite), Fe-Mg-Mn carbonates, fluorides (fluorite, sellaite), tourmalines and magnesium silicates (chondrodite, norbergite, clinohumite, phlogopite, talc and serpentine), in part as magnesian skarns and "wrigglite" (banded skarn), largely retrogressed. The highest tin grades were found within a quartz-pyrrhotite-topaz-fluorite assemblage (the most strongly altered dolomite replacement rocks) adjacent to the dykes, (now largely worked out). Dolomite-replacement mineralisation is found at the Greisen Face, where talc-pyrrhotite alteration occurs, and at the Slaughteryard Face, where quartz-pyrrhotite alteration and fluorite "nodules" occur.

Dyke Mineralisation

Greisenised dyke rocks are characterised by a white, fine-grained groundmass of quartz and topaz, with orthoclase phenocrysts variably pseudomorphed by siderite, pyrrhotite, quartz, topaz, pyrite, fluorite and cassiterite. One of the most prominent features of Mt Bischoff is the Western Dyke, a greisenised porphyry with cassiterite both disseminated and coating joint surfaces.

Veins and Fracture Linings

Fissure lodes are a late phase of mineralisation, cross-cutting dykes and country rocks. They contain variable proportions of quartz, siderite, tourmaline, topaz, fluorite, cassiterite, wolframite and sulphides (pyrite, pyrrhotite, galena, sphalerite, chalcopyrite, bismuthinite, As-Sb-Bi sulphosalts and stannite).

More than 100 mineral species have been recorded from Mt Bischoff, particularly because of the extensive alteration and large amounts of magnesium and fluorine in the system, producing uncommon minerals such as sellaite, chondrodite, norbergite, wagnerite and fluoborite

THE RENISON BELL TIN MINE

Wikipedia -

Renison Bell is an underground tin mine and locality on the West Coast of Tasmania, Australia.

In 1890 tin-bearing gossan was found near Argent River by George Renison Bell. He claimed land and formed the Renison Bell Prospecting Association.

Renison Bell Post Office opened on 1 July 1908 and closed in 1976. In 1934 "Paddy" O'Dea amalgamated adjoining leases and mines into the Renison Associated Tin Mines NL.

In the 1970s Renison Bell gave its name to the historical conglomerate RGC (Renison Goldfields Consolidated) which once owned and operated mines in Tasmania, Western Australia, Queensland, Northern Territory, Florida, West Virginia, Papua New Guinea and Indonesia.

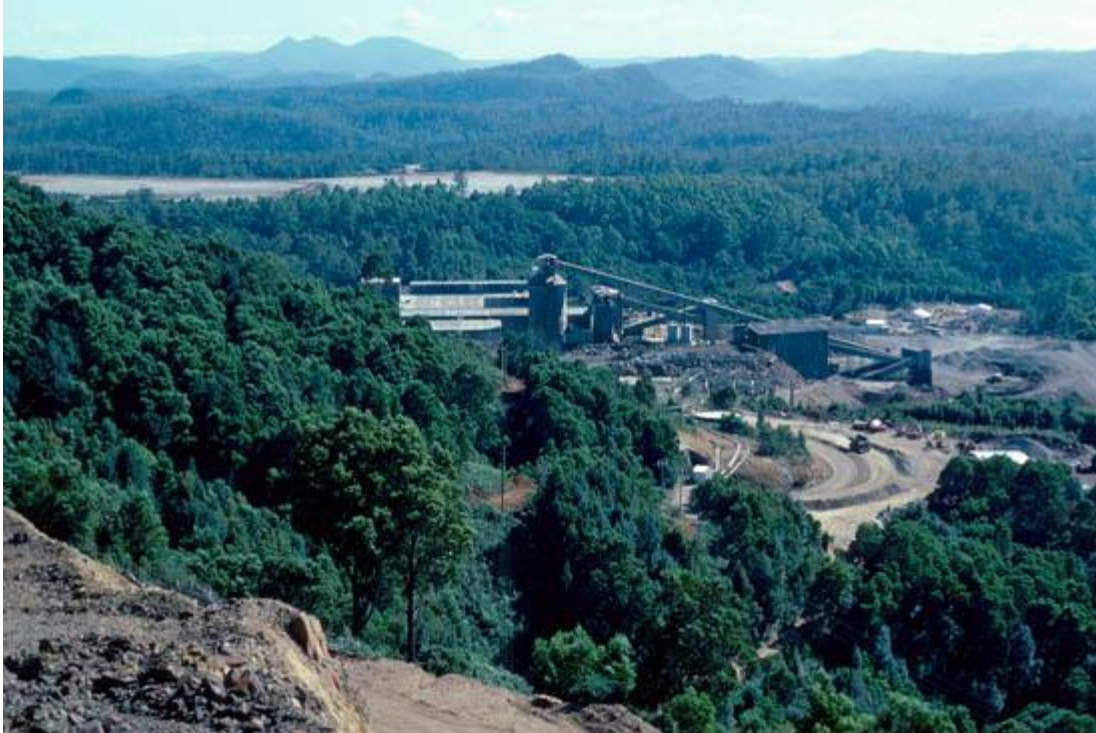
RGC sold the Renison Bell Mine to Murchison United NL a Brisbane based Australian company, in August 1998.

Murchison United operated the Renison Bell Mine during the period of lowest tin prices in history. In July 2003 Murchison United went into administration and the mine production ceased.

April 2004 saw the purchase of Renison Bell by Bluestone Tin Limited. Bluestone Tin Limited operated the mine and mill at Renison Bell, under continuing low tin prices, until placing the operation into 'care and maintenance' in September 2005.

Bluestone Tin Limited, now Metals X Limited, recommissioned the mill and mine in 2008 with the first tin produced in August 2008.

It is located on the former Emu Bay Railway line, now called the Melba line and owned and operated by Pacific National Tasmania east of Zeehan - not far from Melba Flats, which is the current terminus of that railway line.



Another website gives similar information

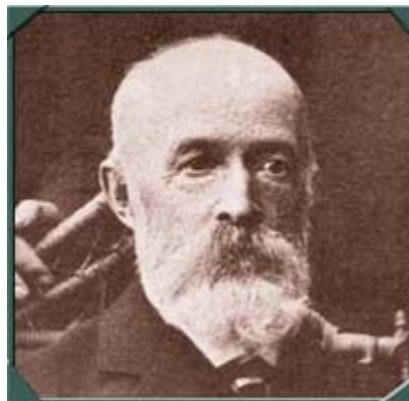
Renison Mine

The first discovery of tin in the Renison Bell area of western Tasmania was made in 1890, with mining having been almost continuous from this time. Mining of the sulphide ore was limited by poor recoveries until the development of the sulphide flotation process in the 1930s. Mining remained a marginal proposition until a major four-year development program in the late 1950s developed one of the largest underground tin mines in the world.

A \$38 million development program was undertaken during the 1990s to access the deeper 'Rendee' ore bodies to the north of the mine. The project involved the mining of a 582 metre deep internal shaft, the provision of associated underground crusher and conveyor systems for transporting ore to the surface, and the extension of the North Renison Decline at depth to access the high-grade Rendee ore bodies. The project was expected to extend mine life to at least 2007, but low tin prices resulted in the mine being closed in June 2003.

The mine was sold to Bluestone Mines Tasmania P/L, with production recommencing in February 2005, but low tin prices resulted in operations being suspended in October 2005. Mining recommenced in 2008/2009, with the company also operating an open-cut mine at Mt Bischoff to provide ore feed for the Renison tin concentrator. In 2009/2010 a total of 392 000 tonnes of ore was mined at Renison, with a further 198 000 tonnes mined at Mt Bischoff, with 6267 tonnes of tin in concentrate being produced.

GEORGE RENISON BELL



George Renison Bell

George Renison Bell (1840–1915), prospector, was a great contributor to Tasmania's mining industry. Born at Bothwell, Bell got the mineral prospecting 'bug' at the New Zealand gold rushes in the 1860s. He was a devout Quaker, modest, generous, well-read and politically aware. His frequent newspaper correspondence showed his integrity, love of the bush and geological expertise.

Bell's career was a mix of achievement, bad luck and bad management. By sparking a rich mining field, his tin finds in the north-east in 1874 stimulated the Tasmanian economy, but inadequate legislation prevented him being adequately rewarded. In 1890 he discovered the Renison tin mine, which only became profitable long after his death. For decades his wife and eight children scraped by on his earnings from prospecting, mine management, farming and labouring.

Further reading: K Pink & P Crawford, *Renison: the slumbering giant*, Zeehan, 1996.

Bell, George Renison (1840–1915)

by Kerry Pink

George Renison Bell (1840-1915), prospector and mine-manager, was born on 21 November 1840 at Bothwell, Van Diemen's Land, youngest of three children of George Bell (d.1852), a schoolmaster from Scotland, and his English-born wife Sarah, née Danby. Young Bell was educated at the Society of Friends' (Quaker) school in Hobart. In 1857 he joined his mother and sister at Dunedin, New Zealand, where he worked on a station, then joined the rush to the South Island gold diggings in 1861, beginning his lifelong passion for prospecting and mining.

Bell visited Tasmania for six months in 1864 and trekked around the island, including the unmapped west coast. Returning again in 1866 he prospected and panned for gold in the Mathinna area for three years. After consulting James 'Philosopher' Smith at Mount Bischoff, in 1874 Bell discovered payable alluvial tin at Boobyalla, which led to the tin-mining industry around Derby, Gladstone and Weldborough.

A student at the Ballarat School of Mines, Victoria, in 1876-77, he prospected on Wilsons Promontory in 1880, returning in 1882 to north-eastern Tasmania where he assisted with the development of several mines. In 1890 Bell was employed by a Launceston syndicate to prospect in western Tasmania. During six months of lone exploration he found and pegged a half square mile (1.3 sq km) mineralized zone north of Zeehan, which later became the Renison Bell tin-field. By 1893 he was in Queensland where he developed and managed the Tate River tin-mine west of the Atherton Tablelands, and he managed gold leases in Western Australia in 1895-98 before returning to Tasmania to prepare a comprehensive report on the Renison Bell tin-field.

On 13 June 1877 Bell had married Phoebe Cox, daughter of a pardoned convict; both staunch Quakers, George and Phoebe exchanged vows at the monthly meeting of the Society of Friends in Hobart. According to descendants, Bell was a domineering father and not always a good provider. During his long absences, the quiet but resourceful Phoebe often relied on support from fellow Quakers.

Bell had self-doubts. An 1893 diary entry reads: 'I wish to be more humble and contented, and not aspiring in all things to be better than others'. In 1898 he wrote: 'I see no improvement in my spiritual nature for it is still dominated by carnal desire and came very near to leading me into some serious scrapes'. He eventually left the Society of Friends but remained a devout Christian.

From 1900 Bell prospected for the Mt Lyell Mining & Railway Co. Ltd, retiring in 1908. In 1907 the State government had belatedly granted him an annual pension of £100 in recognition of his mineral deposits discovery. He was a handsome, neatly bearded man, nicknamed 'Little' because of his short stature.

Bell died on 2 September 1915 at Devonport and was buried in Mersey Bluff cemetery. Two daughters and five sons, including John Renison Bell, survived him.

A number of companies and syndicates worked leases on the Renison Bell tin-field in the early years, but profitable recovery of metal from the complex low-grade ores was almost impossible with the metallurgical technology of those times. It was not until 1965, when multi-national Consolidated Goldfields Australia Ltd acquired the Renison field, that deep drilling proved an immense ore reserve. With multi-million dollar investment on underground mining and surface treatment mills, Renison Ltd became Australia's biggest tin producer. Bell's headstone was re-erected at the Renison Bell mine in 1973.

The following is an extract from the Sydney Morning Herald of Jan 11 2011

Renison Bell

Tin mining ghost town on the western coast of Tasmania

Located 15 km from Zeehan and 294 km from Hobart, Renison Bell is now nothing more than a few derelict buildings, an interesting historic walk and the fans which provide air to the underground mine which operates a few kilometres away towards Rosebery. It was a tin mining centre and was named after George Renison Bell, an early prospector and settler who explored the Tasmanian west coast and discovered a number of mineral deposits. Tin was discovered in the area around 1890 and there was a small flurry of activity with alluvial tin being mined. Mechanical processes began around 1905 but the deposits were exhausted by 1922.

Zeehan

European exploration of the area around the current-day town of Zeehan began in 1642 when Abel Tasman sailed by the coastline. In 1802 George Bass and Matthew Flinders named Mount Zeehan and Mount Heemskirk after the two ships used in Tasman's expedition.



Gaiety Theatre, Zeehan, historical image (courtesy West Coast Heritage Ltd)

Tin was discovered at Mount Bischoff in 1871 and Mount

Heemskirk in 1879 and mining commenced in the area.

Silver-lead ore was discovered by prospector Frank Long near the current Zeehan township in 1882. Initial growth at Zeehan was slow and was hampered by poor access to the area.

However the discovery of further deposits and the development of better access routes quickly expanded the community.



Main Street, Zeehan, historical image (courtesy West Coast Heritage Ltd)

Zeehan gained a railway line to the coastal port of Strahan in 1890 and the rail line from Burnie arrived a decade later.

During the boom period from 1893 to 1908 ore valued at eight million dollars was extracted from the mines.



Pegging Day Andersons Hotel Main Street Zeehan 1891, historical image

(courtesy West Coast Heritage Ltd)

There were 20 hotels trading in Zeehan when the town was at its peak, with the first opening around 1889. During this time Zeehan even had its own stock exchange.

(and no pewter apparently anywhere!)

The School of Mines at Zeehan was established in 1894, with regular courses including metallurgy, assaying and chemistry beginning in 1896. Construction of the current building (now the West Coast Pioneers Museum) began in 1902. The School of Mines ceased full time teaching in 1921 and finally closed in 1958.



Mr Frank Long, historical image (courtesy West Coast Heritage Ltd)

The Gaiety Theatre and Grand Hotel were constructed in 1898.

The theatre was Australia's largest concert hall at the time and had a capacity to seat 1000 people. It attracted performers such as Dame Nellie Melba and Enrico Caruso as well as escape artist Harry Houdini and provocative dancer Lola Montez.

The size of this establishment and its guest list provides some insight into Zeehan's importance at the time.

In the early 20th century Zeehan was known as the 'Silver City of the West'. Its recorded population of 5,014 people in the 1901 Census made Zeehan Tasmania's third biggest town at that time.



Zeehan Stock Exchange, historical image (courtesy West Coast Heritage Ltd)

The demise of the mining industry as the ore deposits gave out around 1910 saw the formerly thriving community enter a period of decline. The population decreased, buildings were dismantled and, in 1913, the smelters that had been operating at Zeehan since 1898 began to close.

Zeehan's population was reduced to less than 700 by the 1950s.



Oonah Silver Mine, Zeehan, historical image (courtesy West Coast Heritage Ltd)

Mining recommenced at the Oceana mine in the 1950s but operations ceased once again in 1960.

Zeehan, 38 kilometres north-west of Queenstown, is today a classified historic town. Its miners today commute to the Renison Bell tin mine around 15 kilometres away. Tourism now provides a secondary industry for the area.

The Mining Museum at Zeehan (north of Queenstown before Rosebery). (photo below in 2012)

a remarkable museum, well worth a visit (as is the smaller but more domestic museum at Queenstown).



The Museum at Zeehan displays inside its buildings and in the open outdoor areas and sheds, trains, machines and engines used at the mines.

Indoor areas feature geological displays as well as models of large scale mining equipment and details of the domestic lives of those in the area.

There is a former Masonic lodge where visitors are welcome to see just what was involved in being a member of the freemasons in this community.

The former Gaiety Theatre is open and film shows what might previously have been shown at the Theatre and detail of the community at the time.

Much of the information in this article was garnered from this museum.





This above is a poor photo but included as you can just make out that this purports to be a plan model of the 164 kms of driveable underground roadway at the Renison Bell Mine thus it gives some idea of the size of the mine workings.





Blacksmith's mine workshop



AND -

1870-1920:

Tin

The discovery of a rich tin lode at Mount Bischoff in 1871 kick-started the Tasmanian mining industry. In the ensuing seventy years, the world-famous mine produced almost 57,000 tonnes of tin metal. During 1876, more tin deposits were located

south of Mount Bischoff, which resulted in the establishment of the Heemskirk Tin Field.

Following the success of Mount Bischoff, further discoveries were made in northeast Tasmania between 1874 and 1877 which became the state's "tin province". These discoveries led to the development of alluvial mines along the Ringarooma Valley at Branxholm, Moorina, Pioneer, South Mount Cameron and Gladstone.

The famous Briseis Mine at Derby produced almost 20,800 tons of tin during its eighty-year life from 1876, making it the region's main producer.

GENERAL TIN MINING INFORMATION

In most mines the extraction of the valuable minerals from the mined ore takes place in a separation plant called a MILL.

The ore is stockpiled at the entrance to the mill. It is usually a mixture of host rock, unwanted minerals and the minerals to be extracted. To be able to extract minerals from the ore it must first be broken down to about mud size (eg about 75 microns - thousands of a millimetre).

The ore is fed into a crusher and usually crushed down to very small pieces. The crushed material is screened or sieved and the larger particles returned to the crusher or into another crusher circuit.

The pieces below 40mm in size (called minus 40mm) are conveyed to a grinding circuit. This has smaller crushers and a semi autogenous grinder. Water is added to the crushed ore. A BALL mill is a large rotating rubber cylinder in which steel balls bounce around and grind away the ore particles. In a SAG (mill) the particles actually grind one another away whilst rotating.

At the end of the process a mud slurry of ground ore is produced. This slurry passes through hydro cyclones which further separate the coarse from the fine material and the heavier metallic minerals from the light waste material which is discarded as tailings.

Sometimes further separation is needed. In Tasmania sometimes spirals were used or gravity separation tables. Simply the aim is to separate the heavy materials from the waste rock.

In mines where heavy metal sulphide materials like galena (lead) chalcopyrite and bornite (copper) and sphalerite (zinc) are to be extracted the flotation process is used to float off the particular minerals.

Flotation uses bubbles caused by adding a frother or detergent and air to the ore slurry that is stirred or agitated. A "collector" chemical is added to the frother mixture with air to cause minerals to cling to the bubbles which float upwards through the tank and overflow into collecting vessels. The remaining ore is pumped into another tanks for the next mineral to be removed and so on, there might be many such flotation cells in which different chemical collectors cause different elements to float off and be collected..

Once the slurry has been collected the water has to be pumped off from the thickening tank and pumped away to settling ponds.

The tailings (crushed waste rock) is also pumped off to settling ponds where the clean water can be taken off and recycled through the process or drained away.

Another use for tailings is to be added to cement to refill the mined space/voids underground created by the ore removal, thus providing support and enabling further mining. "Waste not - want not" - comes to mind.

Transporting the Ore -

The concentrates in Tasmania were shipped through to Burnie and then overseas to smelters where they are further refined into pure metals. Zinc concentrate to Pasmaico Smelter in Hobart where through a complex chemical and electrolytic process it becomes pure zinc metal with by-products such as sulphuric acid. Lead, cadmium, copper sulphate are other by-products.

Features of the orebody and its mineral (metal) content determine the kind of mine that will be used to extract the ore

Mining the ore involves breaking the ore into very small pieces. In both open cut and underground mines the ore is drilled to depths varying between 4 metres to 12 metres. To get the drill spacing correct the site is 'marked up' using spray paint to show the drillers where to drill the holes.

The drill holes are loaded with explosives that are then detonated (called a shot). If the spacing is correct and the right amount of explosive used and the sequence of detonations in each hole is right then the ore should be easily broken into small pieces that can easily be picked up and carried by loaders (by a loader - think of something rubbish bin size.)

During the mining operation exploration diamond drilling is used to search for new ore bodies and if found to determine their size, extent and mineral composition.

In areas of unsupported rock where miners have to work the walls and roofs are strengthened using rock bolts and steel mesh.

In recent times in Tasmanian underground mines the broken ore is picked up using a load-haul-dump (LHD) machine. To protect the driver from the possibility of injury due to falling rock the LHD is often driven by remote control into the area containing the broken ore.

The ore is loaded onto haul trucks or taken straight to an ore pass through which the ore is guided (belts?) to a loading site.

The haul trucks may also take the ore to an ore pass or in some mines haul the ore up a long spiralling tunnel called a decline to the surface.

It might also be brought to the surface in a skip which is hauled up a shaft.

At the surface the ore is stacked into a stockpile positioned for further treatment.

Historical Data and Maps

Mineral prospectors often relied on old written reports and stories about the prospectivity of an area, Often it was the old stories that led them to a particular area. They used existing maps or made their own.

Walking the land

Prospectors moved across mountains and up the valleys, examining and collecting rock and mineral specimens. Often they had to cut tracks or set fire to the thick bush to enable them to fully examine an area.

Panning

Prospectors panned sands and gravels from streambeds in the search for gold and tin. Gold or tin 'shows' in the pan directed them upstream towards the point where the valuable metals entered the stream.

The active mines on the West Coast - (Renison, Mt Lyell and Roseberry - to name just three) were all discovered in the late 1800's by prospectors panning their way to the source of the valuable mineral called the orebody or "mother lode".

Pits, trenches and exploratory shafts and adits.

When prospectors were sure they were near an orebody they decided to have a closer look by digging trenches or pits, called costeans, deep vertical shafts or horizontal tunnels called adits, to test if a rich ore deposit was present or not, because this was very hard manual work and more often than not wasted effort.

The old timers did not have the benefit of modern exploration technology nor good geological information. What they had was strength, determination, persistence and a hunger to succeed. With those qualities they discovered many of the important orebodies that lead to the opening up of Tasmania's mines.

CASSITERITE at the Renison Bell Mine

Cassiterite is a name for tin oxide. This was originally back in time (about 350 million years ago) carried into the Rocks in the Renison Bell area by extremely hot metal-laden fluids moving upwards and away from a body of molten granite.

The fluids moved through cracks and porous spaces in the rocks. When they met rocks like dolomite or limestone a reaction took place that caused the dissolved minerals to replace the limey minerals in the rocks.

At Renison Bell cassiterite, along with quartz, calcite and pyrrhotite (iron sulphate) is found as veins in faults (cracks) and as replacement of the dolomite layers. Over at Mount Bischoff they found that extreme force of water could clean out and separate the minerals from the cracks.

Most of this information is taken from the Mining Museum at Zeehan and some photos from this writers visit are shown below. But firstly a photo of information regarding the minerals found.

The minerals mined on the West Coast are either sulphides of metals, like:

galena	lead sulphide (PbS)	Rosebery, Hercules
chalcopyrite	copper-iron sulphide (Cu FeS ₂)	Mt Lyell, Rosebery
bornite	copper-iron sulphide (Cu ₅ FeS ₄)	Mt Lyell
sphalerite	zinc sulphide (ZnS)	Rosebery, Hercules
argentite	silver sulphide (Ag ₂ S)	Rosebery, Mt Lyell
pyrite	iron sulphide (FeS ₂)	Rosebery, Mt Lyell

or metal oxides, like:

cassiterite	tin oxide (SnO ₂)	Renison Bell
magnetite	iron oxide (Fe ₃ O ₄)	Savage River, Kara

or actual metals like

native gold (Au)		Henty Gold Mine, Mt Lyell, Rosebery
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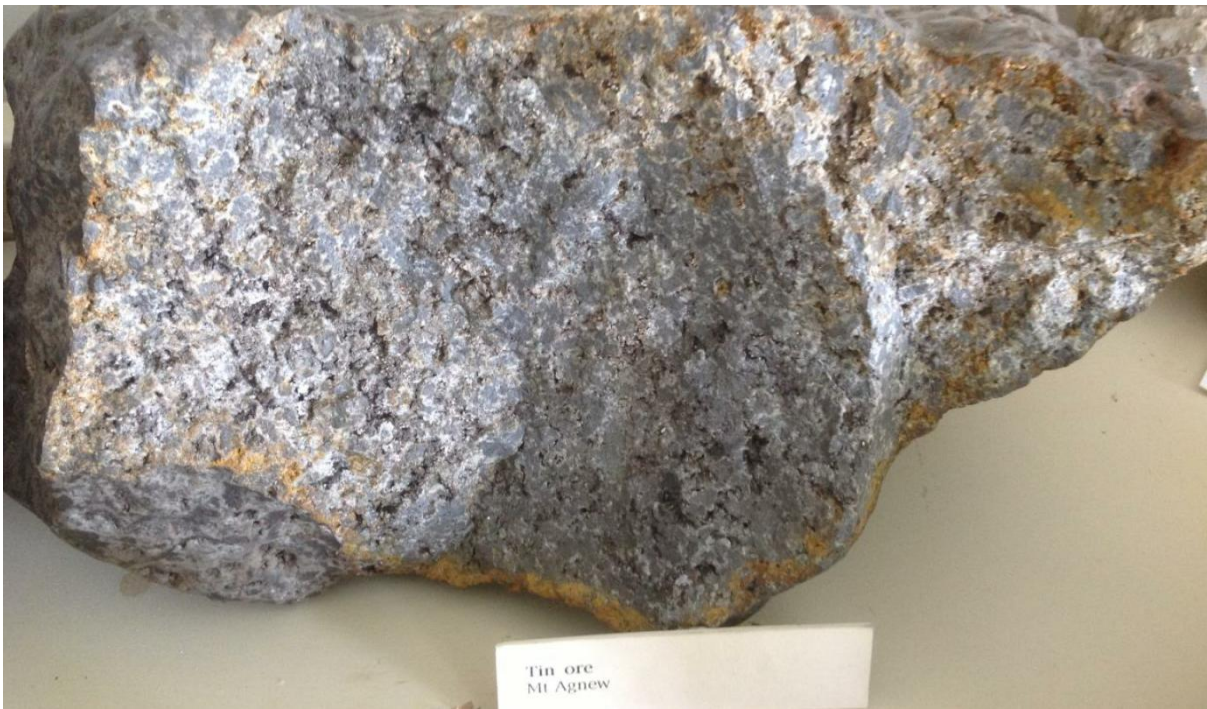


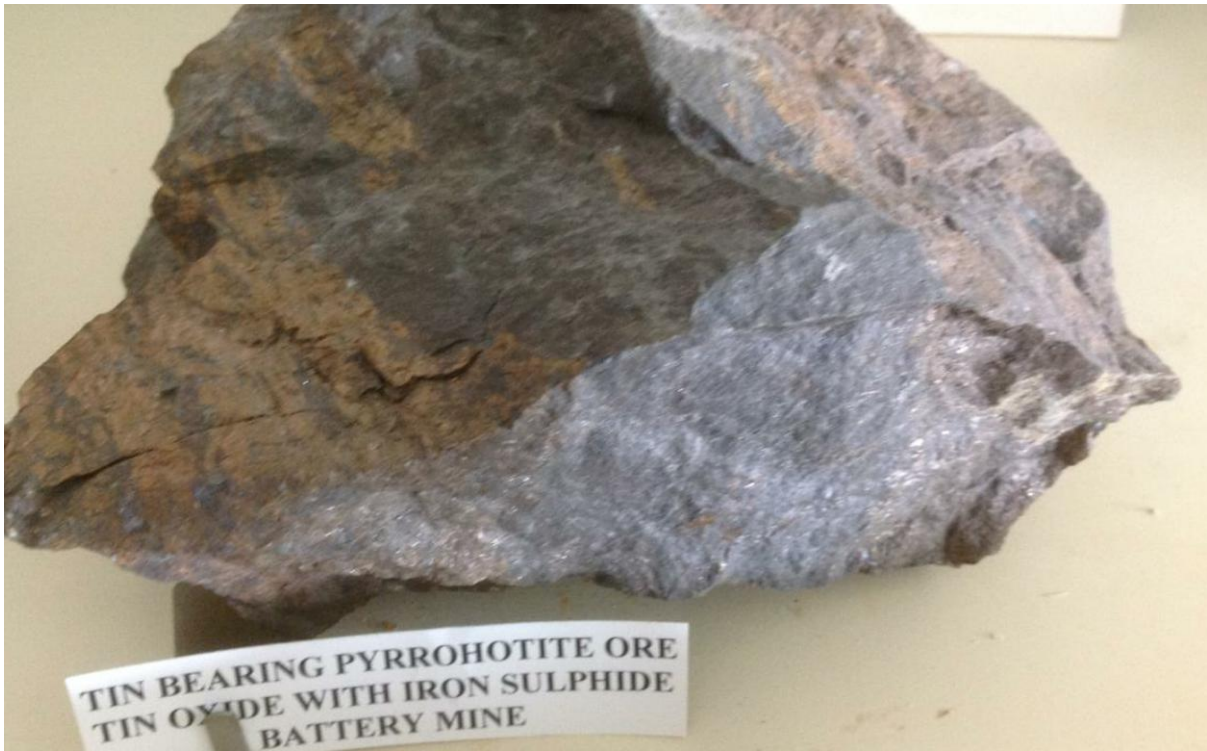


There are many different images for Cassiterite (Tin Oxide) here follow a few found on Google









Below shows the Small Blue Lake near the Mount Bischoff Mine. When the area is cleaned out of ore a white sterile clay can be left behind wherein the water that gathers reflects the sky and can thus appear exceptionally blue.



Below shows the Tin Visitor Centre at Derby (East Tasmania)



Above - The Galley Museum in Queenstown, Tasmania
Corner Driffield and Sticht Street,
Queenstown, Tasmania.
Telephone
Business Hours 03 6471 1483

The Galley Museum has Displays and information on Queenstown and surrounding areas. The collections include a photographic collection, Minerals Collection, and Local memorabilia. The Galley Museum is housed in the original Imperial Hotel, built in 1897. The building operated as one of Queenstown's leading hotels for twenty years, and was also used as a Hospital for a time, as well as a Single Men's Quarters for the Mt Lyell Mine. Since the 1970's Eric Thomas photographic collection made it's home there. The Galley Collection and building was bought by the Lyell Council in 1985, and is now managed by a volunteer committee.

Details as follow supplied by Wendy Avery of Adelaide, Australia. A bowl seen at Port Arthur.

BOWL made by Thomas Alderson marked for the Board of Ordnance suppliers to the British Army and Navy



B ↑ O

This stands for the army's 'Board of Ordnance - see JPS Aut 2008 p42.

Unlike the 'Naval' bowls that formed the subject of that article, this looks as though it could be genuine

From Wikipedia -

The **Board of Ordnance** was a British government body responsible for the supply of armaments and munitions to the Royal Navy (until 1830) and British Army. It was also responsible for providing artillery trains for armies and maintaining coastal fortresses and, later, management of the artillery and engineer corps. It also produced maps for military purposes, a function later taken over by the Ordnance Survey. The board existed under various names from at least the early fifteenth century until 1855, with headquarters in the Tower of London



Pewterware seen in Tasmania

In 2012 little or nothing was seen by this writer in all the very many places travelled to (some 3600 kms around Tasmania.)

One place some Pewter was seen was near Stanley at the Government farm/house overlooking the "Nut". This was "Highfield Farm House".

The Pewter was on loan there in a glass fronted living room cabinet on the bottom shelf nearest the floor. So it was decorative and thought to be of the period.

