Late Triassic Redbeds, Kingsport Area

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Continental redbeds of the Late Triassic Fundy Group (Klein 1962) are well exposed along the shore in the vicinity of Kingsport (Fig. 1). A columnar section of these rocks is presented in Figure 2.

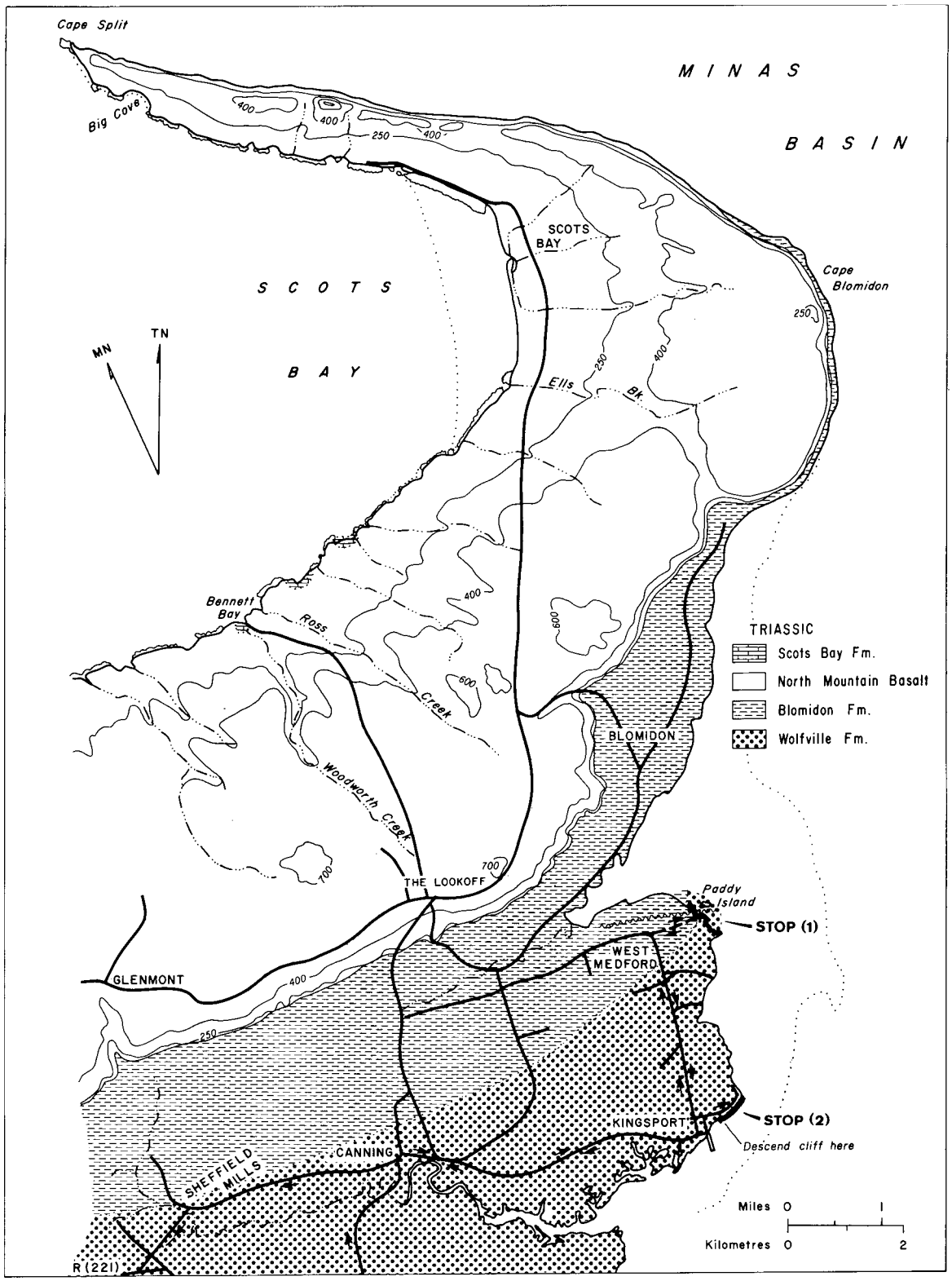

Fig. 1. Geologic map of the Kingsport area.

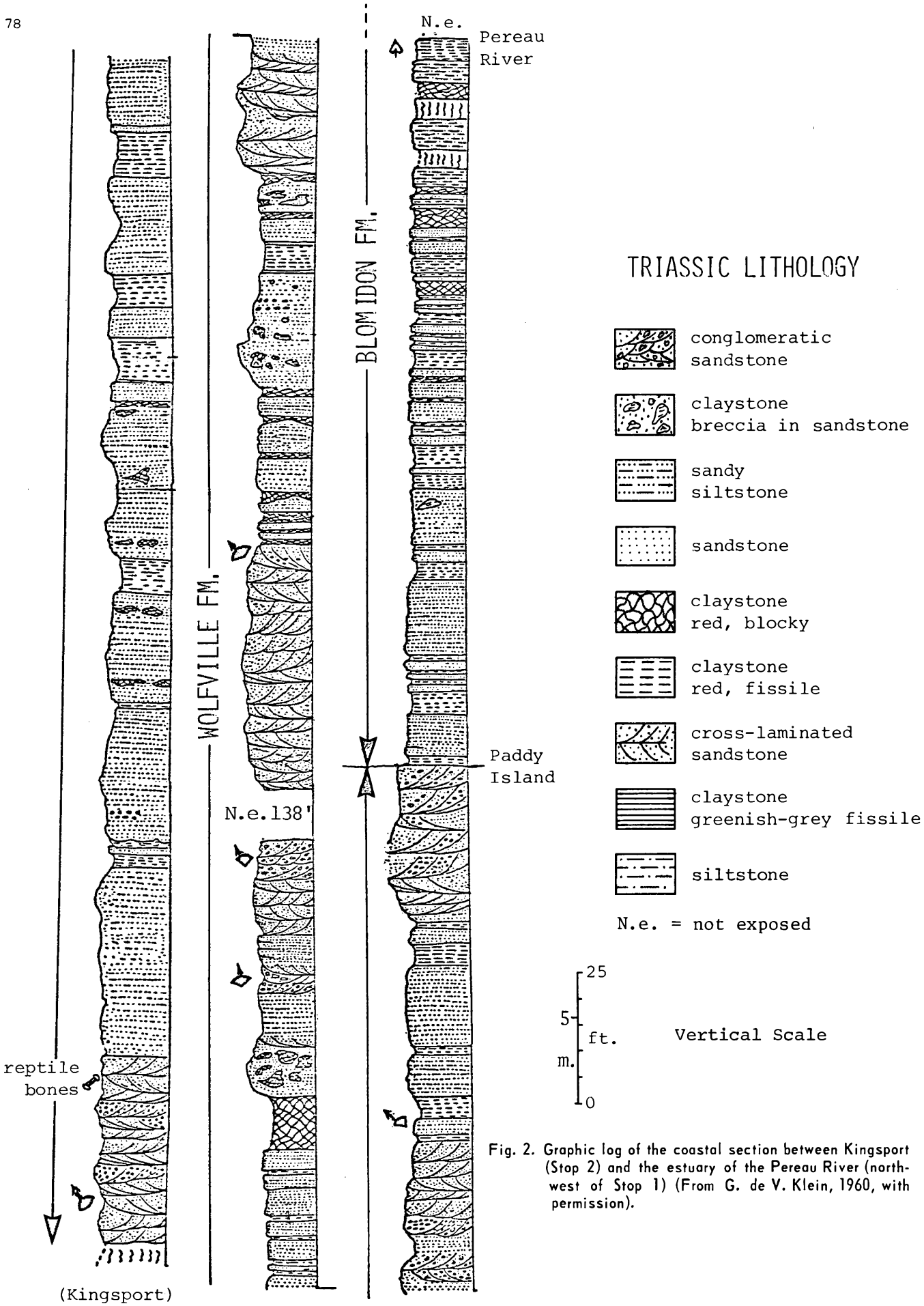

Fig. 2. Graphic log of the coastal section between Kingsport (Stop 2) and the estuary of the Pereau River (northwest of Stop 1) (From G. de V. Klein, 1960, with permission).

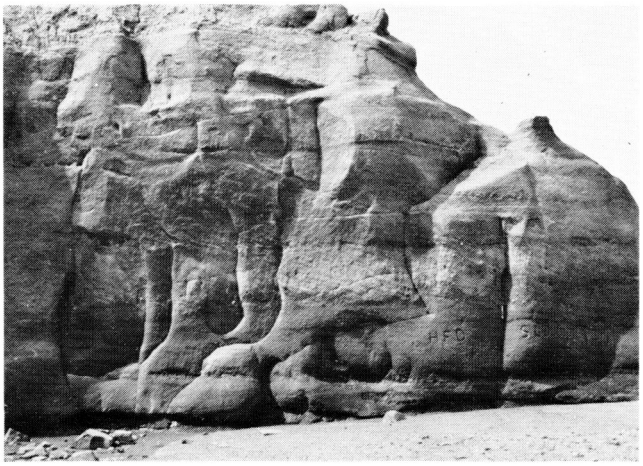

Fig. 3. Thick-bedded sandstone of the Wolfville Formation Evangaline Beach, 2¼ mi (4 km) southeast of Kingsport. Note large-scale cross-stratification.

These sediments were deposited unconformably on pre-Mesozoic rocks that were down-dropped on faults along the north side of a half-graben. A lower fluviatile unit (Wolfville Formation, 60 to 750 m thick) grades upwards into a partly lacustrine and partly fluviatile unit (Blomidon Formation, 7 to 370 m thick). Capping these soft sediments is 270 m or more of North Mountain tholeiitic basalt flows. An incompletely exposed unit of sandstone, mudstone and limestone (the Scots Bay Formation) overlies the basalts. Non-marine vertebrate fossils have been collected from the various sedimentary units, but are fairly rare. The strata are folded into a broad, open syncline with a gently southeastward-plunging axis that bisects Scots Bay. The basalts form a prominent cuesta that overlooks a fertile farmland underlain by the Wolfville and Blomidon Formations.

A stop of several hours is planned in the vicinity of Paddy Island (Stop 1), where the contact between the sandy Wolfville Formation (370 m thick at this locality) and the muddy Blomidon Formation (370 m thick here) is exposed. The Wolfville Formation is mainly red sandstone with lenticular beds of conglomerate (Figs. 3-5) and minor, interbedded siltstone. The Blomidon Formation consists of laminated red siltstone and mudstone with minor fine-grained sandstone.

Fig. 4. Conglomeratic and coarse-grained sandstone with prominent cross-bedding, Wolfville Formation (Stop 1).

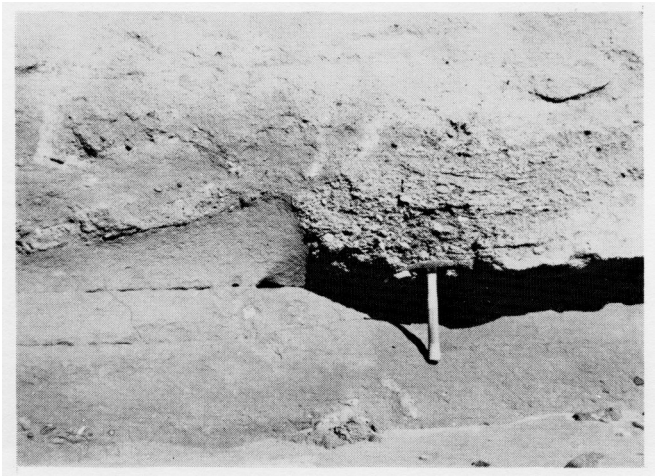

Fig. 5. Scour-and-fill structure containing conglomerate and conglomeratic sandstone and underlain by mudstone, Wolfville Formation (Stop 2). The light-coloured (calcareous) patches below and to the left of the hammer are a possible indication of former plant roots (see text).

Klein (1960, 1962) described the sedimentology of these rocks in detail. The comments presented here serve only to draw attention to some of the more interesting sedimentary structures to be observed in these rocks. Exposure of overbank, mudstone deposits in the Wolfville Formation show the development of paleosoils at several horizons (Fig. 5). In this figure, light-coloured calcareous tubes (barely visible in the photograph) extend vertically below a steep-sided scour depression, and probably represent the diagenetic development of calcite around the plant roots. At some exposures, the calcareous tubes have bifurcating apophyses. These "roots" sometimes extend down past the mud into the sand beds below. Such soil horizons are particularly well developed at Kingsport (Stop 2).

Shallow troughs containing conglomeratic material are a common feature in the Wolfville Formation. They are commonly overlain by cross bedded, immature sandstone and conglomeratic sandstone (Fig. 4). In exceptional cases, overbank muds are preserved above the cross-bedded sandstone, and an entire sedimentation cycle is represented.

A striking characteristic of the Wolfville Formation is the lenticular nature of the strata.

Fig. 6. Sand-filled channel within finer-grained sediments, in middle part of the Blomidon Formation (near Stop 1).

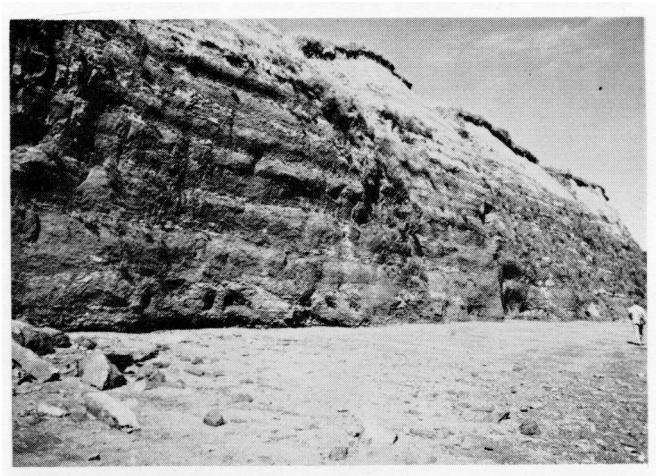

Fig. 7. Strata of mudstone, siltstone and fine-grained sandstone of the Blomidon Formation, with characteristically even and laterally continuous bedding (Stop 1).

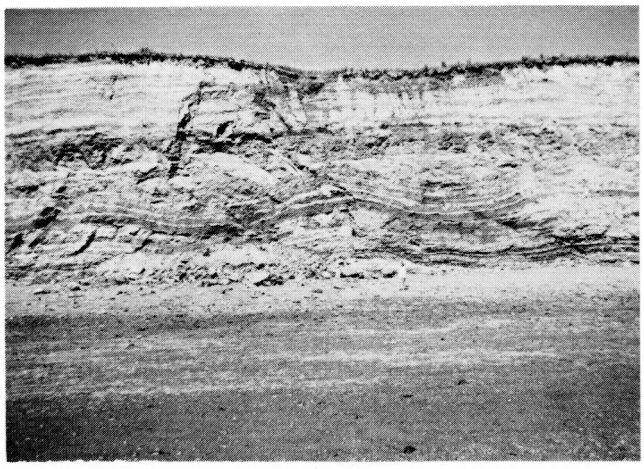

Fig. 8. Undulatory bedding in the Blomidon Formation (Stop 1), a product of the differential compaction of channelized sediments.

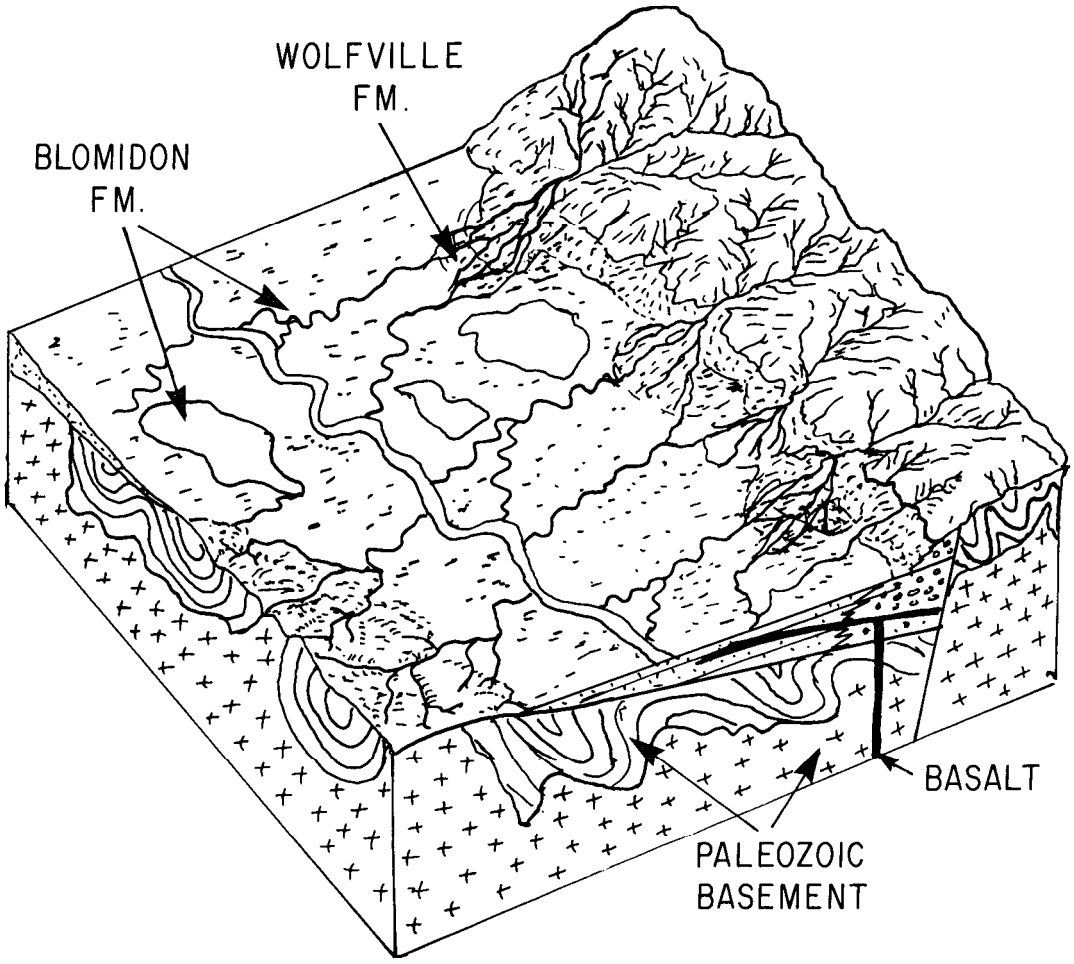

Fig. 9. Depositional setting of the Late Triassic sediments of Nova Scotia (adapted from Fig. 13-21 of Clark and Stearn, 1968).

In contrast, the Blomidon Formation is composed of strata that maintain constant thicknesses for considerable distances along strike (Fig. 7), particularly in the upper part of the formation. Near the base of the Blomidon Formation, some steep-walled, sand-filled channels are embedded in laminated muds (Fig. 6). A well-developed accretional mudbank occurs near the contact. Compaction folds associated with channels are shown in Figure 8.

A lacustrine environment for much of the Blomidon Formation is suggested (Klein, 1960, 1962) by the presence of uniform stratification, thin and rhythmic, very fine sand-silt-clay laminae and the lacustrine crustacean *Isaura ovata* (Lea).

The depositional environment of the Wolfville and Blomidon Formations is depicted in Figure 9. The two formations are partly coeval, as the diagram would suggest.

References

CLARK, T.H., and STEARN, C.W., 1968, Geological Evolution of North America; 2nd ed., The Ronald Press Co., New York, 570 p.

KLEIN, G. de V., 1960, Stratigraphy, sedimentary petrology and structure of Triassic sedimentary rocks, Maritime Provinces, Canada; Unpub. Ph. D. thesis, Yale Univ.

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