

Type-C and Type-M Pumice Pseudomorphs: Compaction Versus Welding in Ancient Pyroclastic Rocks

S.R. McCutcheon

Department of Natural Resources and Energy, Bathurst, New Brunswick

and

P.T. Robinson

Department of Geology, Dalhousie University, Halifax, Nova Scotia B3H 3J5

The Late Devonian (previously Early Carboniferous) Piskahegan Group in southwestern New Brunswick is dominated by subaerial pyroclastic rocks. These rocks contain two, mutually exclusive, types of pumice pseudomorphs. Type-C or cryptocrystalline pseudomorphs are characterized by greenish colors and submicroscopic micaceous intergrowths. Type-M or microcrystalline pseudomorphs are characterized by reddish colors and micrographic intergrowths.

Eutaxitic foliation defined by Type-C pseudomorphs is the result of mechanical compaction under relatively low temperatures, whereas eutaxitic foliation defined by Type-M pseudo-

morphs is due to welding processes. Unflattened "fossil pumice," which is caused by calcitization or silicification of vesicular pumice texture prior to compaction, commonly occurs with Type-C pseudomorphs.

Type-C pseudomorphs could conceivably occur in air-fall or even subaqueous tuffs, and therefore are not indicative of a particular eruptive mechanism or a particular depositional setting. In ancient pyroclastic rocks, one should not assume that all eutaxitic foliation is the result of welding processes, or that all rocks exhibiting eutaxitic foliation are pyroclastic flows.