Note on peculiar Quartz-Pseudomorphs found at the Owera Mine, Opitonui, North Island, New Zealand.

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[Communicated by Professor Judd, C.B., F.R.S.]

[Read April 5th, 1898.]

THE Owera Mine is opened on a line of lode or reef consisting of small auriferous quartz veins traversing decomposed hypersthene-augite-andesite. The quartz of the veins is highly ferruginous, and full of little patches of brown hæmatite indicating decomposed pre-existing pyrite, remnants of which are occasionally observed. It is in connection with the veins in the soft country rock and near the surface that the pseudomorphs under notice are found, and it seems probable that they owe their origin to infiltration of silica into cavities left by removal of calcite, though none has the actual form of a crystal of that mineral, which, in fact, is quite absent at the place Yet the specimen (No. 2) found with some of the pseudo-crystals tends to support this supposed origin, the hollows and, more clearly, wax impressions of them showing that the removed crystals were scalenohedra. On some of the pseudo-crystals here and there an angle occurs, as measured by the hand-goniometer, approaching one or other of the terminal scalenohedral angles measured on a wax impression, but there is no further resemblance to this form. In general development and appearance, save colour, these pseudomorphs are much like the chalcedony "enhydros" found many years ago in the decomposed granite bottom beneath gold drift of a miner's claim in the Beechworth district, Victoria. There, however, many of the discovered pseudo-crystals enclosed fluid and moveable gas bubbles, while in none of those now under notice can such be seen. Yet it is probable that some of the kind do occur, and would therefore be true "enhydros." Two of the pseudo-crystals were cut in half. In one the interior cavity is virtually filled up, while the other shows, like many chalcedony geodes and Beechworth enhydros, a central cavity with drusy walls of quartz crystals. The appearance of a shining tracery on the

planes of the pseudo-crystals, judging from fine transverse striations, is doubtless due to the prism faces of small quartz crystals that lined the walls of the original cavities, while the dull parts between belong to quartz crystals grown into the cavities at all angles up to 90° to the walls. In fact, microscopic examination in convergent polarised light of thin sections, cut parallel to any of the planes of a pseudo-crystal, proves that the mass of each is compounded of small crystals of different optical orientation, and amongst these there are many cut at right angles to the principal axis, showing fine interference figures in which the positive optical character of the quartz can be especially well observed.

It may be mentioned in this connection that in other parts of the North Island gold fields, notably at Tirua, free silica produced through the decomposition of rhyolitic rocks has been deposited as "opal," forming a kind of granular rock in which many grains, here and there, show the colours of real precious opal; and some of these having been found of good size, mining for precious opal in the district has been spoken of as a possibly profitable industry.