

A note on the location of diamictite in the Ratcliffe Brook Group on Hanford Brook, southern New Brunswick, Canada

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Mapping of the lower part of the Cambrian Saint John Group on Hanford Brook was recently conducted as part of a larger field mapping project in the western Caledonia Highlands. The classic Hanford Brook section is of regional significance as it contains a well-preserved and nearly complete succession of fossiliferous Cambrian rocks characterizing the Avalonian marginal platform. Of equal importance is the report of a muddy diamictite horizon in the lower part of the section that has been interpreted as a dropstone bed. This interpretation provides the only evidence for Early Cambrian glaciation in Avalonia and therefore has implications for paleo-reconstructions of peri-Gondwanan terranes during the Cambrian. Accordingly, the location of the diamictite bed is important. A slab of the dropstone conglomerate is housed at the New Brunswick Museum in Saint John (specimen NBMR 1788); however, the coordinates for the sample were not given.

The diamictite occurs in the Early Cambrian Ratcliffe Brook Group, which is composed of the basal Rencontre Formation and overlying Chapel Island Formation. The Chapel Island Formation is further subdivided into the lower Quaco Road Member and upper Mystery Lake Member. The stratigraphic level of the dropstone conglomerate is reported to be near the base of the Mystery Lake Member, almost immediately above the highest fluvial conglomerate, in an overlying olive-green mudstone-dominated interval. The detailed description and stratigraphic log show the dropstone at interval 173.95–174.35 m, only 5 cms above the highest fluvial conglomerate. The location and depositional context of the dropstone is depicted in a series of three field photographs showing the underlying fluvial conglomerate, the top of the dropstone bed and the dropstone itself. Although polymictic conglomerate was observed above the fluvial conglomerate near the reported dropstone interval it was mostly underwater in the stream bed and was not accessible for sampling. However, it was clear that the photographs depicting the top of the dropstone bed and the dropstone itself were not taken at this location. A careful examination of the entire section has revealed that these photographs show strata much higher in the Mystery Lake Member, approximately 70 m and 110 m respectively above the dropstone interval as shown on the detailed stratigraphic log, which brings the exact location of the diamictite into question. Additional field work will be required to confirm the location of the diamictite bed and to determine where the museum specimen was collected.