

THE OCCURRENCE OF ZEOLITES AT KYOGLE, NEW SOUTH WALES.

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(Plate xlvi; Figures 1-5, and Map.)

The Kyogle Shire Council opened up a basalt quarry for the supply of road metal some years ago, but it was not until Dr. W. G. Woolnough visited the district in 1923 that it was known that this quarry was a prolific producer of zeolites and calcite. On his report the writer, accompanied by Mr. C. M. G. Friend, visited the quarry with a view to collecting and examining the occurrence. The visit was made possible by the generosity of Mr. Anthony Hordern, and over four hundred specimens, mainly chabazite, were obtained. The collection contains the finest specimens of this mineral yet obtained in Australia.

Kyogle is only 198 feet above sea level and is built on the fertile valley of the Richmond River, which has here reached a mature age. To the west of Kyogle the sandstone of Jurassic age dips under the alluvium and the basalt of Fairy Mount immediately to the east of the town. The dip of the sandstone here is 8° south-east, but, following the sandstone to the west, where it has been exposed by the denudation of the basalt (see map), the dip increases to about 15° south-east, and near its junction with the basalt to the west it shows distinct evidence of crumpling, indicating proximity to the fissure or vent from which the basalt was extruded. Fairy Mount is a residual of this basalt, and has been separated from it on the west and north by the valleys of the Richmond River and Fawcett's Creek respectively, while to the east it has been separated from the same mass of basalt by the valley of Back Creek.

The quarry face at the foot of Fairy Mount, and about thirty chains east of the Kyogle post office, discloses the fact that this mass of basalt is a complex structure. Four distinct flows can be readily recognized, as well as the presence of a dyke. The quarry face at the time was eighty feet high, and the greatest thickness of any one flow was thirty-six feet. Unfortunately the mountain is well covered with soil, and outcrops are scarce, but at a height of 900 feet vesicular basalt was observed to be overlain by solid basalt, indicating the surface of another flow. There is a marked absence