

# **The History of the Mount Boppy Gold Mine**

The President asked Peter Williams to introduce the speaker for the evening. Professor Ken McQueen is currently employed by the University of Canberra but for several years has been seconded to the C.R.C. LEME, - the Co-operative Research Centre for Landscape Environments and Mineral Exploration. The LEME research programs have examined classical geology of ore deposits but more specifically aspects of the evolution of the Australian landscape with particular emphasis on the development of regolith, the soil and deposits above bedrock and the movement of minerals within the regolith. Ken McQueen has published widely in the field, not only on geology but also in respect of his interest in mining history and as a member of the Australasian Mining History Association. Professor McQueen previously lectured to the Society in August 2006 on weathering in the Cobar mineral field.

## **The History of the Mount Boppy Gold Mine**

### **Ken McQueen**

The speaker commenced his lecture by describing his interest in mining history and his joining the Australasian Mining History Association a group which was formed about ten years ago and has gradually expanded membership since then. The Mount Boppy Mine was one of the most successful gold mining ventures during the early part of the 20<sup>th</sup> century. It is located about 40 kilometers east of Cobar near the town of Canbelego. Until 1937 it held the record for being up to then the largest gold producer in New South Wales when it was surpassed by the New Occidental Mine at Cobar. Between 1901 to 1922 it produced about 13.5 tons of gold from about one million tons of ore processed. In that period it returned about five times the original capital outlay spent by the company in setting the mine up. After 1922 mining continued more slowly with to date a total of about 16.1 tons of gold recovered or about ½ a million ounces.

The success of the early period of the mining was due to three main factors. The first one being that the company was working a fairly high-grade ore body but there was also the benefit of good management by forward-thinking people who applied state-of-the-art and innovative technology both in exploration, metallurgy and also in the mining infrastructure. The mine was originally managed by a group of mining engineering consultants, John Taylor and Sons, Cornishmen from the U.K. The mine took its name from the nearby Mount Boppy, originally named Buppe Mountain. Gold was first discovered in the Canbelego area in 1879 but not in exploitable quantities. It was not until 1896 that the first significant discoveries were made.

Prospecting had proceeded over a period from about 1887 to the early 1890s when there was a slight decline in the copper mining industry in Cobar spurring miners to look for gold in the area since it had been found that some of the Cobar copper deposits had gold associated with them. The history of the discovery of the Mount Boppy deposit is very well documented largely due to the efforts of the government surveyor of the time, Ernest C. Andrews who between 1910 and 1912 conducted a very detailed study of the Cobar and Canbelego goldfields. He was able to reconstruct the discovery of the Mount Boppy lode from evidence given to an inquiry established

to provide a reward to the prospectors who had found the deposit and was also able to interview one of the original prospectors, Thomas Reid. E.C.Andrews' report provides a detailed and very accurate description of how the lode was found and gives some interesting insights into how prospectors found ore deposits in those days. It was a discovery made using regolith techniques that are still used today.

A few years before 1896 a prospector had found some blocks of an unusual microcrystalline quartz alongside the Nyngan to Cobar road. In 1896 Thomas Reid also examined this material taking more trouble over it than the previous prospector and found good signs of gold. He then proceeded to follow the trail of these blocks along the very shallow drainage channel that they were lying in to trace the source, a technique that has been used for centuries to find reef gold deposits. This led him to examine an outcrop of gossanous material in the side of the alluvial channel which initially did not seem promising and he carried on further to find another gossanous outcrop which after working on for a while showed payable gold. This deposit became known as the Hidden Treasure Mine which is now in the centre of the town of Canbelego. The original gossanous outcrop Reid had first examined later became the Birthday Mine.

The description of the finding of gold in the Mount Boppy area is so accurate that visitors today can find examples on the ground of the unusual quartz that alerted the original prospectors. Professor McQueen has examined the area and had been readily able to find and follow the trail of quartz boulders that Reid would have seen. The speaker spent some time showing a number of views of what remains of the Canbelego township today and of the surrounding countryside and mining areas. Some of the old mined areas have been rehabilitated such as the Birthday Mine in 1986 although there has been recent exploration of the area by the Golden Cross Company which

may lead to the re-working of some of the deposits. Thomas Reid asked a fellow prospector, one Michael O'Grady, to help him work the Hidden Treasure mine and the two worked the deposit for a few weeks before O'Grady happened upon the outcrop of the Mount Boppy lode. O'Grady was living at the time in a house near the Mount Boppy railway station, about three kilometers away from the Hidden Treasure mine and in walking to and from work each day found the larger orebody apparently by chance. The two prospectors promptly pegged the new deposit and applied for a gold-mining lease and an extra prospecting lease. The leases were meant to have been in the names of both men but O'Grady's is the only one that appears on the paperwork since Reid should have accompanied O'Grady to Cobar to sign the papers.

With a second gold deposit to be worked on Reid and O'Grady decided to take in partners and enlisted William Budd who was the proprietor of the nearby 'Gap Inn' and M.J.Brown who was the manager of the also nearby Sussex station. The Gap Inn was so-called because it was situated in a small gap in a low ridge near to a present-day turn-off to a location 'Florida' on the Nyngan-Cobar road. William Budd was readily interested in becoming involved in a mining venture since as a publican the prospect of setting up a mine near to one's pub would be very

likely to increase the pub's income substantially!. Shafts were sunk into the Mount Boppy ore deposit initially to 60 feet and then with the aid of a 'Prospecting Vote' grant from the NSW Dept of Mines extended to 160 feet. This work established that there was a substantial ore-body

and the miners decided that since it would be beyond their means to develop as a major mine they put it up for sale.

At the end of 1897 the Anglo-Australian Exploration Company bought the Mount Boppy lease for £1,000. The company then spent another £7,000 over the next two years further proving the deposit. Over this period in Australia, from 1897 to about 1902 there were severe drought conditions, referred to as the 'Federation Drought' and the exploration company was working under considerable difficulties but by 1900 was able to float the Mount Boppy Mining Company in Britain with a capital of £110,000. During 1900 a small township had become established alongside the mining leases held by the company and in 1901 this was surveyed as the township of Canbelego. In June 1904 the mine was visited by the then Chief Inspector of Mines, J.B.Jaquet, who recognised that the orebody had the structure of an inverted saddle reef which helped the miners to better understand how and in which direction to develop the mine workings. By 1905 Mount Boppy was said to be the most productive gold mine in New South Wales and supported a population in Canbelego of about 1,500 people.

In referring to the geology and mineralogy of the of the reef Professor McQueen described it as a hydrothermal replacement-type deposit, the ore being a micro-crystalline highly silicified slaty material which contains much disseminated pyrite and some gold with smaller amounts of other sulphides, galena, sphalerite with a little chalcopyrite and arsenopyrite. The upper part of the orebody had been oxidised to a substantial depth but beyond this the gold proved more refractory to extract and the miners had to adjust their metallurgical techniques to cope with this.

A number of views of the above and under-ground workings and workers were shown with the speaker noting the very flimsy wooden pole scaffolding used at the working faces underground and the lack of virtually any protective clothing, no hard hats, safety glasses or earmuffs. One small concession to safety that the miners perhaps always attended to was to tie a straps around both their trouser legs to stop rats running up their legs!. With the aid of many photographs of the early life of the mine which have fortunately been preserved Professor McQueen described the surface plant, processors and processing in considerable detail. Much of the processing was as modern as it could be at that time with innovations being incorporated as the miners found necessary. The machinery was all steam-driven and in view of the unreliable water supply in that part of Australia the miners had to set up water condensation units alongside the steam boilers as well as a water purification plant to treat salt-containing mine and ground water.

Graphs of gold production over the main productive period of the mine up to 1922 show fluctuations due to factors such as drought but notably the effect of the 1914-1918 war when many of the miners left to take up arms with not all of these returning afterwards. (According to the speaker, of those that did return to Australia many having been in Europe and visiting cities such as Paris did not want to take up residing and working in Canbelego again!). However in spite of a manpower shortage after 1918 the mine managed to boost production for a while by introducing open cut mining but only for a few years up to 1922 when the mine effectively closed having mined out all the highest-grade ore. There was some sporadic activity by small or sometimes larger groups over the next several decades with in the early 1940s interest generated in re-processing the tailings from the mine, some half a million tons having been produced and which still contained about three grams per ton of gold.

The re-processing was not too economically successful and was only conducted for a few years but by the 1970s and with improving extraction technology the Mount Boppy tailings were looked at again this time by a company called Lennard Oil which reported favourably to its sponsor Westralian Sands Ltd that the tailings should be amenable to residual gold extraction by the new carbon-in-pulp process developed by the U.S. Homestake Company. The process provides economic extraction of gold from very low-grade ore. The first CIP plant in Australia was built at Mount Boppy in 1975 by Leighton Mining. It only operated for one year having produced about 5,000 ounces of gold and 4,000 of silver, the re-processing proving not to be sufficiently financially viable. The re-processing was started up again for a few years in the mid 1980s with a modified CIP plant and employing six men which was about half the population of Canbelego by that time!.

By the late 1990s a company called Polymetals Australia Ltd bought the Mount Boppy CIP plant initially to process supergene silver-bearing ore from the Eleura mine north of Cobar and were quite successful for a few years before also turning their attention to the tailings. In about 2001-2002 the company commenced to open pit mine the old Mount Boppy workings to more adequately recover tailings used as backfill and also obtain previously un-mined lower grade ore. This work continued up to late 2006 - early 2007 when the deposit was bought by Peak Gold Mines of Cobar which is currently not conducting mining there. The plant is still owned by Polymetals but is also not in use.

In conclusion Professor McQueen enumerated the important innovations that were first developed or used at the Mount Boppy mine and answered a number of questions after a very interesting lecture.