
**On the Silurian rocks and the gold-bearing veins
of White Bay, western Newfoundland**

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The western side of White Bay is a scenic and geologically diverse area including rocks ranging in age from Mesoproterozoic to Carboniferous. It was the site of early geological explorations by Alexander Murray and James P. Howley, and also the location of some of the earliest gold mining on the island of Newfoundland. The gold-bearing veins that were exploited are hosted within Silurian sedimentary and volcanic rocks now known as the Sops Arm Group.

The traditional view of the Sops Arm Group is that it comprises five formations. The lowermost three formations (Lower Volcanic Formation, Jacksons Arm Formation and Frenchmans Cove Formation) are largely of terrestrial aspect, becoming finer-grained upwards in the sequence. The upper (and thicker) formations (Simms Ridge Formation and Natlins Cove Formation) are dominated by marine sedimentary rocks, but the latter also includes a thick sequence of subaerial felsic volcanic rocks. Three of the formations in the group are discontinuous along strike, and this pattern has generally been ascribed to primary facies changes within an integral and essentially continuous sedimentary sequence.

A different interpretation is here suggested for these Silurian rocks, in which the disparate terrestrial and marine sequences are unrelated, and were juxtaposed along an important structure termed the Long Steady fault zone. This disappearance of formations along strike suggests that they are excised by this regional fault zone. Although much of it is unexposed, the suspected fault zone is marked by localized strong deformation, and folding is best developed in less competent rocks in its hangingwall. Its history is unclear, but there are indications that it may have at one time been a west-directed thrust or reverse structure. Interestingly, many of the gold-bearing veins in the Sops Arm Group are located close to this regional fault zone, and some may be directly linked to minor associated structures. Hence, the fault zone may be an important regional control on gold mineralization, but it is probably not the only such factor. Auriferous veins (and indeed quartz veins in general) are more abundant in the south of the area, where later granites abound, implying that there could also be a thermal or genetic link to such magmatism, as originally (and eloquently) proposed by James P. Howley exactly 100 years ago.