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LATE PALEOZOIC STRIKE SLIP TECTONICS OF THE NORTHERN APPALACHIANS

by

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[This page is not in Dwight Bradley's dissertation; this colour added by William S. F. Kidd from photos taken in a field visit to northern Cape Breton in late July 1981. Particularly in memory of the rock-sucking dog Rhubarb mentioned in the acknowledgments but which seems to have escaped appearing in the grey dissertation photos]

View north to the fault line scarp of the Aspy Fault. See Figure 5.2 for the grey version.

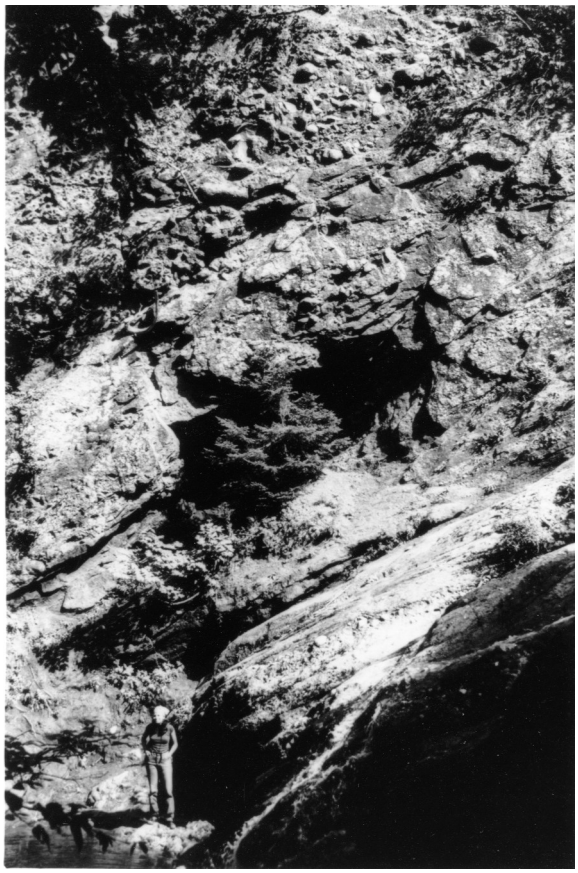

Figure 2.7. Coarse boulder conglomerate of the Horton Group at Beulach Ban Falls, southern Aspy Basin, Cape Breton Island. Rounded and angular boulders up to 1 meter in long axis make up this deposit, which interfingers nearby with fluvial sandstones and lacustrine siltstones. The Aspy fault or a subparallel splay to the east was presumably responsible for the deposition of this fanglomerate.

Figure 4.3. - (A) Outcrop of thick-bedded, matrix-supported boulder conglomerate of the Grantmire Formation, interpreted as a debris flow deposit. (B) Outcrop of Grantmire Formation at the southern basin margin, showing boulders of Fourchu Group volcanics nearly a meter in long axis.

(A)

(B)

Figure 4.5. - Debris flow lobes in the Grantmire Formation, viewed through standing water from above, locality 1.

Figure 4.6. - Clast-supported boulder conglomerate of the Grantmire Formation, showing inferred upstream imbrication. Paleoflow here (locality 1) was from right to left, toward the East Bay Basin.

Figure 4.9. - Fractured boulder in the growth fault zone at locality 12. Offsets on fractures in this clast are believed to reflect displacement on the nearby basin-margin fault. See also figure 4.10.

Figure 5.2. - The fault line scarp of the Aspy fault, northern Cape Breton Island, seen looking north from the Aspy Basin. The peneplained surface of the Cape North Massif is in the background.

Figure 5.7. - Outcrop at locality G of conglomeratic sandstone of the Lowland Cove Formation. Trough cross strata and parting lineation indicate paleoflow to the southeast.

Figure 5.8. - Bedding plane surface in Lowland Cove conglomeratic sandstone, locality G, showing pebbles and cobbles of red-brown rhyolite porphyry, leucocratic metamorphics, and vein quartz.

Figure 5.11. - Oscillation rippled gray siltstone of the Meat Cove Formation at locality R. The 100 m cliff is cut by an oblique left-slip fault that trends NE.

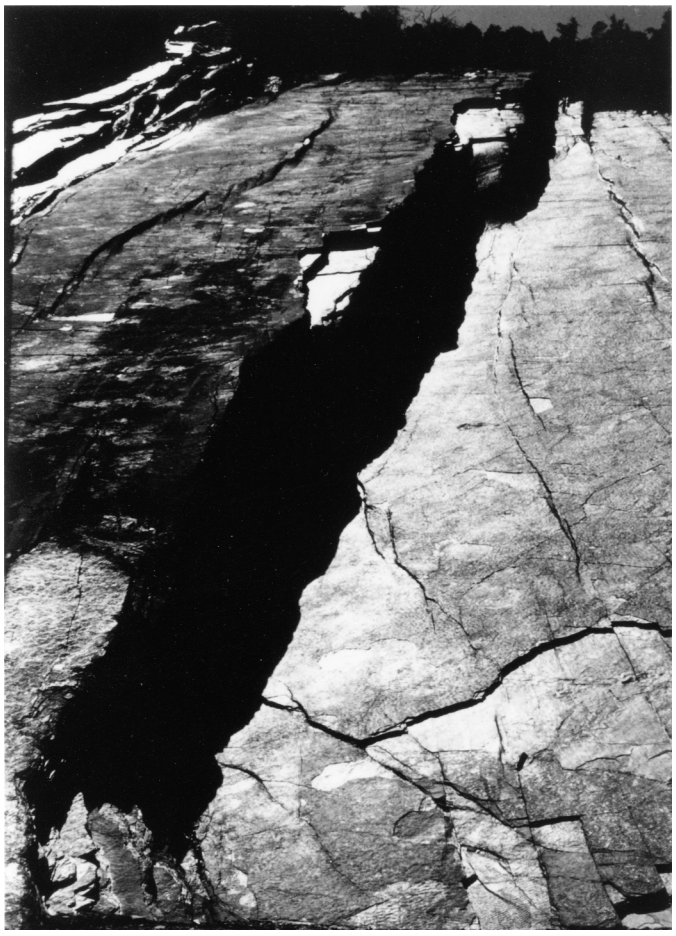

Figure 5.13. - A coarse, pebbly, arkosic channel sandstone in the Black Point Formation at locality S.

Figure 5.15. - Clast count (minimum diameter 1 cm; n = 54) from arkosic, conglomeratic sandstone in the lower Black Point Formation, locality J. The source of sediment was granitic, presumably the Cape Breton Highlands to the south. Note the absence of volcanics, and the presence of sandstone clasts believed to have been derived from an older part of the Horton Group already undergoing erosion.

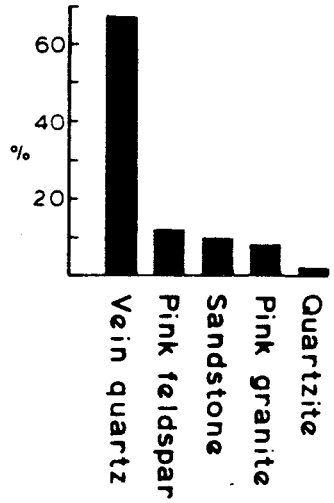

Figure 5.16. - A 4 cm clast of green quartz sandstone in the lower Black Point Formation at locality J. It was probably derived from a lower part of the Horton Group, already undergoing uplift and erosion to the south.

Figure 5.18. - Polished section of clast-supported conglomerate of the Bay Road Formation, eastern basin margin. Clasts are of pink granite and foliated (mylonitized) granitic gneiss.

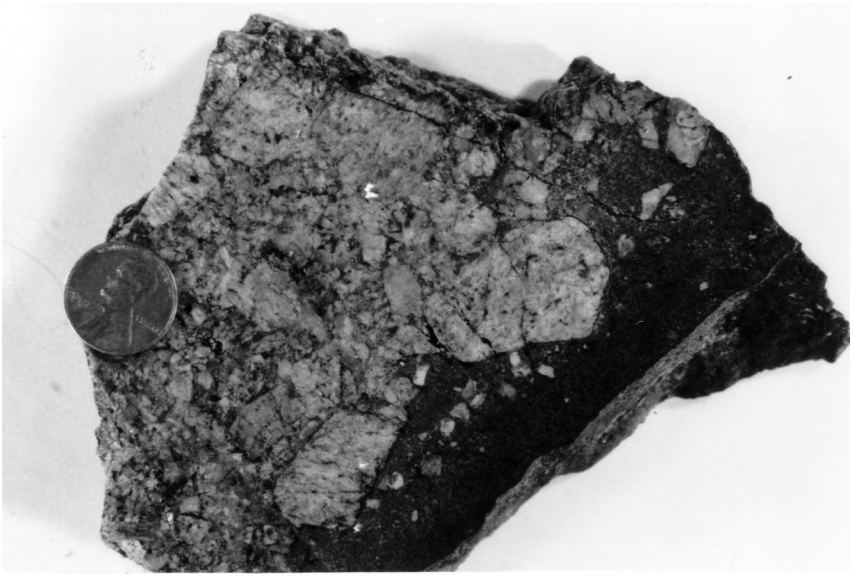

Figure 5.19.- Clast-supported conglomerate of the Grantmire Formation, eastern basin margin. These conglomerates intertongue with Windsor limestones, and are only exposed within a few hundred meters of the St. Lawrence fault.

Figure 5.20. - Matrix-supported cobble conglomerate from a sliver in the Salmon fault zone. Cobbles of pink, arkosic sandstone are believed to have been derived from the Horton Group, and their presence in the fault zone suggests faulting during deposition of the conglomerate. The matrix of micritic limestone is the basis for assigning the conglomerate to the Grantmire Formation.

Figure 5.21. - Pebbly lithic wacke of the middle member of the Bay St. Lawrence Formation, locality O. Detrital garnet, muscovite, and feldspar indicate a metamorphic source area.

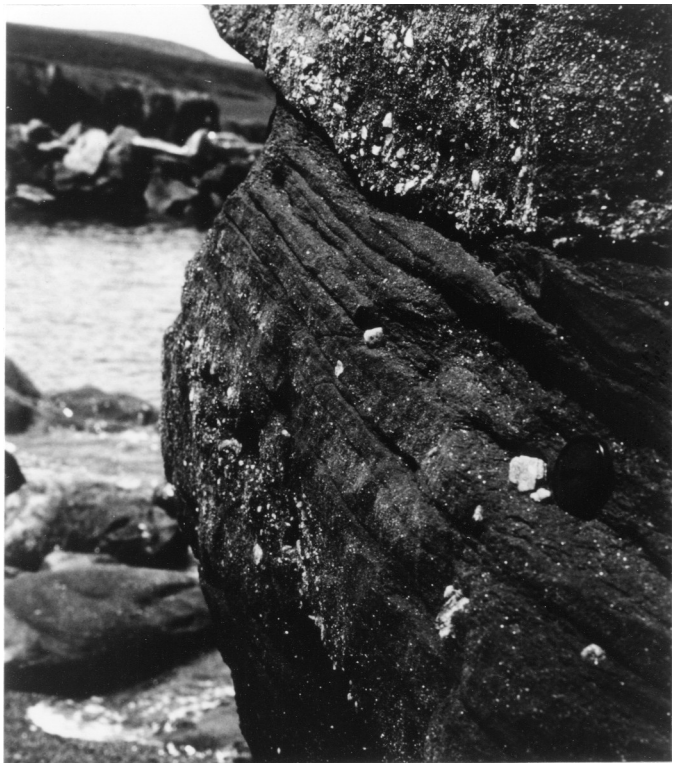

Figure 5.22. - Coarse, boulder conglomerate horizon in the middle member of the Bay St. Lawrence Formation. The large boulder below the hammer is of limestone of Windsor aspect.

Figure 5.25. - Coastal exposure looking east across the Salmon fault zone, showing folded and faulted Bay St. Lawrence mudrocks. Deformation decreases away from the main fault (marked by scree in the foreground). Gently dipping Bay St. Lawrence mudrocks underlie the lowlands visible in the background, while the highlands are underlain by basement rocks of the Cape North Massif.

Figure 5.27. - The Bear Hill fault zone seen from offshore. The fault juxtaposes north-dipping Meat Cove siltstones (left) with Lowland Cove volcaniclastic sandstones (off the photograph to the right). The cliff is about 250 meters tall.