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CAMBRIAN LITHOSTRATIGRAPHY, NOOK-PRESTON-PENGUIN AREA

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Cambrian rocks on the North Coast occupy a belt extending from Deloraine west through Black Bluff, with an offshoot north to the coast through the Dial Range. Sections 1-12 refer to the north-eastern margin of the basin, from Nook west to Preston, then north to Penguin. All lie within a few miles of the present exposed edge of the Precambrian, with 4, 5, 10, 11 and 12 adjacent.

Section 4, 10 and part of 11 are based on detailed traverses. The remainder are constructed from field mapping, in which the stratigraphy is of reconnaissance standard only, and the thicknesses given are approximate. Section 12 has been previously described by Hughes (1953) and section 7 by Banks (1956, p. 184 and fig. 2f); sections 10 and 4 are mentioned by Banks (1956, pp. 184, 185 respectively), while sections 1-7 are after Burns (1957).

Seven lithologies are represented, with in the case of alternation, the subordinate indicated by a wedge within the dominant type.

The basic lava, or spilite which shows pillow structure, contains agglomerates and chert and mudstone xenoliths. It was described by Scott (1952).

The intermediate lava, or keratophyre, is frequently vesicular, and is commonly interbedded with volcanic breccias.

The chert varies from a relatively pure, translucent, thick-bedded type with fine laminae marked by iron ore or clay and interbedded with thick or flaggy bedded claystones with a transitional lithologies present, to an opaque, thin-bedded, finely laminated chert with occasional beds of siltstone or, in one case, conglomerate with laminae showing sedimentary contortions, and sometimes very red or black with haematite and graphite.

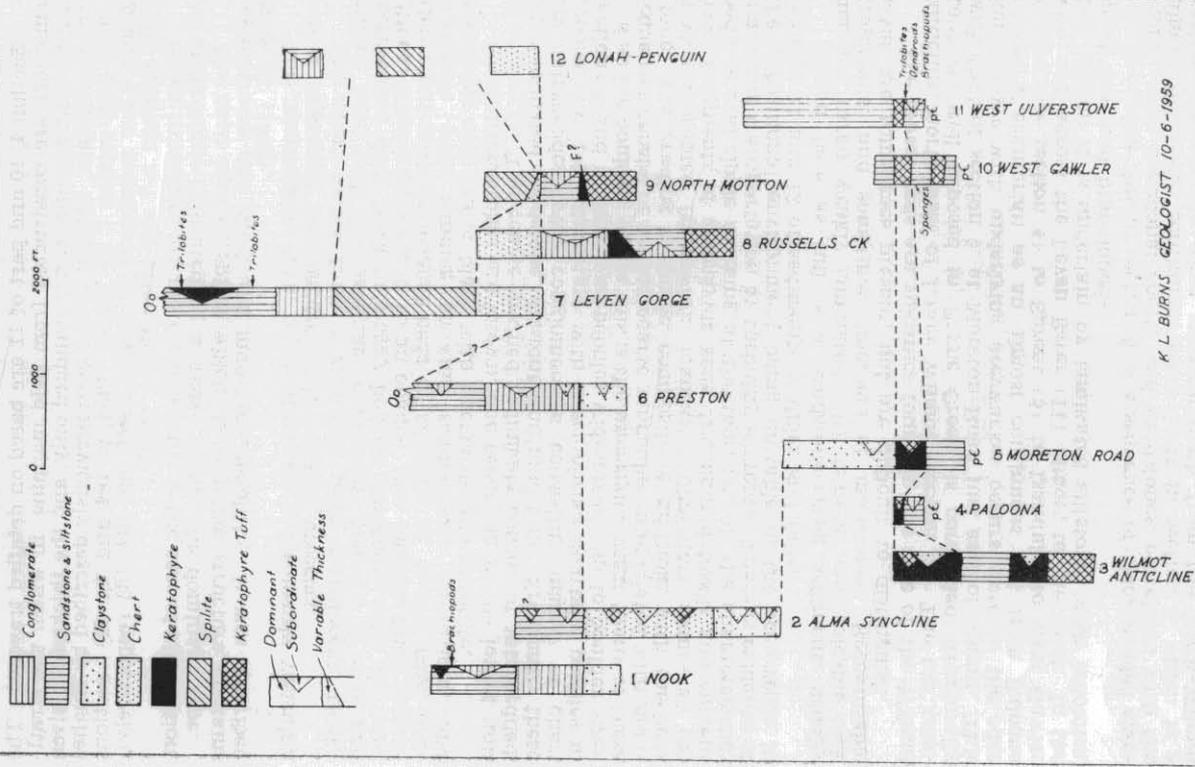
Several limestones are known, one occurring in the lowest unit of section 2. The coarse grained sediments consist of interbedded, interlaminated sandstone, siltstone and mudstone. Frequently these are interbedded with conglomerates consisting mainly of chert pebbles (av. 1-2" diameter) with Precambrian quartzite pebbles in sections 1 and 6, limestone pebbles widespread (up to boulder size) and spilite boulders where this is the underlying rock. Many of these sequences consist of graded coarse sandstone intercalated with mudstone. The grading is simple, composite or multiple, with the beds having disrupted framework, loadcast sedimentary scours at the base, fragments of underlying beds, fragmented fossils and current bedding and ripple marking at the tops, i.e., all the characteristics indicating transportation by turbidity currents. There is evidence of the depositional environment being unstable in the occurrence in sections 11 and 12 of sedimentary slides and rolls.

Shown here as tuff is a sandstone-grade sediment, usually massive, rarely weakly laminated, with feldspar and volcanic rock fragments, and sometimes boulders of mudstones. Recognisable lavas are sometimes present, but are difficult to distinguish.

The lowest beds are volcanics found in the core of the Wilmot anticline, north-west of Lower Wilmot (section 3). The top keratophyre, well exposed in Payne Creek, is correlated structurally with that of section 5, at Moreton Road just east of Sprent. This keratophyre with underlying greywackes occurs close to the edge of the Precambrian as an almost continuous belt from Palooona Bridge (see section 4) to Sprent (5) to Isandula, to West Gawler (10) and across the Leven River (11) almost to the coast. In the last section it is underlain by laminated siltstones with trilobites, dendroids, and brachiopods.

Overlying this in section 5 is a sequence of thick-bedded claystones, with occasional cherts and sandstones, correlated with the almost physically continuous equivalents in section 2, which is a section through the Alma syncline south from the Forth-Wilmot junction. Correlation between Nook, Alma and Preston (1, 2 and 6) are based on lithology, and match the known structure.

COLUMNAR SECTIONS OF CAMBRIAN, NOOK-PRESTON-PENGUIN AREA



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FIGURE 10.

5 cm

Along the Dial Range, the sequence from chert up through spilite to greywacke conglomerate and sandstone occurs in several places (7, 12 and 9). This chert at North Motton is correlated on structural grounds with that in Russells Creek (section 8), with which it is almost continuous.

The greywacke sequence underlying the chert in Russells Creek, with the interbedded vesicular keratophyres, may be equivalent to the greywacke of section 6 east of Preston near the Castra road (see diagram). The alternative is that the chert and spilite form a strongly transgressive interruption to the greywacke sedimentation of sections 6, 7, 8 and 9. The alternative given is preferred since in the West Gawier River, apparently underlying the chert of section 7, is a greywacke conglomerate and mudstone with a spilite lens below the conglomerate—if this sequence is valid, the stratigraphy becomes as shown, with a spilite lens at the level of the base of the greywacke conglomerate of section 6.

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