

***Ordovician intracratonic sediments in the Lac-St-Jean
and Chicoutimi areas, Quebec***

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Ordovician outliers in the Lac-St. Jean and Chicoutimi areas, Quebec, consist of 30-40 m of variable limestones overlain by 35 m of dark brown or grey shales and further limestones. We focus attention on the basal limestone sequences, which are of late Trenton (Middle Ordovician) age and overlie Precambrian gneisses and anorthosites with marked unconformity.

The transgression of the Ordovician sea into the present-day Lac-St-Jean and Chicoutimi areas produced an intracratonic basin within which a variety of sediments were deposited in a number of environments. Nearshore sediments of the basin formed a complicated suite of clastics, derived from the adjacent rugged coastal hinterland, and intertidal and shallow subtidal carbonates with variably admixed clastics. Further from shore, in sheltered bays or lagoons partly enclosed by offshore shoals and bars of skeletal lime sands, fine-grained carbonates with coral-algal-bryozoan

thickets accumulated. Variations in sedimentation rate and also the development of periodically exposed banks of sediment resulted in numerous submarine hard- or firm-grounds and subaerial microkarstic surfaces. The offshore skeletal shoals and bars, which were composed mainly of pelmatozoan debris but included patches of incipient reef growth, provided an incomplete barrier to circulation. Offshore subtidal sediments consisted of mixed carbonate and argillaceous muds. Sudden increased rates of transgression, probably related to isostatic movements, resulted in the drowning of this palaeogeographic distribution of sediments and the deposition of dark coloured argillaceous shales in significantly deeper water. These shales are partly of latest Utica and mainly Lorraine in age and it is likely that the initial drowning of this part of the Laurentian Shield was much later than that in the St. Lawrence Lowland.