

Wonderful Mines of Ballarat and the Millions They Produce

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BALLARAT, Australia, April 22.— (Special Correspondence of The Bee.)—In the heart of one of the chief mining districts of Australia, within a stone's throw of where the "Welcome" nugget, a lump of gold as big as a foot ball, was found, surrounded by the smokestacks of quartz mills, I write of the gold of Australia. Under the very floor of my hotel rich deposits of gold have been mined, every bit of earth in sight has been run again and again through a sieve to wash out the precious dust it contained, and the valley for miles above and below me has been honeycombed with diggings. Today thousands of men are burrowing here through the bowels of the earth, the best of modern machinery is taking out and hoisting the ore to the surface, and it is even said that the water in some of the deepest mines contains gold. One story is told of how several barrels of water were hermetically sealed and sent away to Paris. They were kept there for years, and when opened were discovered to have precipitated several gold nuggets. As to the truth of this I do not vouch.

Big Gold Nuggets of Australia.

There is no doubt, however, about Australia's production of enormous gold nuggets. The greatest of them was found shortly after the discovery of gold, away back in the '50s. It had long been known that there was gold in Australia, but it was not until 1851 when Hargraves, an Australian, who had visited California, announced that there was gold here in paying quantities. The first of it was discovered in a water hole in New South Wales, and a month later it was shown that every creek for seventy miles had gold. Later on the placer mines were opened up at Ballarat and from them came some of these enormous nuggets.

One of the first nuggets weighed 101 pounds, another ninety-eight pounds and the "Welcome" 184 pounds 9 ounces, or as much as a good-sized man. There are models of these nuggets in the various mining museums of the Australian capitals. I have seen them in Queensland, in New South Wales and Victoria, and also in the mining schools here. The "Welcome" nugget measured twenty inches in length, twelve inches in breadth and seven inches in thickness. It was sold in Melbourne for \$50,000. Five months after it was discovered another nugget was dug up which was sold for \$29,000, and later on came the "Welcome Stranger," which weighed 189 pounds and was valued at \$50,000. In 1858 a lump of gold worth \$29,000 was found in New South Wales, and early in the '80s a number of nuggets were discovered, some of great value. So far California has the record of producing the largest nugget. It weighed 155 pounds and was taken out of a mine in Calaveras county. The "Welcome" nugget was found at a depth of 180 feet, but most of the others were nearer the surface.

Placer Mines Against Quartz.

Altogether \$350,000,000 worth of gold has been taken from the earth about Ballarat, and it is estimated that out of this state of Victoria alone the product has been \$1,250,000,000. At first all of the gold was alluvial. At present the most of the mining is quartz mining, and some of it is very deep. There are a number of mines that are below 2,000 feet, and the South Star is mining at a depth of 2,500 feet. There are twenty mines here which have paid out more than \$15,000,000 in dividends on an original investment of less than \$2,500,000.

The mines in Victoria are economically managed. In some of them the ore runs less than three pennyweights to the ton. There is one mine in Victoria which averaged only an ounce of gold to every six and one-half tons of ore last year, and notwithstanding this paid \$14,000 in dividends. Among the incidents of economical management are seven mines which have netted



SCENE IN THE BALLARAT DIGGINGS.

131 per cent on their paid up capital stock. In these mines only 58 per cent of the gold found is spent in getting it out and paying the cost of management, etc. Over 60 per cent of the gold produced goes to the dividends.

Some of the most remarkable mines of this state are at Bendigo, or Sandhurst, about 100 miles from Melbourne, where the gold fields yield about \$1,000,000 a year. The mines are very deep. The Lausell mine



MOULDING THE BARS.

is already down 3,352 feet and it is going lower. There are eleven other mines more than 2,400 feet deep and of these five have a depth of over 3,000 feet. They are being worked at a profit and it is thought that the heat will not be too great at a depth of 4,000 feet. Bendigo has already produced about \$300,000,000 worth of gold and at the present time 5,000 miners are working there. The men are paid \$12.50 a week. They work eight hours a day with a half holiday every Wednesday. Most of the mines have day and night shifts, three sets

of men being employed to fill out the twenty-four hours.

Australia's Big Gold Production.

A steady growth is going on in Australia's gold production. Every state is increasing its product and new mines are being discovered in all parts of the country. Some of the largest mines today are in Queensland and western Australia, in places where gold was not known to exist until a few years ago. Mount Morgan, the richest gold mine of the world, is in Queensland. It is a mountain of iron and gold which has vast fortunes in sight. New South Wales produced 500,000 ounces of gold in 1899 and Western Australia turned out more than 1,500,000 ounces in 1900. Indeed, Queensland and Western Australia are now the leading gold producers. In 1900 they produced more than 2,500,000 ounces of gold, or more than three-fifths of all of the gold mined that year in Australasia. The production of the whole continent and New Zealand in 1900 was more than \$75,000,000 and in 1899 more than \$80,000,000, or almost three times as much as it was in 1890.

Indeed, it is hard to appreciate the enormous extent of the undeveloped gold country in this part of the world. I have talked with miners from western Australia. They tell me that the most of that vast territory has not been touched. Said one mining expert:

"The gold we know of extends over an area of more than 600,000 square miles. You can take dirt from the road at any point along a thousand miles, wash it and find color. Many of the camps are so far in the interior that camels have to be used to carry the supplies. Prospectors travel on camels and the ore is taken out upon camels. There are parts of the country where you can travel for hundreds of miles and see nothing but sand and rock, but the sand and rock are mixed with gold."

"The chief trouble," continued the miner, "is the lack of water. It is impossible to get enough to wash the gold out and we have fanning mills through which the dust is run. The fans blow the sand away, and as the gold is heavier it drops to the bottom. Of course, a great deal of gold goes off with the sand, but enough remains to make it pay."

In such places water is worth money. In the Coolgardie fields it has brought as much as 25 cents a gallon, and there is a regular business of taking salt water from the lakes and wells and running it through condensers to make it fresh.

The government does all it can to help the miners. In Western Australia an appropriation of \$12,500,000 for water works for one district was recently voted. The government is laying 200 miles of water pipes there, through which it will pump 5,000,000 gallons of water per day. It has set aside \$1,000,000 for reservoirs and artesian wells, and it has its engineers prospecting for water with diamond drills. In the Coolgardie district nineteen tanks and reservoirs have been built with a capacity of 50,000,000 gallons. Artesian wells have been put down and there are great condensing machines of various kinds. Coolgardie has 30,000 people, and it is connected with Perth, the capital, by railroad.

The government of New South Wales has offered a reward of \$10,000 for the discovery of payable quartz or alluvial gold at a depth of 1,500 feet, and promises to pay \$15,000 if such material be found as far down as 2,000 feet. The mines of that state are now only about 1,000 feet, but the people believe that the gold exists at a lower level, and the government is willing to reward the successful experimenter.

The Victorian government paid Hargraves for his discovery of gold, and

Western Australia paid him to come out and prospect there. It has since paid other prospectors and similar actions have been undertaken by the other colonies.

Mining Schools of Australia.

Nearly every one of the Australian colonies has its mining school and mining museums. All of them have their geologists and geological surveys, which give reports on mines and other such matters. The people are looking out for new things



MELTING THE GOLD.

and they pursue the mining industry quite as intelligently as we do.

One of the best mining schools of Australia is in Ballarat. It has 400 students and is, I venture, as well equipped as any mining college of the United States. I had letters to its superintendent from the director of the mint at Melbourne and its president, Prof. Fred Martell, very kindly showed me through it during my stay in Ballarat. The college is built right over a gold mine which belongs to it. It operates this mine chiefly to teach its students. The mine has its shafts and its workings. It is a paying property, and the boys go down into it and do the mining, thus learning practically just how gold should be gotten out of the earth. Connected with the school are all sorts of reduction works operated by the students. It has cyanide plants, a chlorination plant and all the various means of extracting the precious metal from the ore. There are large chemical laboratories, many assay furnaces, and, in short, everything needed for such a college.

For Catching Flour Gold.

In this school I saw a new Australian invention for catching the finest of gold dust which might be of value in the placer mines of our western states, and also in the gold sands of Alaska and the Pacific coast. We have a great deal of flour gold in our western rivers, gold so light that it floats away on the surface of the water, so light that the most of it cannot be saved, although all sorts of processes have been attempted to save it. The same kind of gold is found in New Zealand, and some is caught there by the plush-covered tables of which I wrote in a former letter. By this new invention the ore dust is floated over inclined iron plates, which have little ridges upon them, so raised that the gold is caught as it goes over them. Prof. Martell told me that 98 per cent of the gold was saved by this means. The gold dust sticks to the iron, while the lighter dust is carried on by the water. At intervals the plates are turned up, a hose is applied and the gold washed off. The machine could be built, I should judge, for less than \$100

and would seem to me to be fitted to the Idaho, Washington and others of our gold fields. It is used for all sorts of free milling gold. I saw one crushed to a powder and run through a screen which had 3,000 holes to the square inch, holes so small that you could not pick your hand with a pin through them. The dust was run through these holes and over the plates, with the result of a saving of 98 per cent of the gold, as I have described.

During my stay in Ballarat I have visited some of the mines. They are very carefully managed, but seemed to me dirtier than the big quartz mines of our country. The timbering is not so well done and some of the machinery is antiquated.

Ballarat in 1901.

The Ballarat of today is not like the Ballarat of fifty years ago. Then it was a city of tents. Now it has perhaps less people for its population is only 40,000, but it is as well built as any city of its size anywhere. It is typically Australian. The streets are as wide and well paved as those of Washington. The chief one is lined with marble statues, and there are statues scattered throughout the large park in its suburbs. It has good stores, banks and public buildings. It has a theater which will seat 2,000 people, an art gallery containing some fairly good paintings, a stock exchange and a mechanics' institute with a library of 25,000 volumes. It has four other free libraries and churches of every Christian denomination under the sun. It has flour mills, woolen mills and iron foundries. It has good public schools and many very comfortable homes. Its hotels charge \$2 a day and are good. On one edge of the town is a lake of 900 acres, and another feature is the horse cars, which jolt you to pieces as they take you about it.

Ballarat is surrounded by a rich pastoral and agricultural region. It is seventy-five miles from Melbourne by rail and on the main road from Melbourne to Adelaide.

How They Cook Gold in Australia.

Speaking of the gold production of Australia, I went through the mint in Melbourne, where for thirty years they have been turning the dust and bullion into sovereigns. Already more than £82,000,000 have been coined, an amount equal to more than 100,000,000 gold dollars. The mint differs from our mints in that it coins only gold, no silver or copper being handled. The gold comes here from different parts of Australia and after coining is shipped chiefly to London. A few \$40 gold pieces are made for the Indian rajahs, but the greater part of the metal goes into sovereigns and half sovereigns, worth \$5 and \$2.50 each.

It was with the director I went through the money mill. We first watched the gold as it came in. Much of it was in the shape of the little dull yellow grains which have been washed out of the streams and much in the bullion bricks from the smelters. As it was handed over the counter the clerks weighed it, using scales so fine that they will accurately weigh a lump of gold as big as your head or one as small as the point of a pin. After weighing a memorandum of the amount is given to the depositor. The gold is assayed and later on he gets just what it is worth.

We Ting the Gold.

Leaving this room, we went on to see how the smelting was done. The gold is melted in crucibles or pots of fire clay and plumbago, a material which will stand an intense heat. Each pot has a capacity, I should think, of perhaps half a gallon of liquid gold. It is fitted into a little furnace not unlike the forge of a country black-

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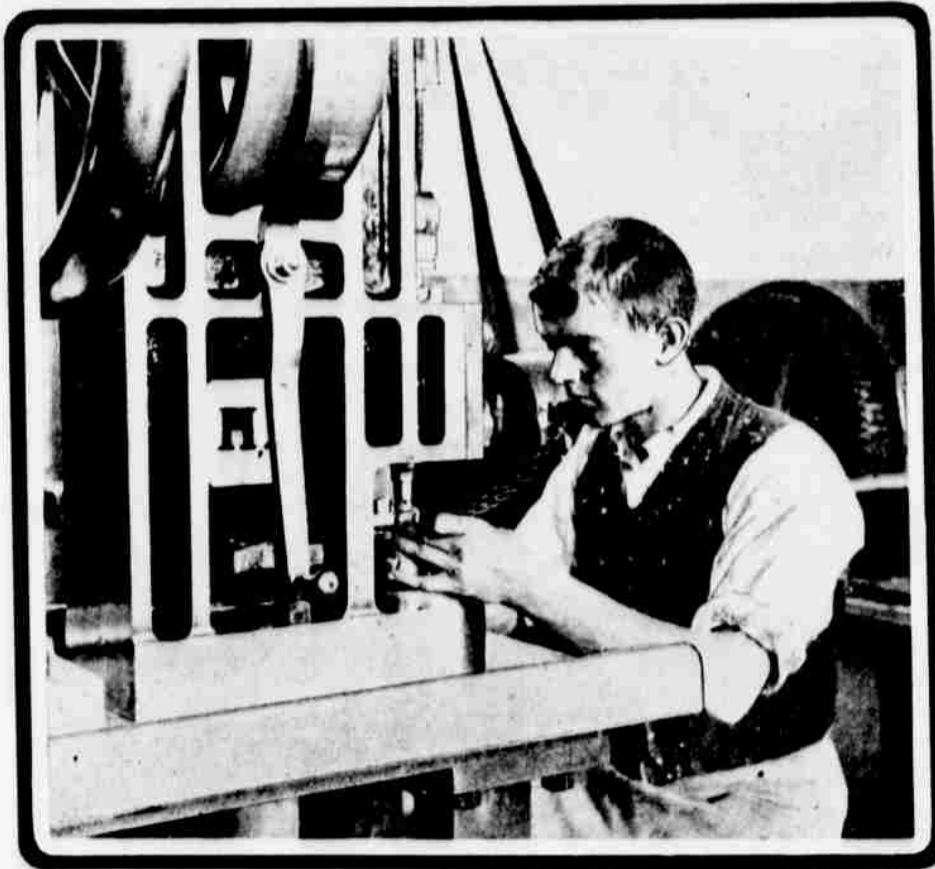
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