

## DIAMOND MINING.

### THE COPETON DEPOSIT.

(FROM OUR CORRESPONDENT.)

The Copeton diamond production is continuing on its uneven way, and the output is largely influenced by the price obtained for its gems. That rich deposits of diamond still are to be met with associated with the stream drifts that lie concealed beneath the basaltic flow is being proved by development work. The ever-fluctuating price paid upon the field for rough diamonds renders it an uncertain problem as to the local value of the output. Copeton still stands out as by far the most important field for the diamond's production in Australia. The gems here, though small, have an acknowledged superiority as regards their brilliancy, so much so that they have been compared through their polarisation of light as equal and closely allied to the best Brazilian diamonds. The establishment of a cutting and polishing works in Australia would go a long way towards rendering values obtained of a more uniform nature. Parcels of diamonds won from the different claims upon the field command local values somewhat regulated by the size, shape, and colour of their gems. The field has produced few large stones, and the output would average between three and four diamonds to the carat.

#### OPERATIONS AT DIFFERENT MINES

Briefly, I purpose to describe the development work on some of the principal mines. Washing operations are being vigorously carried out at the Alfredamia mine, on the western end of the diamondiferous run. Good marketable gems are daily won from the alluvial deposits, which in the past have produced thousands of carats of diamonds. A six-foot rotary puddling machine is treating the wash, which is turning out very payable results. For the first 30 hours a return of 101 diamonds resulted. Some of these gems weighing up to 1½-carat each. Whites and straws are obtained in a fairly even proportion.

About 500 diamonds have been won in about a fortnight's washing operations, and as many as 50 diamonds per day of eight hours have resulted from this trial work. In addition to the alluvial deposits on this mine a dolerite structure of unprospected extent has been proved, lying directly beneath the diamondiferous wash. Samples of the rock being taken from a shaft which was sunk for 70 feet in the structure, were assayed by the Mines Department, and pronounced to be an identical formation to the proved diamond matrix rock found in the Donnamsia fissure at the Oakley Creek mine. It is the intention of the owners of the Alfredamia mine to raise a few hundred loads of the dolerite from different sections of the structure, and, when decomposed, the material will be washed, in order to test the ground. As yellow soft rock was met with in the shaft for a depth of 50ft the disintegration by atmospheric exposure will be a rapid process, and the ground easily washed in order to test its value. If diamonds are therein contained in payable quantities the future of the field is assured; for, with a payable diamond matrix proved, the industry would go forward in leaps and bounds, owing to the permanency of the undertaking. Coming eastward along the diamondiferous zone, the Donnamsia mine at Oakley Creek is next seen. Operations here have been confined to raising diamond matrix

have been confined to raising diamond matrix from the proved fissure. From the No. 1 tunnel that intersected the structure over 300 truck loads have been mined. The disintegration of the dolerite from this section of the development work when exposed to atmospheric conditions is very pronounced. It was from this section of the fissure that the diamonds in matrix were obtained, as exhibited by Professor David before the scientists in congress at York (England) and Mexico. The matrix fissure has been proved fully 700ft further down the hill, and all along the intervening ground shafts have been sunk at intervals along this continuous line. An open cut at the bottom of the hill revealed immense bodies of the matrix formation. From this development work over 700 truck loads of the dolerite matrix has been spread for disintegration from pores. When it is ready for washing purposes a rotary puddling machine will be installed, and the decomposed material washed for its included diamonds.

Under microscopic observation gem sand, calcites, iron oxide, magnetite, limonite, zircons, bright crystals, and garnets form constituent parts of the matrix rock, thus proving that the fissure 140ft below the outcrop is a true diamondiferous enclosure of great importance. This fissure has been traced in a direct line west of north for fully two miles from the present workings.

The Bonnamsia mine is situated near to the Donnamsia, further eastward. At this mine two fissures lying parallel have been exposed, presenting the recognised features that are characteristic of local diamond matrix structures, enclosed between granite walls. Iron oxidation has altered both of the Bonnamsia fissures, and the structures (which extend east of north) both present a clay-like capping. This is also a marked feature, both on the Donnamsia and Alfredamia structures. Alluvial diamonds and tin deposits were obtained in rich patches in the shallow workings on this mine. Development work has proved that the granite bottom dips in a marked degree towards the centre of the hills. Consequently, a low-level tunnel is found necessary in order to cope with the water stored in the dip.

The Banca mine has been worked at intermittent periods by means of tunnels driven into the basalt capped hill. Wash was met with in seams of one to two inches thick of almost pure tin. In some of the development work granite boulders of enormous dimensions were met with. In driving between these granite boulders, it was found that a natural sluicing channel in the original stream had concentrated a rich deposit of diamonds associated with fine water-worn tin. The Malacca mine has been one of the most consistent producers of tin and diamonds on the field, and constant development for many years has been carried out. At some time of its history the work has been performed for an English company, but of late years the mine has been worked under a tribute system. This mine is a prominent tin-producer. The tributaries in five months have produced 5½ tons of tin, in addition to the diamond yield. The diamonds from this mine are particularly clean and bright gems, and command values on account of their natural, uncut brilliancy.

The Soldier Hill mine in the past has produced tin and diamonds in fairly rich quantities. The diamonds won from this mine were rounded and plump stones, and remarkable for the average size of its output. The shallow ground on this mine has been worked out, but the centre of the hills remains unprospected, with just as much chance of containing rich deposits as met with in the surface developments.

Rich returns have often been won from the "Old Farm" mine situated near to Copeton. The development work carried on by the last mine's tributaries yielded rich returns.

See below for transcription

The development work carried on by the last party tributers yielded rich returns. From a drive in the wash from the shaft extending into the hill a distance of 200, 1000 carats of diamonds and 1-ton of tin ore was obtained. Many thousands of carats of diamonds have been won from this mine, in addition to its tin deposit, and acres and acres of ground on the flat and extending into the hills, should be just as rich as the prospected ground has proved to be.

The "Round Mount" mine has been under constant development work for the last six years by the owners, J. Cant and Sons. The returns from this mine varied from two carats of diamonds up as high as 50 carats to the load, in addition to the tin deposit, which is estimated to yield 3 lb to the load throughout. The "Round Mount" mine is an isolated hill of considerable acreage, carrying seams of wash at varying intervals, therefore, special facilities are afforded for treating the entire hill by means of hydraulic sluicing operations, there being an absence of overburden on by far the greater portion of the mine.

The "Mount Ross" Diamond Mining Company has acquired Davis's Shaft, the "Star Mine" and the "Deep Shaft" mine, forming a most important series of joining blocks that in the past produced rich returns of tin and diamonds. The "Deep Shaft" mine has just claims of being one of the principal diamond producers on the field. It has stood the test of years of systematic development work. Its tin deposits form a very important asset, especially so on account of the present high prices ruling for this product. The class of diamonds won from this mine are principally round and plump stones, first water gems predominating. Very brilliant 'colourations' are often obtained, and black diamonds (boart) are found associated with the other gems, weighing from half a carat to four carats each. This boart differs from the carbonado of other diamond fields, being the hardest form of the diamond's crystallisation. A parcel of diamonds as obtained direct from the washing plant shows a marked percentage of gems of a uniform size. The largest stone won from this claim weighed 'four fifths' of a carat. In the development work carried out by the former owners phenomenal returns resulted.

A block of ground measuring 20 ft x 14 ft was taken out, and the diamondiferous gravels washed, producing 1150 carats of diamonds, in addition to its tin inclusions.

Many fine parcels of diamonds have been won from this mine, the returns per load varying from five carats up to as high as 50 carats per load, beside the tin inclusions, which have often returned ore which cleaned up as high a return as four cwt per load.

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The Copeton diamond production is continuing on its uneven way and the output is largely influenced by the price obtained for its gems. That rich deposits of diamond still are to be met associated with the stream drifts that lie concealed beneath the basaltic flow is being proved by development work. The ever fluctuating price paid upon the field for rough diamonds renders it an uncertain problem as to the local value of the output.

Copeton still stands out as by far the most important field for the diamond's production in Australia. The gems here, though small, have an acknowledged superiority as regards their brilliancy, so much so that they have been compared through their polarisation of light as equal and closely allied to the best Brazilian diamonds. The establishment of a cutting and polishing works in Australia would go a long way towards rendering values obtained of a more even nature. Parcels of diamonds won from the different claims upon the field command local values somewhat regulated by the size, shape and colour of their gems. The field has produced few large stones, and the output would average between three and four diamonds to the carat. OPERATIONS AT DIFFERENT MINES. Briefly, I purpose to describe the development work on some of the principal mines. Washing operations are being vigorously carried out at the Alfredamla mine, on the western end of the diamondiferous run. Good marketable gems are daily won from the alluvial deposits, which in the past have produced thousands of carats of diamonds. A six-foot rotary puddling machine is treating the wash which is turning out very payable results. For the first 30 hours a return of 191 diamonds resulted. Some of these gems weighing up to 1-1/2 carat each. Whites and straws are obtained in fairly even proportion. About 600 diamonds have been won in about a fortnight's washing operations, and as many as 50 diamonds per day of

eight hours have resulted from this trial test. In addition to the alluvial deposits on this mine a dolerite structure of unprospected extent has been proved, lying directly beneath the diamondiferous wash. Samples of the rock filling, taken from a shaft which was sunk for 70 feet in the structure, were assayed by the Mines Department, and pronounced to be an identical formation to the proved diamond matrix rock found in the Donnania fissure at the Oakey Creek mine. It is the intention of the owners of the Alfredamla mine to raise a few hundred loads of the dolerite from different sections of the structure, and when decomposed, the material will be washed in order to test the ground. As yellow soft rock was met with in the shaft for a depth of 50ft the disintegration by atmospheric exposure will be a rapid process and the ground easily washed in order to test its value. If diamonds are therein contained in payable quantities the future of the field is assured; for, with a payable diamond matrix proved, the industry would go forward in leaps and bounds, owing to the permanency of the undertaking. Coming eastward along the diamondiferous zone, the Donnania mine at Oakey Creek is next seen. Operations here have been confined to raising diamond matrix from the proved fissure. From the No 1 tunnel that intersected the structure over 200 truckloads have been mined. The disintegration of the dolerite from this section of the development work when exposed to atmospheric conditions is very pronounced. It was from this section of the fissure that the diamonds in matrix were obtained as exhibited by Professor David before the scientists in congress at York (England) and Mexico. The matrix fissure has been proved fully 700ft further down the hill, and all along the intervening ground shafts have been sunk at intervals along this continuous line. An open cut at the bottom of the hill revealed immense bodies of the matrix formation. From this development work over 700 truckloads of the dolerite matrix has been spread for disintegration from pores. When it is ready for washing purposes a rotary puddling machine

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therefore special facilities are afforded for treating the entire hill by means of hydraulic sluicing operations, there being an absence of overburden on by far the greatest portion of the mine. The "Mount Ross" Diamond Mining Company has acquired Davis's Shaft, the "Star Mine" and the "Deep Shaft" mine. Mining a most important series of joining blocks that in the past produced rich returns of tin and diamonds. The "Deep Shaft" mine has just claims of being one of the principal diamond producers on the field. It has stood the test of years

of systematic development work. Its tin deposits form a very important asset, especially on account of the present very high prices ruling for this product. The class of diamonds won from this mine are principally round and plump stones, first water gems predominating. Very brilliant 'colourations' are often obtained, and black diamonds (Boart) are found associated with the other gems, weighing from 'half a carat to four' carats each. This boart differs from the carbonado of other diamond fields, being the hardest form of the diamond's crystallisation. A parcel of diamonds as obtained direct from the washing plant shows a marked percentage of gems of a uniform size. The largest stone washed from this claim weighed 'four fifths' of a carat. In the development work carried out by the former owners phenomenal returns resulted. A block of ground measuring 20 feet by 14 feet was taken out, and its diamondiferous gravels washed producing 1,150

carats of diamonds in addition to its tin inclusions. Many fine parcels of diamonds have been won from this mine, the returns per load varying from 5 carats up to as high as 50 carats per load, plus the tin inclusions, which have often returned ore which cleaned up as high a return as 1/2 cwt per load.