

1986/03. The Adventure Bay coalfield

C.A. Bacon

Abstract

The Adventure Bay coalfield is located on the western margin of Adventure Bay on South Bruny Island. The coal measures are correlates of the Cygnet Coal Measures and are of Late Permian age. A seam was worked intermittently from 1879 to the early 1890s by means of two adits and three shafts. The seam is thin, <0.5 m thick, and of limited areal extent. The coalfield is of no economic importance although the previous mining activity is of historical interest.

LOCATION AND ACCESS

The Adventure Bay coalfield is located on the western margin of Adventure Bay (fig. 1), on the east coast of the southern part of Bruny Island. Bruny Island is separated from the mainland of Tasmania by D'Entrecasteaux Channel. The island is 50 km long with a 9 km long isthmus connecting North Bruny Island to South Bruny Island. A vehicular ferry service runs from Kettering to North Bruny Island whilst a network of sealed and unsealed roads provides access over most of the island.

GENERAL GEOLOGY

The coal-bearing sequence at Adventure Bay has been described by Johnston (1887), Voisey (1938) and more recently by Rigg (1970), who mapped South Bruny Island in detail.

The Adventure Bay Coal Measures have been defined by Rigg (1970) as "that formation, about 69 m thick, just north of Adventure Bay, South Bruny Island (260020), consisting of quartz sandstone, feldspathic sandstone and carbonaceous siltstone, which overlies the Ferntree Mudstone and underlies a formation of massive sandstone, the basal part of the Triassic".

The name Parmeener Super-Group was proposed in 1973 to define the widespread sequence of Late Palaeozoic and Early Mesozoic rocks across Tasmania (Banks, 1973). Subsequently the Parmeener Super-Group was divided into an Upper Division, consisting of essentially freshwater strata, and a Lower Division, consisting predominantly of glacial and glaciomarine beds (Forsyth *et al.*, 1974). The Adventure Bay Coal Measures are now part of the Upper Parmeener Super-Group and are of Late Permian age. The Permian-Triassic boundary passes through the basal part of the Upper Parmeener Super-Group. The stratigraphic sequence of Rigg (1970) on South Bruny Island is:

Triassic		
Fluviatile sandstone		UPPER PARMEENER SUPER-GROUP
Permian		
Adventure Bay Coal Measures		
Ferntree Group (including the Risdon Sandstone)		LOWER PARMEENER SUPER-GROUP
Malbina Siltstone and Sandstone		
Grange Mudstone		
Woody Island Sequence		

The sedimentary sequence has been intruded by dolerite of Jurassic age, which now covers much of the land surface of South Bruny Island. Quaternary alluvial deposits cover much of the low lying country.

The Adventure Bay Coal Measures crop out on the shore at Adventure Bay, where a thin seam was once mined, at Sheepwash Bay [EN220075], and at Lunawanna [EN180013] (Rigg, 1970), although no coal has been noted from the latter two localities. The Adventure Bay outcrop is small in area and is faulted to the west against stratigraphically younger quartz sandstone.

The Adventure Bay Coal Measures are correlates of the Cygnet Coal Measures (Johnston, 1887; Voisey, 1938) and are of Late Permian age. The stratigraphy and sedimentology of the sequence at Adventure Bay is described in detail by Rigg (1970) who concluded that the coal measure sediments had been deposited in a deltaic environment, with the basal sediments being deltaic plain deposits; overlain by channel and levee sands; followed by interdistributary silts and sands; which were finally overlain by 'back-swamp' deposits.

PREVIOUS MINING HISTORY

The location of an outcrop of coal on the shore of Adventure Bay on Bruny Island is marked on a map dated 1823, produced by a Captain Dixon who visited Tasmania in a ship named the 'Skelton of Whitby'. The Adventure Bay coal was examined by Scott, Hobbs and Roberts in 1826 who remarked that any attempt to work the coal "would be attended with difficulty and expense, it being exposed to the lash of the sea, so that no boat could land nearer than two miles" (Scott et al., 1826).

In 1841 James Clare wrote to the Chief of Police Superintendent saying he could provide a sample of the Adventure Bay coal if wanted, which was claimed to be a better coal than that being mined at Saltwater River (LSD 1/28/456).

A sample of the coal was analysed in 1850 at the Museum of Practical Geology, London (GO 1/78, p. 373-379), along with samples of coals from all over Tasmania, by Sir H.T. de la Beche who pronounced the Adventure Bay and Douglas River samples to be the best of all Van Diemens Land coals. Falconer (1862) suggested that some of these results were based on 'picked' samples of coal and ventured the opinion that: "there is 1 or 1½ inches thickness of coal in each of these seams (referring to the Adventure Bay and Jerusalem coal seams) that might have been picked out to produce such results". A trial of Adventure Bay coal on board the steam ship 'Monarch' gave results similar to that of the Port Arthur coal (Falconer, 1862). A summary of Scott's earlier excursion to Adventure Bay was presented to Parliament in 1861. The Lands and Surveys Department considered the field to be of no economic interest at this time (Booth, 1962), although S. Abbott gave a favourable account of the coal at Adventure Bay and at Three Hut Point (near Gordon) to the 1864 Select Committee on Coalfields. Abbott complained bitterly in 1879 that the Government had sold coal-bearing land at Adventure Bay and the coal was now being worked and his mine near Gordon could not compete with this operation (LSD 1/48/214).

William Zschachner began mining coal at Adventure Bay in 1879. The mining continued until 1881 without interruption, and then was intermittent until the early 1890's when the mine closed (Hills et al., 1922). The workings were visited by Johnston (1887) who recorded finding the plant fossils *Gangamopteris* and *Glossopteris* (among others) from near the mine.

Johnston (1887) inspected Zschachner's workings, which consisted of two shafts. The coal seam worked in each was 0.60 m thick. At the close of mining operations the works consisted of three shafts and two dip tunnels (Hills et al., 1922). One of the adits and one of the shafts can still be found.

The coal from this mine was transported to Hobart by sea. The supply vessel carrying stores and mail to Bruny Island took on a cargo of coal for the return voyage to Hobart. The jetty built for the loading of coal near Zschachner's mine was demolished by heavy seas in 1881, after which time the mining was severely hampered by the loss of the loading facility.

Oil prospects on North Bruny Island have been examined fully by Wade (1915) and Reid (1929). A mining lease for oil was held from 1921-1924 on North Bruny Island.

COAL QUALITY

Very few analyses are available for the Adventure Bay coal. A number of historical analyses are listed below:

	1	2	3	4
Moisture (%)	-	3.40	3.0	2.9
Ash (%)	8.67	19.50	12.9	17.9
Fixed carbon (%)	-	66.50	69.6	63.5
Volatile matter (%)	-	10.60	14.2	15.7
Total sulphur (%)	-	0.31	-	-
Specific energy (MJ/kg)	-	22.7	-	-

- sample analysed at the Museum of Practical Geology, London, 1850; (possibly a picked sample) GO 1/78/373-9
- basal 400 mm of seam 635 mm thick at outcrop on shoreline (Hills et al., 1922).
- sample of coal from Adventure Bay (Johnston, 1888)
- sample of coal from Gardeners Bay (Gordon) (Johnston, 1888)

RECENT EXPLORATION

No work has been done in the Adventure Bay area since the closure of the original mining venture.

FUTURE POTENTIAL

Due to the extremely thin nature of the seams and the small areal extent, the Adventure Bay coalfield is of no economic importance and has no potential for further exploration.

REFERENCES

- BANKS, M.R. 1973. General geology, in BANKS, M.R. (ed.). *The Lake Country of Tasmania*. 25-34. Royal Society of Tasmania : Hobart.
- BOOTH, B. 1962. *Ninety years of the Tasmanian coal industry*. B.A. (Hons) thesis, University of Tasmania : Hobart.

- FALCONER, W.R. 1862. [Experiments with Tasmanian coal at Launceston Gas Works and experiments with Tasmanian coal aboard the steamships 'Monarch' and 'Tasmania']. *Unpubl.Rep.Dep.Mines Tasm.* OS11.
- FORSYTH, S.M.; FARMER, N.; GULLINE, A.B.; BANKS, M.R.; WILLIAMS, E.; CLARKE, M.J. 1974. Status and subdivision of the Parmeener Super-Group. *Pap.Proc.R.Soc.Tasm.* 108:107-109.
- HILLS, C.L.; REID, A.M.; NYE, P.B.; KEID, H.G.W.; REID, W.D. 1922. The coal resources of Tasmania. *Miner.Resour.geol.Surv.Tasm.* 7.
- JOHNSTON, R.M. 1887. Notes on the geology of Bruni Island. *Pap.Proc.R.Soc.Tasm.* 1886:18-26.
- JOHNSTON, R.M. 1888. *A systematic account of the geology of Tasmania.* Government Printer : Hobart.
- REID, A.M. 1929. North Bruny oil prospects. *Unpubl.Rep.Dep.Mines Tasm.* 1929:151-156.
- RIGG, A.J. 1970. *Permo-Triassic stratigraphy, sedimentation and palaeontology of South Bruny Island.* B.Sc.(Hons.) thesis, University of Tasmania : Hobart.
- SCOTT, T.; ROBERTS, R.A.; HOBBS, J. 1826. Report on coal at South Cape Bay and Adventure Bay. *Unpubl.Rep.Dep.Mines Tasm.* OS2.
- VOISEY, A.H. 1938. The upper Palaeozoic rocks of Tasmania. *Proc.Linn.Soc.N.S.W.* LXIII:309-333.
- WARD, A. 1915. Petroleum prospects on Bruny Island. *Parliamentary Paper Tasmania.* 1915:(60).

RECORDS HELD IN STATE ARCHIVES

GO = Government Office Records
LSD = Lands and Survey Department Records

[13 January 1986]

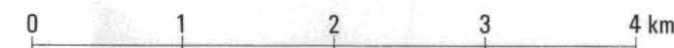


GEOLOGICAL SKETCH MAP ADVENTURE BAY COALFIELD

C. A. Bacon 1986

Geology after A. Rigg (1970)

Contour interval 20 metres



LEGEND

QUATERNARY

Sand and gravel

JURASSIC

Dolerite

TRIASSIC - PERMIAN

Quartz-rich sandstones and siltstones

Adventure Bay Coal Measures (lithic sandstone, with minor mudstone and coal seams)

Ferntree Mudstone (sandy mudstone with dropstones)

Malbina Formation (sandstone and mudstone, in parts fossiliferous)

Grange Mudstone

UPPER

PARMEENER
SUPER-GROUP

LOWER

Geological boundary, position approximate

Fault

Fault, inferred

Base map from Lands Dept. 1:50 000 series