Kangaroo Hills.

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In the Kangaroo Hills Mineral Field considerable activity is being displayed in the quest of alluvial tin, the present high price of the metal rendering the search remunerative where previously it had not been successful. Besides the alluvial of the present creeks, on which most of the claim holders are working, and which calls for little remark, there are extensive deposits of stanniferous alluvium capping many of the ridges, in places itself covered by basalt, as has been described previously by Mr.

W. E. Cameron, Assistant Government Geologist.* These appear to offer considerable inducement to prospecting, but any geological investigation to assist in guiding that prospecting is well-nigh impossible until a reasonably accurate map of the locality has been made, for the present map is so inaccurate as to be useless.

This high level alluvium has been worked successfully in several places. At the present, the most important workings are the Phoenix and Trial, at the Fifteen Mile, the property of Mr. A. Castle, who by tunnelling has drained and tested ground that is certain to yield the substantial reward which the large amount of dead work undertaken merits. The "wash" here is very free, offering no difficulty to sluicing, while, considering the ease with which it can be excavated, the ground requires remarkably little support.

In the same locality, Mr. N. Turckersen has driven a tunnel 75 ft. in the high level alluvium, and has met with some good wash, but this is unfortunately not so free as is the wash in the Phoenix and Trial.

At Red Hill—or Allingham, as it is officially designated—Mr. Harris is also working high level alluvium, at present being engaged in removing the overburden from some treacherous ground.

Mining for lode tin is at present chiefly in evidence at and near Mount Kidston, and at the recently discovered Watercress Creek lodes. Tin was first found at Watercress Creek in December, 1911, in a small gully, which, though rich, could not, owing to its size, last for any length of time. The finding of this gully, however, led to a close prospecting of the immediate vicinity, with the result that at least two likely looking surface shows have been found.

The St. Patrick, owned by Messrs. Webb and Wilson, lies at the head of the gully. The mine consists of an open cut, or rather a quarry, which has exposed a body of tin-impregnated granite some 30 ft. long by 20 ft. wide. The granite has been very slightly altered by the solutions which deposited the tin not having been greisened, or kaolinised, beyond the ordinary decomposition due to weathering. The tin impregnation appears to replace the ferromagnesia constituents of the rock as well as in places the felspar, and is associated with a little chlorite material and occasional grains of an iron ore.

The stanniferous portion of the rock appears to shade off gradually into the ordinary country rock, there being, so far as can yet be seen, no definite walls to the deposit. It is a pity, that, instead of quarrying out the ore, trusting to the advent of a battery to crush it, the proprietors have not applied their energies to sinking on the ore-body and determining its magnitude and quality lower down, as, with a reasonable quantity of ore proved there would be no lack of batteries to crush it. Indeed, the very unusual antipathy to sinking shows that the proprietors have not much faith in their property.

A sample, consisting of chips taken round the whole face of the stanniferous parts of the quarry, yielded the Government Analyst 2.72 per cent. of metallic tin, which is a very satisfactory result.

Fifty yards south-east of the quarry, a cut has been made on a small shoot of tin ore.

In the same neighbourhood, the Cameronia, owned by Mr. W. E. Cameron, appears to be a form of ore deposit similar to Messrs. Webb and Wilson's, but as even less work has been done on it, it is quite impossible to form any idea as to the value of the ore-body. Both of them are very promising shows, as far as their surface appearance goes, but being irregular deposits, probably of a similar nature to the carbonas of Cornwall, it is impossible to form any idea as to the likelihood of their continuation in size or quality to any depth.

Besides the above two claims, several others held in the vicinity, on small veins carrying short but rich shoots of tin ore. These claims include Messrs. Harwood and Eather's Mea, and Hopkins, Thomson, and Simmon's Evelyn. The latter has the distinction of possessing the deepest shaft (45 ft.) at Watercress, and shows in the bottom a short shoot about 8 in. in thickness of rich ore. It is said to have produced about 8 tons of black tin, containing about 65 per cent. of metal. While this and
similar rich shoots and pipes may be satisfactory to the prospector, they are unlikely to lead to anything of sufficient importance to affect the mining industry of the field in general.

The most important mining centre in the Kangaroo Hills Mineral Field at the present time is Mount Kidston, 5 miles south-east of the township of Ewan. Besides the Mount Kidston Mine itself, which is the only mine now working on the field that has attained to the dignity of a winding engine, not to mention a 100-head battery, there are in the vicinity several claims being worked by small parties of miners, who get their ore crushed at the battery.

The Mount Kidston Mine, the property of the Mount Brown Tin Mining Company, Limited, is situated in granite country on a saddle dividing the heads of two gullies which run into Deception Creek. The ore was first worked by means of an open cut, and carted into the Mount Brown battery, near Ewan; but, developments warranting it, a disused battery at Waverley was transferred to the present site. A dam, ample for the supply of the mill, was also constructed in a situation particularly favourable for the purpose.

The ore deposits of the Mount Kidston Mine take the form of irregularly shaped bodies, whose longest axes are vertical and the shortest roughly north-north-west and south-south-east, the direction of a well-defined fissure with which the ore-bodies appear to be connected.

The main shaft has been sunk on an ore-body possessing, at its maximum, dimensions of 50 ft. east to west by 36 ft. north to south, which yielded an average of 80 tons per vertical foot. At 60 ft., in the shaft, a footwall was met with running somewhat east and west, and dipping to the north-east at 60°. A level has been driven south on this wall, which varies in direction between south-east and south. The level met with two ore-bodies. One, about 60 ft. from the shaft, has not yet been thoroughly tested; the other, about 100 ft. from the shaft, was 6 ft. wide and about 30 ft. along the level. Twenty feet above the level it was 30 ft. wide, and has been stopped out; but between 30 and 40 ft. above the level it became too poor to work.

The shaft continues 45 ft. on the underlie from the 60-ft. level. A short level to the north here showed no valuable ore, but on the south side of the shaft the ore-body still continues. A crosscut here demonstrated the existence of another ore-body in the footwall, and this has been stopped out as the "back stope," nearly up to the No. 1 level, where it ceased to be profitable. At its maximum it measured 30 ft. east and west by 20 ft. in a north and south direction.

The main shaft has been continued down a further 40 ft. below the No. 2 level, keeping the one footwall. About 20 ft. down the ore is on another wall in the hanging-wall side of the shaft, while the footwall of the back stope joins the ore which the shaft follows.

The No. 2 level has been driven 160 ft. south-east from the shaft to connect with the No. 2 shaft, which was sunk in another ore-body. This ore-body had maximum dimensions of 40 ft. by 8 ft., but does not extend downwards to the No. 2 level. The ore-body, 100 ft. from the main shaft in the No. 1 level, has also been stopped out between the two levels. It is 30 ft. along the No. 2 level by at least 6 ft. wide. A winze is being sunk on it below the No. 2 level.

It will be seen from the above that there are four, or perhaps five, ore-bodies already located. The ore consists of what appears to be the ordinary granite of the country rock, of which the felspar has been altered into a soft talcose material, the quartz remaining unaltered, and the whole impregnated with the cassiterite.

While the ore-bodies so far found certainly appear to be connected with the well-marked footwall of the workings, this fissure or joint itself does not appear to be appreciably stanniferous, except where the ore-bodies noted occur. Mr. J. Lennon, the manager of the Mount Brown Company, is of the opinion, formed from his intimate acquaintance with the workings, that the ore-bodies probably are associated with cross joints, which traverse the main fissure, though insufficient work has yet been done to demonstrate this view with certainty.

Another outcrop of tin ore is included in the Mount Kidston lease. The No. 3 shaft has been sunk in an open cut in line with No. 2 shaft, while the No. 4 shaft is on an outcrop of chloritic material, which runs east and west to the west of the main line. A little tin was got near the outcrop, but so far it has not proved payable stanniferous. Another open cut to the south of the other workings, with a shaft about 30 ft. deep, has produced some small patches of good ore in altered granite and quartz.

Since the commencement of operations up to the end of November, the mine produced 5,591 tons of ore for a return of 113½ tons of black tin, 1,800 tons of the ore having been crushed at the Mount Brown battery.

The writer is indebted to Mr. Lennon for supplying all information about the mine, as well as for the accompanying plan and sections of the workings, and to Mr. H. G. Ker for the accompanying photographs.

Some 3 or 4 miles to the east of Mount Kidston, a rugged valley tributary to Deception Creek is known locally at the Ditch, and is the scene of some mining activity. In one claim—Mr. J. B. Grieve's—a shaft has been sunk for 50 ft. on a small
pipe of chlorite ore, which, besides the cassiterite, carries also a little galena. In the bottom of the shaft the pipe is only 2 ft. long by less than 1 ft. wide, but is very rich. It has produced by hand dollying 10 bags (roughly 10 cwt.), containing 65 per cent. of metallic tin, while some 8 tons of ore now ready to be crushed are expected to yield 40 per cent. of black tin.

At the Alligator claim, McIntyre brothers are sinking a shaft in a previously existing open cut, on an outcrop of dense chlorite and magnetite. This is situated about 10 chains east of Grieve’s claim, and is said to have produced 5 tons of black tin containing 47 per cent. metal.

McIntyre brothers are also working a claim known as Lode Hill, on the same side of the Ditch, but half a mile to the west of the above. A shoot of ore, about 6 ft. long and up to 2 ft. wide, is being worked on a well-marked joint or fault in the granite country rock, striking in a north-west south-east direction. The ore consists of the granite altered to a soft greenish talcose material. It is said to have produced about 16 tons, estimated to contain 25 per cent. of black tin. Up hill from this another line of lode running east and west has received a little scratching on some small bunches of ore.

Nearer Mount Kidston, several claims are working on small shoots of tin ore, and include London’s, Jackson’s, MacMahon and Neil’s, and Miller’s claims, none of which in their present stage of development call for particular remarks, excepting, perhaps, Mr. London’s, on account of its richness.

About half-way between Ewan and Hidden Valley, on the eastern bank of the Running River, Mr. F. Krumholz is working his Boomerang wolfram lease. The wolfram occurs in several small parallel veins, which strike east-north-east, the country rock being gneiss. The wolfram is associated with molybdenite, which has been partially oxidised in many places. The minerals occur in rich patches in the veins, the deepest shaft on which is only 60 ft., while the workings are scattered along the strike of the veins over a length of 700 ft. As Mr. Krumholz is working entirely by himself, the water has prevented him working below the water level.

The Boomerang lease was visited by Mr. Ball, who refers to it in his progress report, in the “Government Mining Journal” for November, 1911, as having produced about 12 tons of wolfram, the molybdenite not being saved.

About a quarter of a mile north-east of the Hidden Valley Hotel, a strong outcrop of a tin-bearing lode has lately been discovered by Mr. A. Benham. The outcrop continues readily visible for perhaps 200 yards in a north-east south-west direction, and is well worthy of the expenditure which would be required to test it thoroughly.

Titanium and Its Uses.—The use for titanium which gives promise of greatest expansion is in steel and cast iron. In steel it is ordinarily added in the form of ferrotitanium (containing preferably from 10 to 20 per cent. of titanium) in quantity sufficient to form about 0.1 per cent. of the steel. Rails treated with titanium and laid in places on railroads where the wear was especially hard are said to have shown much less wear than untreated rails. Gray cast iron also is said to show beneficial effects from such treatment. Cuprotitanium is also manufactured for use in bronze and other castings containing copper. The titanium acts as a deoxidiser much like phosphor-tin, and makes very tough castings. Another use of titanium which promises to assume considerable proportions is the manufacture of electrodes for arc lights. Titanium ore in the form of rutile, which is titanium dioxide, has been mined in Nelson County, Virginia, where a plant has been erected to extract the metal from the ore. Titaniferous iron ores are mined in New York, Minnesota, and Wyoming.—“Mexican Mining Journal.”

“Shooting off the solid,” that is, blasting down coal without having undercut it, is bad practice. Heavy charges of powder produce an unnecessary quantity of fine coal, and make the lump coal friable; also they weaken the roof and supporting pillars, and failure to undercut or shear the coal causes the danger of windy shots, the cause of frequent dust explosions.