PYRITE PROSPECT AT DIAL CREEK (KEDDIES)

The growing need for the location of sulphur ores in accessible localities has focussed attention on certain pyrite prospects in the Dial Range District, some eight miles by road from the Port of Ulverstone. Prospecting for copper, gold etc., over a long period of years has indicated that bodies of pyrite occur, principally in the vicinity of Dial Creek.

From Ulverstone, after leaving the South Penguin Road, the Lobster Creek Road can be followed to its end at Bowden's property, six miles from Ulverstone. A road, suitable for rough vehicles, then leads, first along the Leven River and then, following Dial Creek, for two miles to the mineralised area. Two bridges on this road need re-conditioning.

Dial Creek flows from the slopes of Mt. Montgomery into the Leven River about seven miles from its mouth. The Leven, at this point, is just above the tidal limit, and Mt. Montgomery, a couple of miles to the West, rises to over two thousand feet, so that Dial Creek is a swift flowing stream with hills rising at high angles on either side.

The pyritic bodies occur in sedimentary strata close to the zone in which these beds pass over into massive crystalline rocks. There is no distinct evidence of a transgressive igneous contact, the boundary of the crystalline mass being roughly parallel, for some distance at least, to the strike of the sedimentary beds. These latter consist of gray and purple slates with minor quartzites, lithologically similar to the Dundas Series. They strike at 330° and dip to the south-west at angles from 30° to 90°. A bed of breccia, a few feet in thickness, intervenes between the other sediments and the crystalline rocks for part, if not all, of the distance.

The crystalline rocks are pale-coloured, and of medium to fine grain. They contain, in places, numerous patches of dark green chlorite of no particular shape. Shining cleavage faces of felspar crystals are visible in hand specimens. Under the microscope, the rock is seen to consist of an interlocking mass of squarish felspar and sub-idiomorphic quartz crystals. The felspar shows both lamellar and simple twinning and both albite and orthoclase are present. There are also occasional corroded phenocrysts of felspar showing simple twinning. Larger irregular relict patches of chlorite, sericite, and magnetite are scattered through the rock. At one place close to the sediments, masses of radiating needles of tourmaline were found.

The breccia is a variable rock. In some places it consists of irregular angular pieces of siliceous material in a fine-grained siliceous ground-mass. In others it is composed of fragments of banded sedimentary material in a fine chloritic ground-mass.

Some parts of the breccia bed consist entirely of secondary micro crystalline quartz and the original state of the rock can be inferred only from the difference in colour between the brecciated pieces and

the groundmass, as seen in the hand specimen, the rock being otherwise homogeneous. Another variety is described by Twelvetrees as appearing to consist of a brecciated form of the crystalline rock. A further variety of the breccia is simply its replacement by pyrite.

The pyritic bodies are metasomatic replacement bodies, genetically connected with the crystalline mass, but localised in the sedimentary strata, just beyond the contact. Selective replacement has occurred and it is the breccia beds that have principally suffered this. Normally the brecciated pieces are replaced by very fine pyrite and the groundmass by coarser crystals. The quartzites have been replaced to a lesser extent and the pyrite bodies in these are smaller and of lower grade. The slates do not appear to have been replaced at all.

About thirty chains up the road from the Leven River, near a small gully, an outcrop of siliceous breccia on the side of the road shows about 50% replacement by iron pyrite. The width of the replacement zone at right angles to the strike appears to be about 12 feet, but it could easily extend farther as the outcrop cannot be traced beyond this width. Between two and three hundred feet farther along the road another outcrop shows pyritic replacement. A wider replacement zone is visible in the gully about half way between the road and Dial Creek. Eighty five feet vertically below the road, the gully enters Dial Creek, and just to the East of this an adit (Adit "A") has been driven for two hundred feet in a southerly direction. For most of the first hundred feet the adit has been driven through the crystalline rock. At 104 feet a mineralised zone begins and from here to the end of the adit, the workings are in pyritic material of various grades all the way, without penetrating to the other side. As this adit crosses the replacement zone at an angle of about 30^{0}, it would appear that this zone is over 40 feet wide at this point.

Pyrite again is visible on the banks of Dial Creek just above the bridge where the old Dial Track crossed it. A couple of chains from the bridge on the south side of the creek an outcrop shows the zone to be at least 10 feet in width. Five chains further, on the opposite bank, a small cut has been put into the hill where a narrow band of replaced quartzite outcrops. Most of the cut is in the weathered crystalline rock. In the vicinity are numerous other prospecting workings. A shaft has water at 10 feet and an adit is collapsed at the entrance, but no pyrite is visible on the dumps of either. More workings still occur to the North, where the contact of the crystalline rock swings to the East but mineralisation appears to be getting weaker in this direction.

The pyrite then occurs as replacement bodies, mainly located in a breccia zone which follows the boundary of a crystalline rock, approximating to an aplite in texture and mineral composition, but containing low grade mineral relicts. The replaced zone may be fairly continuous and of varying widths

or it may consist of a series of lenses. Intermittent pyrite replacement can be observed over a length of at least 20 chains. The zone appears to grow wider at depth but may suffer dilution because of this. To the South-East of the main outcrop is a zone of breccia containing plentiful iron oxide which probably is an oxidation product of pyrite.

Several of these points can be cleared up by organised prospecting which could take the following course.

1. Clearing of Adit "A" (the floor is feet thick in water iron oxide and debris) and preparing a section of the wall free from iron oxide for sampling.

2. Trenching at intervals along the boundary of the crystalline rock (as shown in the plan) to determine the width and value of the replaced zone at surface.

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