

1984/71. The Preolenna Coalfield

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Abstract

The Preolenna Coalfield, located 20 km south-west of Wynyard, is of minor economic importance. The Preolenna Coal Measures are of Early Permian age and are correlated with the Mersey Coal Measures further east. The seams are thin, from 220-600 mm thick, discontinuous, dislocated by faulting and dip steeply at 14°-25°. The inferred reserves of coal are very small and the potential for further exploration is limited.

LOCATION AND ACCESS

The Preolenna Coalfield is located 20 km south-west of Wynyard in north-western Tasmania. Access to part of the field is gained by unsealed roads and rough bush tracks, although much of the area is accessible only on foot. A railway from Flowerdale to Preolenna was opened in 1917 and extended a further 7.6 km to Maweena in 1924 to provide transport for coal and timber products. The railway was closed in November 1931 and dismantled.

GENERAL GEOLOGY

The oldest rocks exposed in the Preolenna Coalfield are mudstone and diamictite of the Wynyard Tillite. As the base of this unit is not exposed at Preolenna the thickness is not known. Overlying the Wynyard Tillite is a 135 m thick sequence called the Inglis Siltstone, which is in turn overlain by the Preolenna Coal Measures. In the area of the Jessie Gorge, the coal measures are overlain by the Flowerdale Sandstone.

Dolerite has intruded and dislocated the Permian sequence. Areas of higher ground, such as Diabase Hill, are now capped with dolerite. Tertiary basalt flows cover extensive tracts of land south of Preolenna (Bravo, in Gee, 1977).

The Wynyard Tillite is composed dominantly of a conglomeritic bouldery mudstone or diamictite, with rhythmite deposits being recorded at several horizons. The transition from the tillite to the Inglis Siltstone is rapid. Lenticular beds of Tasmanite-bearing oil shale up to 0.6 m thick occur towards the base of this unit. The Inglis Siltstone becomes more fossiliferous towards the top with a variety of molluscs, brachiopods, bryozoans and crinoid debris occurring in fossiliferous pyritic siltstone beds towards the top of the unit.

The Preolenna Coal Measures, which overlie the Inglis Siltstone, consist of interbedded white, clean, quartzose sandstone, micaceous sandstone, shale and thin laminations of carbonaceous material. The sandstone is fine to medium-grained, well sorted and usually massively bedded. *Glossopteris* leaves are occasionally found.

Four seams of coal crop out on the north-western bank of the Jessie Gorge near Preolenna (Bravo, in Gee, 1977). Seams also crop out in the Flowerdale River valley south of Preolenna over a distance of three kilometres (Threader, in Gee, 1977). The seams in both areas vary in thickness from 0.2-0.6 m. Mining activity has taken place in both the Jessie Gorge (Preolenna Coal Mine) and in the Flowerdale River valley (Torbanhill or Meunna Coal Mine). Coal outcrops are also recorded from

near Relapse Creek, south-west of Preolenna and west of West Takone (Hughes, 1962). The coal seams exposed near Preolenna dip at 14-25° to the west (Hills et al., 1922), although Bravo (in Gee, 1977) recorded one outcrop of coal dipping at 40°.

The seams, which are part of the Preolenna Coal Measures, may be correlated with the Mersey Coal Measures of Latrobe and so are Sakmarian/Artinskian in age. Previously these seams have been correlated with the Greta Coal Measures in New South Wales, which are Artinskian in age, and so in fact are younger than the Preolenna and Mersey Coal Measures (Clarke and Banks, 1975).

The Preolenna Coal Measures are overlain by the Flowerdale Sandstone, a 215 m thick unit which has been subdivided into four lithologies. The basal part of this unit is composed of pebbly sandstone with a fossiliferous horizon, which is overlain by a dirty "greywacke" sandstone. The third lithology is an interbedded sequence of fine-grained sandstone and siltstone which grades upwards into a white, argillaceous, coarse quartz sandstone (Bravo, in Gee, 1977).

The geology of the area is shown in Figure 1.

PREVIOUS MINING HISTORY

In 1869 a Mr T. Stephens exhibited to the Royal Society of Tasmania a pebble of "kerosene shale" found near the mouth of the Inglis River. Stephens stated that further pieces had been found at the junction of the Inglis and Calder Rivers.

Montgomery (1896) noted that pebbles of coal had been found on beaches near Wynyard, and "high up in the Inglis River and Seabrook Creek", although no seams had been located in outcrop.

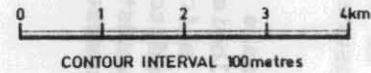
Outcrops of coal were discovered by Messrs Lowrie and Harris while cutting a track from the Calder Road to the Arthur River (Twelvetrees, 1903).

Waller (1902) inspected the newly discovered outcrops, some 22-24 km from the coast. Three outcrops were inspected, with the upper seam being the only one Waller considered to be of economic importance, being 500-560 mm thick. The coal was described as being brownish-black to black in colour with a resinous to dull lustre and a conchoidal fracture. Shortly after this inspection was made, the North West Coal and Shale Company was formed and took out mining leases in the area between the Flowerdale and Jessie Rivers.

Outcrops on these leases were examined and sampled by Twelvetrees (1903) and Hills (1913). Twelvetrees (1903) inspected one adit driven for four metres on a seam of coal 500 mm thick. The adit was driven in a south-westerly direction at a dip of 10°, and called the "Shale Tunnel". This adit, on an outcrop of coal in the south fork of Fenestella Creek, was also inspected by Hills (1913), although no further work had been done since Twelvetrees' (1903) visit. A second adit named the "Cliff Tunnel" was described by Hills (1913). This adit was six metres long and was driven in on a seam cropping out on the spur between Spirifer and Fenestella Creeks. The seam was 600 mm thick and dipped to the west at 25°. In total the North West Coal and Shale Company drove three short tunnels from 4.8-6.0 m in length on outcrops of coal, before abandoning the field.

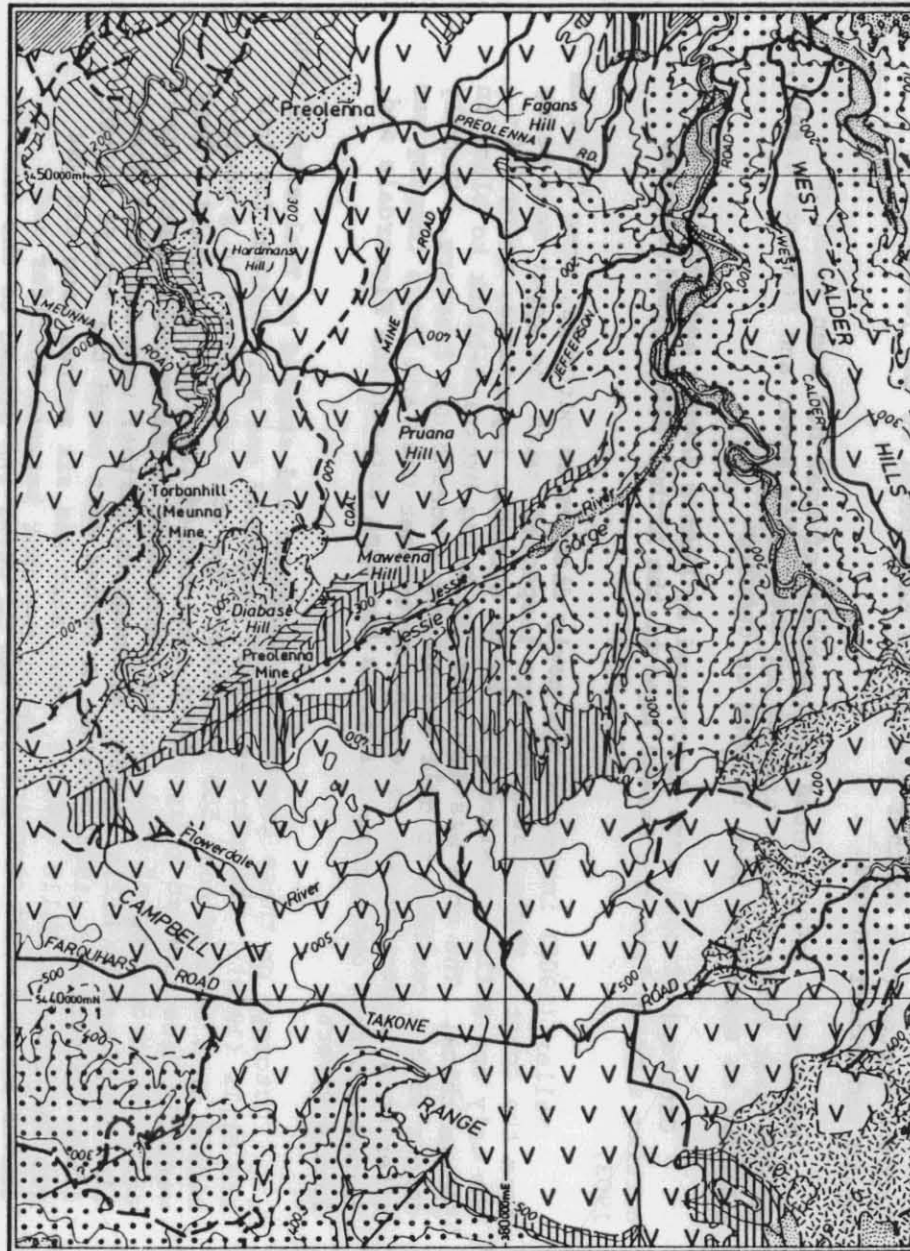
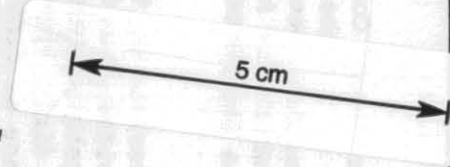
GEOLOGICAL SKETCHMAP
PREOLENNA COALFIELD

Geologist: C.A.BACON
 Geology after GEE et al.1967



LEGEND

- QUATERNARY**
 - Sand and gravel
 - TERTIARY**
 - Basalt
 - Sand and gravel
 - JURASSIC**
 - Dolerite
 - PERMIAN**
 - Flowerdale Sandstone-dominantly coarse sandstone with fossiliferous and pebbly sandstone and siltstone at base
 - Preoleнна Coal Measures-sandstone with carbonaceous shale and thin coal seams
 - Inglis Siltstone-mudstone with fossiliferous siltstone at top and oil shale at base
 - Wynyard Tillite-mainly pebbly mudstone including tillite and prominent sandstone beds
 - PRECAMBRIAN KEITH METAMORPHICS**
 - Phyllite
 - Pelitic, calcic and basic schist
 - Fault-position approximate
 - Geological boundary-position approximate
 - Adit
- LOWER
PARMEENER
SUPER-GROUP



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Figure 1

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By 1913, the new lease holders, Weston and Graue had dug a tunnel 1.8 x 1.4 m for a distance of 62 m on an outcrop in Preolenna Creek. A 1.8 x 1.2 m shaft was sunk to intersect the tunnel. Four seams were intersected in the tunnel and two in the shaft. None of the seams were more than 600 mm thick. Coal bins were erected at the tunnel mouth and a wooden tramway laid to the end of the road. Coal was mined from two of the seams, then hauled by horse-drawn tram some 120 m up a grade of 1 in 4, then transported 30 km by bullock wagon to Wynyard. The mining operation was not a success. Production statistics indicate that mining in this area lasted from 1918-1924.

By 1921, the leases covering the Preolenna Coalfield had been taken over by the Preolenna Coal Company. The adit dug previously in Preolenna Creek by Weston and Graue was extended to 67 m, and another adit 2.1 x 1.7 m was driven in for 120 m close to the first adit. Further south, a tunnel 3.0 x 1.7 m, carrying a double tramline, had been driven for 180 m (Hills et al., 1922). A number of seams were cut in each of these tunnels, although none of the seams was more than 600 mm thick.

In 1925, the Meunna Coal Mining Syndicate was formed and took out mining leases in the Flowerdale River valley, three kilometres north-west of the Preolenna Coalfield leases. The syndicate undertook some initial exploration work, discovering three seams by means of trenching, and dug a dip adit for 18 m before asking the Government for financial assistance to continue with their exploration. In response to this request, an inspection of the area was made. Reid (1925a, 1925b) records that three seams, 450-600 mm thick, were exposed on the eastern bank of the Flowerdale River and could be traced for 800 metres. The dip adit had advanced to 36 metres. A further inspection was made of the Meunna Coal Mine in 1926 when up to 100 t of coal was being produced per week (Reid, 1926). In 1928 a dip tunnel advanced to 25 m was inspected, but mining had ceased (Scott, 1928). Production statistics indicate that mining started in 1926 (10 t) with 53 t being produced in 1928 (the year of Scott's visit). Mining ceased in 1931 although small tonnages were won in 1935 and 1936 (2 and 6 tonnes respectively).

COAL QUALITY

Analyses available for coal from the Preolenna Coalfield are largely of an historical nature. Twelvetrees (1903) and Hills (1913) collected samples from all available outcrops and had analyses made. A selection of these results are given below.

	1	2	3	4	5	6	7	8
Moisture (%)	0.5	1.1	0.7	0.7	0.5	1.17	0.5	1.27
Ash (%)	2.3	4.1	6.5	6.6	2.0	7.58	6.0	4.82
Volatile matter (%)	76.2	71.6	45.9	48.3	75.5	40.46	47.3	42.45
Fixed carbon (%)	21.0	23.2	46.9	44.4	21.0	50.79	46.2	51.46
Sulphur					1.0		4.4	2.26

1. Sample from Tunnel Seam (Twelvetrees, 1903) in Fenestella Creek.
2. Sample from outcrop in cliff 60 m from Tunnel Seam (Twelvetrees, 1903).
3. Sample from 500 mm thick seam in Fenestella Creek (Twelvetrees, 1903).
4. Sample from 450 mm thick seam in Camp Creek (Twelvetrees, 1903).
5. Richest kerosene shale, Preolenna from Tunnel Seam in Fenestella Creek (Hills, 1913).
6. Average of eleven samples of black cannel coal, Preolenna (Hills, 1913).

7. Bright coal from seam in adit in Preolenna Creek (Hills, 1913).
8. Bright coal from Tunnel Seam in Fenestella Creek (Hills, 1913).

Interest was shown at one stage in determining the oil yield from the cannel coal, but the venture was deemed to be an uneconomic proposition (Rogers, 1934).

In 1951 a 22 kg sample of coal was collected from one of the seams in one of the adits in Preolenna Creek (Hughes, 1951). However the results of analysis of this coal are not available.

A coal seam 300 mm thick cropping out in a tributary of Relapse Creek south-west of the main Preolenna coalfield was sampled by Hughes (1962). The seam dipped to the north (340°-360°) at 11°. This and another nearby (300 mm thick) outcrop in Lowrie Creek were sampled in 1971 (Nye, 1971a, 1971b). Part of the sample collected in Relapse Creek was tested for coking purposes but was reported as having no useful coking properties (Nye, 1971b).

A one kilogram spot sample was collected from the entrance of one of the three main adits in Preolenna Creek in 1970 (Smith, 1971). The analyses of these samples are as follows:

	1	2	3	4	5	6
Moisture (%)	0.9*	0.9	4.3†	9.3	8.3	11.1
Ash (%)	5.0	8.4	7.3	20.4	14.8	13.7
Volatile matter (%)	45.4	40.8	35.8	22.3	28.8	39.4
Fixed carbon (%)	48.7	50.8	52.6	48.0	48.1	35.8
Total sulphur (%)	1.74	4.06	1.5	0.14	0.43	0.40
Crucible swelling number	5.5	-	-	-	-	-
Specific energy (MJ/kg)	33.8	32.5	29.1	19.7	23.1	20.9
Specific gravity (g/cm ³)	-	1.25	-			

* air dried moisture

† internal moisture

1. One kilogram spot sample from entrance of one of the adits in Preolenna Creek (Smith, 1971).
2. Sample taken from outcrop of seam 300 mm thick west of West Takone, in tributary of Relapse Creek (Hughes, 1962).
3. Sample taken from same outcrop (Nye, 1971a).
- 4, 5, 6 Sample taken from outcrop 300 mm thick in or near Lowrie Creek (Nye, 1971b).

RECENT EXPLORATION

The coalfield was examined briefly in 1971 by an exploration company and a one kilogram sample of coal collected for analysis. Two holes were drilled in 1981 at the southern end of Coal Mine Road. These holes, drilled to 29.57 m and 48.42 m respectively, terminated in the Flowerdale Sandstone, stratigraphically above the Preolenna Coal Measures.

FUTURE POTENTIAL

Due to the thin, lenticular nature of the seams, which dip steeply

at 14°-25°, and are dislocated by faulting, the potential of this coalfield for further exploration is limited. The inferred in situ reserves of black coal are very small.

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