GOLD IN AUSTRALIA

DISCOVERY

Gold in Australia was first discovered by Edward Hammond Hargreaves at Bathurst in New South Wales in March of 1851. Hargreaves had left Australia for the gold rush of California, America, and noting the similarity of the country there with land he knew in New South Wales he returned to Australia to search for it here. His search was successful and the first gold rush commenced, people flocking from Victoria to the new discovery.

To combat the loss of population, Victoria, in June 1851 offered a reward for the discovery of payable gold within 200 miles of Melbourne. Within two months high grade alluvial gold had been discovered at Ballarat and before October, a population of some six thousand people had congregated there.

Almost simultaneous with the Ballarat discovery, gold was found at Bendigo and at Castlemain. By the end of 1851 some 60,000 ounces per week were being escorted to Melbourne from the Castlemain field and within a year, i.e. by the end of 1852, Bendigo was the leading producer. Within five years of the discovery of gold in Victoria the population of the state had increased from 76,000 to 400,000 and within a further five years it had reached 560,000.

Though gold was known to occur in Tasmania as early as the year 1840 the first discovery of payable gold was made in 1852 when Keeling Richardson, the assigned servant of Mr. James Grant of Tulloehgorum in the Fingal district, discovered alluvial gold about a mile north of Grant's estate, on or near the site of the present town of Mangana. It was at Mangana in 1859 that the first payable reef gold was found in Tasmania.

It was not until the year 1858 that gold was discovered in Queensland when gold was discovered at the Fitzroy River 75 miles from Rockhampton. Other finds in the Rockhampton district followed quickly as far away as Claremont some 200 miles from Rockhampton. The first really big discovery in Queensland was made at Gympie in 1860 and the town in a few months had a population of 10,000 people. In 1871 the goldfield at Charters Towers was found and in 1873 gold was discovered near Cooktown.

In Western Australia gold was discovered in the year 1886 in the Kimberley district. In 1892 Southern Cross was the main centre and in 1893 two prospectors named Hannon and Flannagan found the outcroppings of Kalgoorlie's now famous Golden Mile. Since then nearly £200,000,000 worth of gold has been produced from the Kalgoorlie district alone. In the last ten years of the century, 1890-1900, the population of West Australia increased from 50,000 to 200,000 people.

In Western Australia the goldfields are situated in remote places, long distances from the coast, and large sums of money were expended before the towns could be established. The water supply of Kalgoorlie was first obtained from shallow bores and mine shafts. This later was improved by the construction of a pipe line for a distance of 350 miles along which water was delivered through pipes

of 30 inches in diameter to deliver a quantity of 5,000,000 gallons per day to the field. This water supply has since been extended to Norseman some 130 miles south of Kalgoorlie. The first major undertaking in West Australian gold fields was the construction of the 400 miles of railway from Kalgoorlie to Perth to simplify the transport problem.

It is obvious that gold was the prime factor in populating the young Australia. As new discoveries were made population moved from one centre to another within the country but a continuous stream of migrants from outside the country was maintained. With the growth of population so other industries became established and to gold must be accredited the establishment of the Pastoral industry of Australia for the needs of the mining population demanded that cattle and sheep be raised to feed the people. With the increase in population due to the gold discoveries so also was the sugar industry in Queensland established.

In Tasmania the original discovery of gold gave impetus to the search for it in other parts of the state and it was not long before discovery of gold at Lisle gave employment to upwards of 2,500 persons. Incidentally it was during the search for gold that the discovery of other important mineral deposits was made.

The discovery of gold on the mainland gave some spectacular results, for many nuggets of gold, some containing thousands of ounces, were found. In Tasmania the discovery of gold was not so spectacular for there were few gold rushes and the biggest recorded nugget contained only 243 ozs.

Gold is found essentially in two forms :-

(1) Primary gold.

(2) Secondary gold.

The primary gold is that which is found occurring in reefs or veins either alone or in association with other minerals in the veins.

Secondary gold occurs in drifts and gravels as water worn or angular grains which have been shed from the reefs and veins as the result of weathering and have been carried by the action of water for some distance along the water courses. The degree of smoothness and roundness of the grains will depend on the distance travelled and the nature of the drift with which it is associated.

In most cases it has been the secondary gold which was first discovered, for prospectors in their searching try the drifts and gravels of the gullies, which lead them to the source of gold which of course is the reef or vein.

The recovery of gold is effected in several ways depending on climatic conditions and the nature of the gold. To recover alluvial gold in a place where there are ample water supplies the gold is recovered by sluicing methods.

The loosened gravels are washed (sluiced) along a wooden or ground race (channel). The lighter gravels and sand are washed away and the heavier gold

with some sand is left behind. This material is then further treated carefully with more water to free the gold from the remaining sands.

Where only limited quantities of water are available a "cradle" is used for the separation of the gold and sand. A cradle is essentially a box fitted with rockers. Within the box there are screens with holes of varying sizes. The screens are placed at a slope and have riffles in them to hold the heavier minerals back. The rockers are placed at right angles to the length of the box and the screens. A handle is attached to simplify rocking. The sand and gravel containing the gold is placed in the top screen and rocking is started. At the same time water is splashed over the sand. The lighter sands are washed down the screen and the riffles catch the heavier gold and some sand. The final cleaning is done as with sluicing or with a prospect dish at a water hole.

In very dry country gold is recovered by dry-blower. This is somewhat similar to the cradle in that it has screens and riffles but no water is used. The box with its screens and riffles is mounted above a set of bellows, similar to those seen in a blacksmith's shop. By pushing the blower to and fro a current of air is forced through the box and screens. By placing the gold bearing drift on the top screen and then working the blower, the fine dust is blown away and the remainder of the sand is agitated. The sand gradually travels over the screens and falls off the end the heavier gold and some sand is caught behind the riffles and finally treated with a prospect dish at a water hole.

With extensive deposits covering many acres it is often possible to use a dredge to recover the gold. The dredge is similar to the dredges used in Harbour work but after digging the material it is tipped from the buckets into the sluice boxes and treated as for ordinary sluicing.

Primary gold is won from its reef or vein by first crushing the stone to a fineness suitable for the particular method to be adopted.

Should the gold be contained in a quartz reef which contains no other mineral the crushed stone may be passed over an amalgamation plate and the gold recovered as an amalgam. An amalgamation plate is simply a sheet of copper which has been cleaned and treated with mercury. The mercury will adhere to the copper plate and if the crushed material containing the gold is washed over the plate the sand will be washed away and the gold will amalgamate with the mercury. Periodically the amalgam is recovered and the gold won by retorting and smelting.

Should the gold be associated with other minerals such as copper or zinc its recovery becomes more complicated and is recovered generally after the other minerals have been removed. This is the case in Tasmania, where most of the gold being won at present comes from the copper ores of Mt. Lyell and the zinc ores of Rosebery. In purifying the copper and zinc won from the mines electrical methods are used. The Electrolytic Zinc Works at Risdon treats the zinc won from the Rosebery mines and in purifying it recovers the gold and other minerals as a bye product. Similarly the Mt. Lyell

Company when purifying their copper recover gold as a bye product. This applies also in Queensland where the Mt. Morgan Copper Mine and the Mt. Isa Silver Lead Mine recover gold as a bye product.

In Tasmania the most important of the alluvial gold deposits was at Lisle where upwards of 250,000 ozs. of gold was obtained.

The most important producers of primary gold were originally the Beaconsfield and Mathinna fields. The production from Beaconsfield amounted to 855,000 oz. from 1,023,000 tons of ore, the gold being valued at £3,612,000. At Mathinna, approximately 300,000 tons of ore were treated to yield 246,000 oz. of gold of a total value of £950,000. The deepest mine here reached a depth of 1,800 feet.

The present source of gold in Tasmania is mainly as a bye product from Mt. Lyell and Rosebery Mines.

Mt. Lyell produces approximately 3,000 ozs. per year and has produced since its inception approximately 512,000 oz.

The Mine at Rosebery has produced a total of 138,000 oz. of gold and has a present yearly production of approximately 9,000 oz.

The total production of gold for the state is approximately 2,400,000 oz. of fine gold of an approximate value of £10,500,000.

The total production, though beneficial to the State of Tasmania, is small compared with that of other states and is only a small proportion of the total Australian production which during the years 1851-1948 is recorded as £810.5 million.

(Sgd.) H.G.W. Keid, M.Sc.
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