

The maximum width of any lens was found to be just under 5 ft., a dimension obtained in the winze between No. 2 and No. 3 levels. While the most continuous shoots are those extending from No. 1 to below No. 2, and from about No. 5 to below that level, the lenses of ore in No. 7 are narrow, irregular, and of poor quality. The following table shows the quality of the ore at the various levels :—

	Per Cent. Copper.
(1.) Average of four assays from No. 2 level	2.88
(2.) Average of seven assays from winze and stopes between No. 2 and No. 3 levels	4.58
(3.) Average of four assays from No. 4 level	1.91
(4.) Average of five assays from No. 5 level	4.91
(5.) Average of ten assays from No. 7 level	0.42

By far the greatest amount of the ore has already been removed from the United Mine, and, in the writer's opinion, further exploration seems unwarranted, as the discovery of ore appears to be entirely fortuitous. Quantity as well as quality seems to diminish in depth. In November last, a rough estimate of the amount of ore developing in the mine gave about 400 long tons (2,240 lb.); while, in addition, there were about 270 tons of mined ore, apparently for the most part of good quality, lying at grass outside the various levels.

The Champion Mine, which is now worked under the same management as the United Mine, and, in fact, has been so controlled for some years, was formerly worked separately. The mine has been well developed by numerous shafts and levels. The most important workings are the Champion level (about 30 ft. above the level of the Champion Creek), the Champion 150 ft. level, and the winze descending therefrom for 78 ft., and the Doctor's level. The Champion level and the Doctor's level are at the same elevation on the south bank of the stream. A shaft descends from the surface on the north bank of the stream to the 150 ft. level, and a winze also descends thereto from the Champion level. The Champion level and the Doctor's level approach each other at a very acute angle, and in one place almost join. In addition to the workings named, there are a number of levels, prospecting shafts, surface holes, &c. Like the other mines, the Champion is located in a series of narrow and very irregular lenses in serpentinised peridotite cut by nelsonite. This mine, like the United, lies close to the contact of these rocks with argillites and crystalline limestone. The mineral association in the ore of the Champion presents a marked variation from the other mines of the district. Above the water-level there is, or was, a relatively thick capping (some feet) of oxidized ore, consisting mainly of malachite, cuprite, native copper, and possibly a little chrysocolla. Below the water-level this gradually gives place to unoxidized material (except, of course, where recent alteration has taken place along the workings), consisting of very low-grade cupriferous pyrrhotite and native copper. Both occur in irregular zones of a highly shaly shattered serpentine. The lenses of native copper and pyrrhotite (often, though not always, joined together) are generally very small, being merely stringers, but several of them may occur along the length and width of the zones. Chunks of a hundredweight or more of native copper have been excavated in the upper levels.

In every way the Champion seems much the more promising of the two mines, and, in my opinion, there are fair chances of opening up some small though payable patches in the old mine. Several places in the workings which, I think, would repay further prospecting may be enumerated below :—

(a.) At the end of the Champion level. Here a small seam of native copper with a little pyrrhotite was discovered recently in a shallow cubby-hole in the west wall of the drive, and at the extreme southern end of the present working: a former company carried this level a little further. The ore in the seam is rich, and the shattered country is mineralised with shot copper. Only about 4 ft. of the seam is exposed. It should be prospected to north and south where visible, and, if this work warranted further exploration, a winze should then be sunk on the seam.

(b.) In the 150 ft. level a seam of rich native copper and pyrrhotite was discovered, and traced for about 15 ft. An inclined winze sunk on this seam followed the ore for about 75 ft., on the steep incline of about 75°, with native copper and pyrrhotite appearing at frequent intervals in that distance. At 60 ft. below the level short drives proved the ore-seam to be at least 30 ft. in length. Undoubtedly some further exploration should be done: the winze ought to be sunk further, and the two short drives above mentioned should be further driven to test the full extent of the ore-body.

(c.) Signs of copper are visible at various places on the hanging-walls of the winze descending from the Champion level to the 150 ft. level, and it seems possible that the winze may have been sunk not actually on an ore-body, but on one wall; consequently, further prospecting might here be done to advantage.

Some very small deposits of copper-ore—on which a little prospecting has been done—occur at the head of a branch of the Hacket, known as Chromite Creek, and near the divide between the Hacket and the Serpentine. The most conspicuous of these deposits consists of a thin lens of ore about 12 ft. long by a few inches thick underlying a narrow dyke of nelsonite. The ore is in serpentine, but partly impregnates as well the nelsonite. On the surface it consists of shot native copper, freely disseminated, together with malachite. The quality of the ore is good, but the quantity is very doubtful. Traces of copper-ore were found in Miner Creek in several places.

The Johnston Mine, in Serpentine Creek, has been fairly well prospected—an adit level has been driven at the creek, from which a shaft descends some 30 ft.; another adit about 65 ft. higher up the hillside; and an incline shaft still further up. Very little ore is now visible in the workings, but a small amount of ore is scattered over the surface and on the tip-heads.

The country rocks consist of serpentinised peridotite of varying degrees of hardness, cut by irregular dykes and stringers of nelsonite. The ore seems to resemble exactly that from the various small deposits on Mount Claude.