

Re-Interpreted contact relationships of the Ordovician Cookson Group, southwestern New Brunswick

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The enigmatic contact relationships between the Ordovician Cookson Group and adjacent younger rocks in the St. Croix area have led to considerable controversy in regard to the tectonic history of southwestern New Brunswick. The interpretation of a conformable contact in the north and an unconformable contact in the south, first put forward during mapping in the late 1800's, was accepted until the 1960's. Since that time workers have claimed that both contacts represent significant erosional breaks. However, detailed mapping of the St. Croix area between 1989-91 tends to support the original point of view that sedimentation was continuous in the north.

The Cookson Group (including the Calais, Woodland, and Kendall Mountain formations) was previously considered to be unconformably overlain by lithic wacke and slate of the Digdeguash Formation along its northern flank. However, recent mapping suggests that the Digdeguash Formation gradationally overlies quartzite and slate of the Caradocian Kendall Mountain Formation, and is likely to be Ashgillian or possibly Llandoveryian in age rather than Late Silurian

or Early Devonian as previously assumed. The Digdeguash Formation, therefore, occupies a stratigraphic position similar to the Point Leamington Formation in the Exploits Subzone of Newfoundland. Calcareous sandstone, siltstone, and slate of the Sand Brook and Flume Ridge formations conformably overlie the Digdeguash Formation.

The Late Silurian Oak Bay Formation lies with profound unconformity on Tremadocian black shale of the Calais Formation along the southern flank of the Cookson Group. The presence of deformed clasts of quartzite and slate together with rare Wenlockian limestone clasts in the Oak Bay Formation indicates that uplift of the Cookson Group took place between the Wenlockian and Pridolian. This uplift is contemporaneous with the age of emplacement and deformation of the syntectonic Mohannes pluton (U-Pb date of 420 ± 5 Ma), which intrudes the Kendall Mountain Formation. The intense deformation, metamorphism, plutonism, and uplift along the southern boundary of the Cookson Group may be related to mid-Silurian collision of Avalon with North America.