THE WIRRILDAR BEDS

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DEPARTMENT OF MINES
SOUTH AUSTRALIA

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THE WIRRILDAR BEDS

This is a new name and applies to a poorly exposed sequence of feldspathic and micaceous sandstones, of ?late Precambrian to ?lower Cambrian age, in the North West Province of South Australia.

Origin of name

One of the 1:63 360 sheet areas on which this Formation outcrops is Wirrildar on the western side of BIRKSGATE 1:250 000 sheet area (Major et al., 1971).

Locality

Because of the generally poorly outcropping nature of the Beds only a type area will be located and the determination of a type section (or sections) must await more detailed mapping. Most of the sequence can probably be seen in the area near the intersection of the Wirrildar, Poondinna, Pintamin and Kulyong 1:63 360 sheet areas on BIRKSGATE i.e. Lat. S. 27°30', Long E. 129°30'. (see Fig. 2).

Map Letter Symbol: Gi

General lithology:

Kulyong Volcanics
unconformity
Top-south-not seen

Wirrildar Beds (±?2,700 metres)

- very fine grained micaceous sandy siltstone
- fine grained feldspathic micaceous sandstone
- flaggy dolomite
- arkosic sandstone and micaceous sandstone

Bottom-north-not seen
conformity or para conformity
Punkerri Sandstone

The Wirrildar Beds outcrop very poorly but trend lines (of mulga trees) can be seen very clearly on air photographs.

The sequence as described above is not seen along one continuous section but is a composite from two areas. The basal arkosic sandstone outcrops on the southeast corner of Wirrildar. The upper micaceous sandstone and dolomite are seen east of the Kulyong Volcanics on eastern Kulyong. The areas are thought to be related by synclinal folding of the Wirrildar Beds as shown in Fig. 2. However because of the uncertainty of the nature of the folding no stratigraphic column will be presented in this paper. Further field work is necessary to determine the stratigraphy more precisely. Generally speaking the Wirrildar Beds appear to be coarser grained and more feldspathic towards the base but become finer grained, more micaceous, dolomitic and calcareous towards the top. The thickness of 2 700 metres is estimated from one dip of 25^{o} in a sequence which is poorly exposed and in which no base or top have been seen.

Stratigraphic Relationship and Age

The Wirrildar Beds overlie the Late Precambrain Punkerri Sandstone (Pound Quartzite equivalent, Major, 1973) and unconformably underlie the Kulyong Volcanics which have a minimum K/Ar age of 480 m.y. i.e. Early Ordovician (Major and Teluk, 1967). The contact of the Wirrildar Beds with the Punkerri Sandstone is not seen but is presumed to be conformable, paraconformable or disconformable (see Dunbar and Rogers, 1957, p.117). Although the units are structurally conformable the coarser grained feldspathic sandstones in the lower Wirrildar Beds may imply some syn-depositional uplift and erosion of the crystalline basement with possible erosion of the Punkerri Sandstone. On this assumption the contact may be paraconformable or disconformable.

The contact of the Wirrildar Beds with the overlying Kulyong Volcanics is an unconformity because the Wirrildar Beds are closely folded while the Volcanics are flatlying.

The folding of the Beds is thought to have occurred in about the middle Cambrian (see below).

Due to the lack of information about the upper and lower contacts of the Wirrildar Beds the age is in doubt. It may be latest Marinoan or early Cambrian i.e. possible time equivalent of the Uratana Formation in the Flinders Ranges (see Daily, 1972).

The relationship of the Wirrildar Beds and the middle to late Cambrian Observatory Hill Beds (Wopfner, 1969) on GILES (and near Mount Johns on EVERARD) is not known. Their lithologies are broadly similar except that no cherts have, as yet, been seen in the Wirrildar Beds. The latter are folded on a close style similar to that of the Adelaide System sedimentary rocks (see BIRKSGATE map sheet) and therefore presumably folded at the same time, whereas the Observatory Hill Beds are flat lying on GILES and only gently folded on EVERARD where they overlie tightly folded Adelaidean rocks and are themselves overlain by the Cambro-Ordovician Mount Chandler Sandstone. On the bases of this stratigraphic relationship and the different fold styles, it is inferred that the times of deposition of the Wirrildar and Observatory Hill Beds were separated by a ?middle Cambrian episode of folding.

Correlations

Lowry et al (1971) do not describe any rocks, from the Officer Basin in Western Australia, which are similar in lithology or stratigraphic position to the Wirrildar Beds.

Wells et al. (1970) do not describe any rocks from the Amadeus Basin in the Northern Territory which appear to be lithological equivalents of the Wirrildar Beds, although there are possible time equivalents (e.g. Tempe Formation, Chandler Limestone and Todd River Dolomite).

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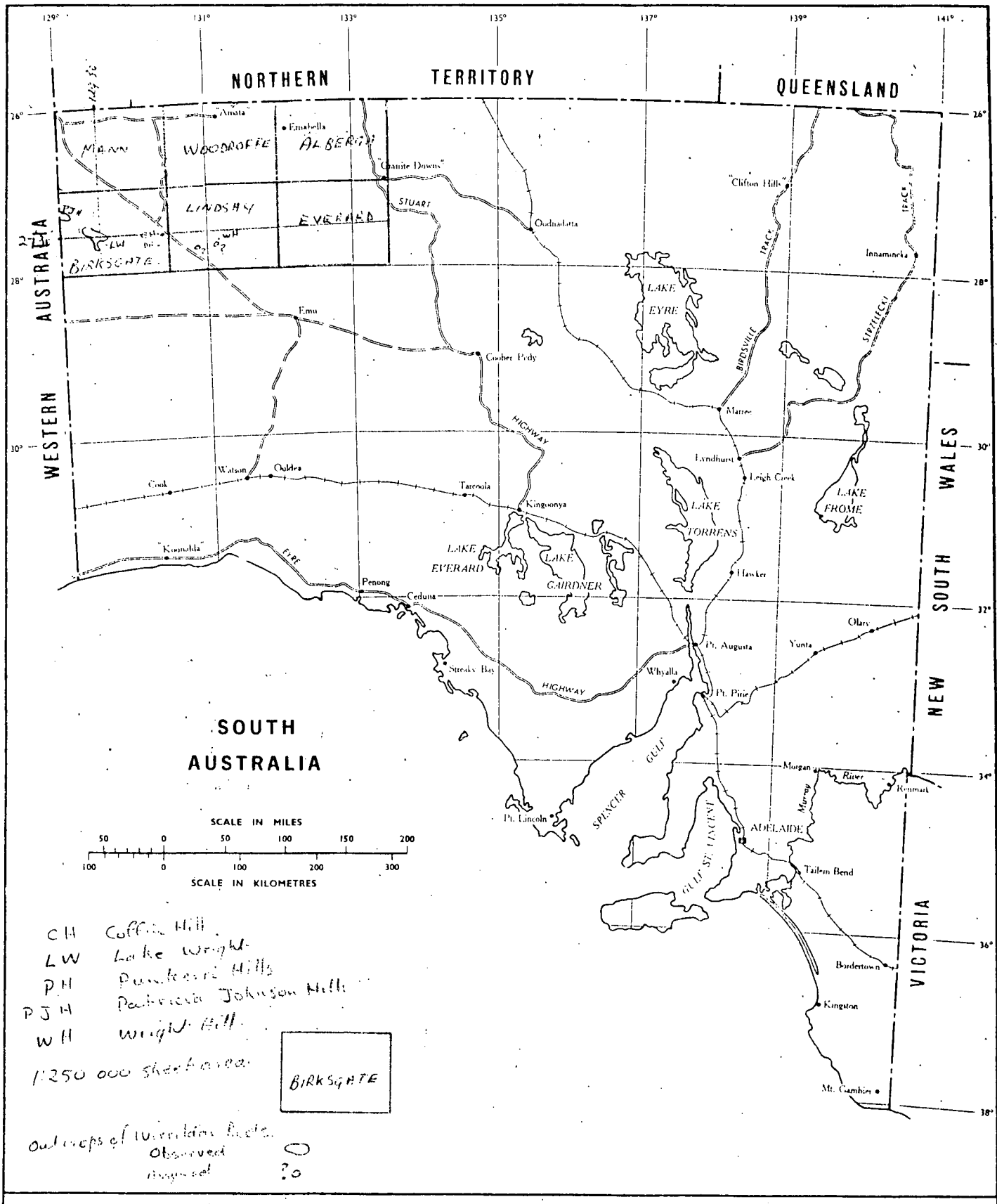

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Compiled. R B M	The Murravian Beds Locations of known and inferred outcrops Fig 1	Date:
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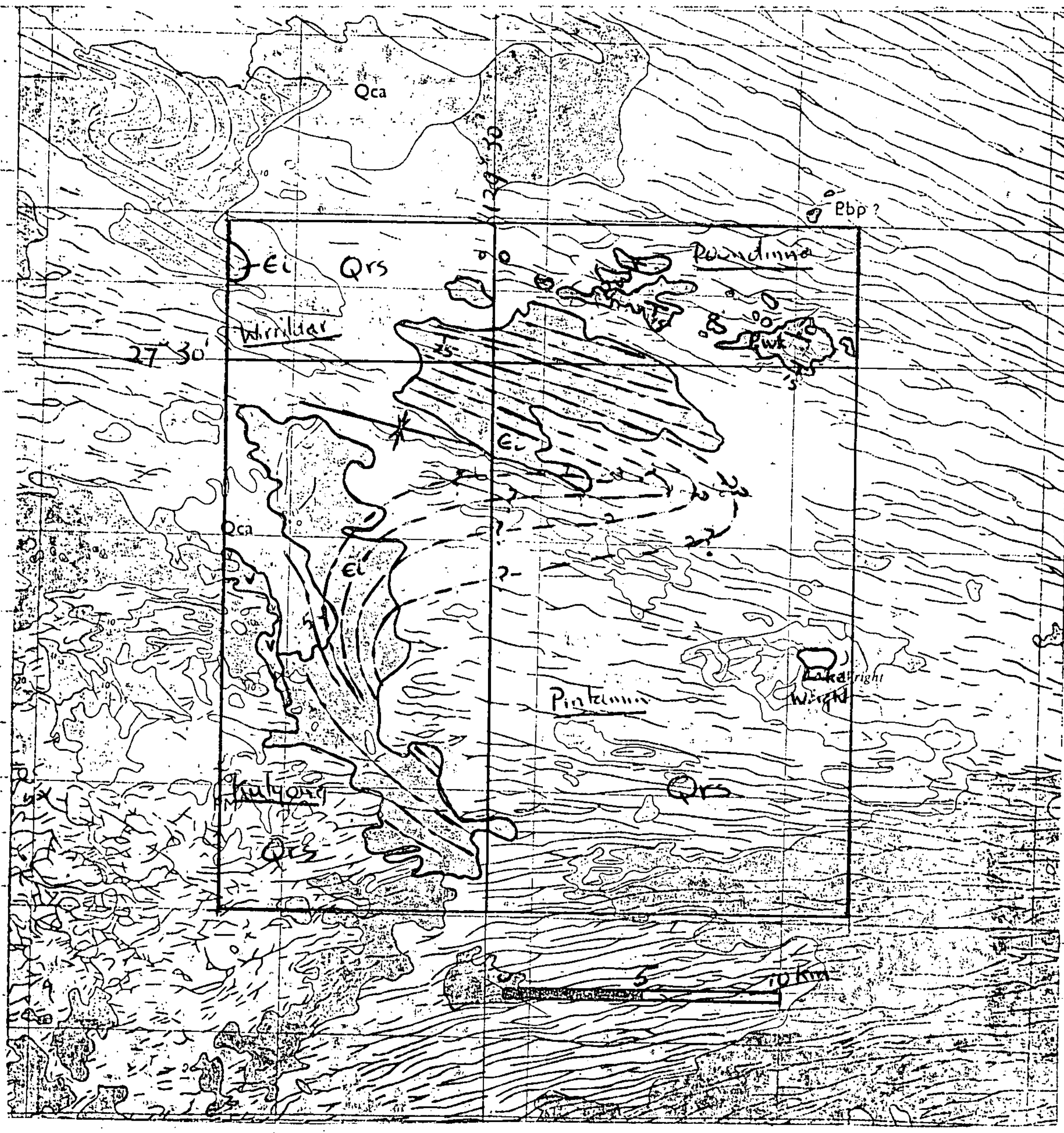

The Wirrildar Beds
Locality of Type Area
Modified from BIRKSGATE map sheet
Fig 2
Reference
Qrs sand dunes and sand spreads
vv Kulyong Volcanics
Ei Wirrildar Beds
Pwk Punkerri Sandstone

Trend lines
airphotos
assumed — — ? — — — ? — —
Assumed syncline

Draftsman, please draw the lines + letters in blue biro only — the rest is to be generalized as Qrs
thanks
Bob Major