Another variety shows the acid plagioclase albite as the predominating phenocryst, while still other varieties of the more basic type show amphibole and pyroxene phenocrysts. All the porphyries are much altered, the thin sections showing the common decomposition products.

From field observations and from exploration work already done in the district it is safe to conclude that the acid porphyries were instrumental in introducing the ore in the present deposits. The line of reasoning is as follows:

either side, viz., the gliding planes between the strata referred to above as "main channels." See Fig. 1.

The mineralized solutions from the porphyry following along these channels deposited minerals in every available void within the zone of its permeability. This mineralization may be seen in the "mashed" conglomerate pebbles and stringers along the channel. This method of mineralization, along such a uniformly crushed zone, accounts for the uniform value of the ore as well as its high content.

In general, under such conditions of mineralization

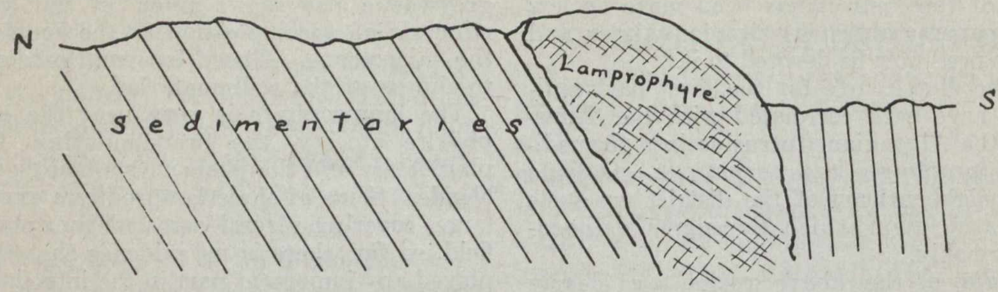

Fig. No. 2.—Showing vertical position of strata on north part of Burnside property, due to a large lamprophyre intrusion.

After the sedimentaries were laid down and prior to the advent of the intrusives, there appears to have been great crustal movement, which folded the sedimentaries, such that the axis of the fold was about N. 75° E., and the dip about east 75° S. This fold may have been synclinal or monoclinal, judging from what evidence is left in the field. (For the present it will be called monoclinal, as the writer has not found any evidence of northerly dips in the strata to correspond to the opposite leg of the synclinal trough.) During this process of folding many lines of weakness were created in the sedimentaries, such as fracturing across the bedding planes and faulting along the bedding planes, as shown by the slickensides. This faulting or gliding of one stratum over the other in the process of folding

as above, many peculiarities may arise. Glacial erosion removed the higher part of the fold, exposing some of the ore deposits as at (a) and (b), striking N. 45° E., still others may exist as at (c), yet not exposed. Conditions might also exist as at (d), where the deposit follows the bedding plane and follows a fracture as at (f), across the bedding plane. Conditions being equal, consider the deposits (a) and (b), at (b) the ore shoot is much shorter than at (a), for at (b) the length is bx, and at (a) the length is ay. The length of the ore shoot would be proportional to the distance north from the porphyry outcrop. Then again other ore bodies, such as (k), may emanate from an intrusive as (z), which is not exposed; ore as at (m) might also be found.

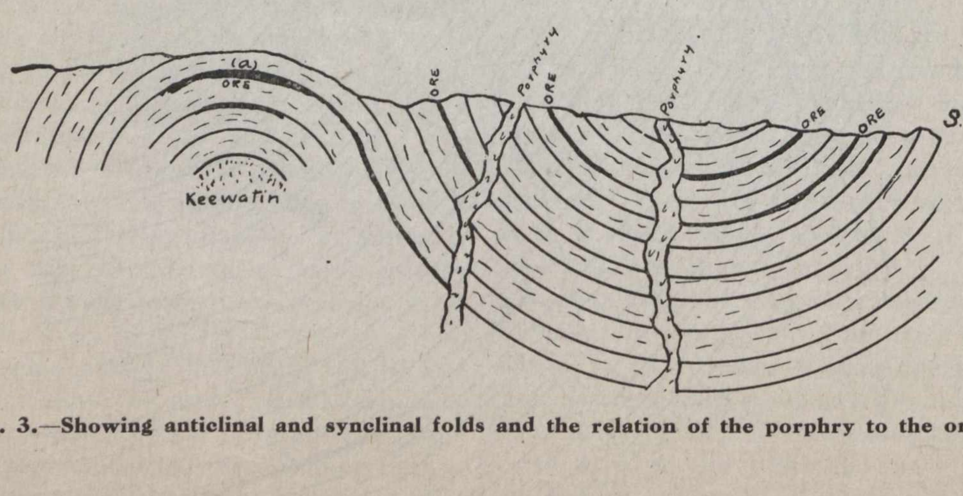

Fig. No. 3.—Showing anticlinal and synclinal folds and the relation of the porphry to the ore deposits.

probably afforded the "main channels" for the mineralization solutions.

After these lines of weakness in the crust had been formed by some tectonic movement, the intrusives began to find their way to the surface through these fractures. For reasons outlined above, the porphyry only will be considered in this discussion. This porphyry crossing the bedding planes of the sedimentaries imported minerals to the lines of weakness on

Next consider the conditions resulting from synclinal and anticlinal folding in this district, instead of monoclinal folding. In the immediate district the results would be somewhat similar but to the north and south of this district, if not already removed by glacial erosion, would be found the other legs of the folds, and possibly the outcropping ore bodies of the bedding planes of the sedimentaries, providing there exists the porphyry intrusives to introduce the ore.