

1974/77

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MINERALS AND ENERGY



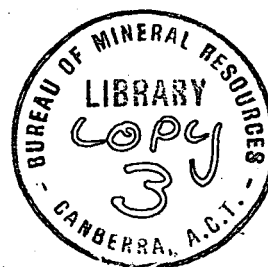
BUREAU OF MINERAL RESOURCES,  
GEOLOGY AND GEOPHYSICS

Record 1974/77

PERMIAN FOSSILS FROM THE CANNING BASIN, 1971 AND 1972

by

J.M. Dickins and P.A. Jell



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## SUMMARY

Species are identified from the Noonkanbah Formation and the Balgo Member of the Liveringa Formation.

A fauna from the lower part of the Noonkanbah is distinguishable from the Upper Noonkanbah fauna. The Upper Noonkanbah and Balgo contain many species in common but the Upper Noonkanbah is characterized by the presence of such forms as Lialosia kimberleyensis and Streblopteria? sp. nov., whereas, in particular, Atomodesma exarata is confined to the Balgo Member.

## INTRODUCTION

The fossils were collected by the Bureau field party of 1972 (A.N. Yeates, V.L. Passmore, A.T. Wells, and R.W.A. Crowe\*) or by Dr J.M. Dickins during a short visit to that field party. The collections made by Mines Administration during 1971 and 1972 and submitted to the Bureau by R.J. Paten are also identified.

The localities are considered in order of stratigraphical position according to information supplied by the field party and by Mines Administration. In many cases the preservation is so poor or the collections so small that it is not possible to indicate any correlation within the Permian. Other localities are represented only by trace fossils which, at the present state of knowledge, may not be correlated with any accuracy. The correlations based on the diagnostic samples show agreement with the stratigraphical positions supplied.

\* Geol. Surv. W. Aust.

## Identifications

### Grant Formation

B113. (Lat. 9°54'S, Long. 127°48'E, 0.8 km E of Mt Mueller).

Unidentifiable organic remains.

### Noonkanbah Formation

L371. (Lat. 20°12'S, Long. 127°59'30"E, 1.2 km NW of Namalook Rockhole)

Gastropods: Mourlonia (Mourlonia) sp. nov. B.

Warthia sp.

Stachella sp.

Pelecypods: Atomodesma mytiloides Beyrich, 1865

Praeundulomya cf. concentrica

Dickins, 1957

Astartila sp. C.

Phestia sp.

Streblopteria sp.

Scaphopods are numerous

L3 (Minad A6) (Lat. 20°08'S, Long. 127°58'E, 4.8 km W of Balgo Mission)

Brachiopods: Lialosia kimberleyensis (Prendergast, 1943)

Neochonetes sp. nov.

Spiriferid ind.

Gastropods: Stachella sp. nov.

Mourlonia (Mourlonia) sp. nov. A

Ptychomphalina sp.

Pelecypods: Atomodesma mytiloides Beyrich, 1865

Trace fossils

L/G 17 (Lat. 20°23'S, Long. 128°01'E, 32 km SSE of Balgo Mission)

Brachiopods: Neospirifer? sp.

Neochonetes sp. nov.

Trace fossils

L101 (Lat. 20°08', Long. 127°58', 4.8 km W of Balgo Mission)

Brachiopods: Neochonetes sp. nov.

Pelecypods: Atomodesma cf. mytiloides Beyrich,  
1865

Elimata? sp.

L358 (Lat. 20°16'S, Long. 127°58'E, Pallotine Headland)

Brachiopods: Neochonetes sp. nov.

Pelecypods: Atomodesma mytiloides Beyrich, 1865

Etheripecten cf. E. subquinguilineatus  
(M'Coy, 1847)

Streblopteria? sp. nov.

Trace fossils

L359 (Lat. 20°17'S, Long. 127°58'E, 1.6 km SE of the tip of Pallotine Headland)

Brachiopods: Neochonetes sp. nov.

Pelecypods: Streblopteria? sp. nov.

L360 (Lat. 20°09'S, Long. 127°56'E, 3.2 km SE of Narelli Rockhole)

Pelecypod: Streblopteria sp. ind.

L363 (Lat. 20°13'S, Long. 127°59'E, 3.2 km WSW of Namalook Rockhole)

Brachiopods: Neochonetes sp. nov.

Gastropods: Macrochilina sp.

Pelecypods: Aviculopecten sp. ind.

Ostracodes

L364 (Lat. 20°11'S, Long. 127°57'E, 4.8 km SSW of Balgo Mission)

Unidentifiable shell fragments

Trace fossils

L372 (Lat. 20°13'S, Long. 127°59'30"E, 1.2 km SW of Namalook Rockhole)

Gastropods: Mourlonia (Mourlonia) sp. nov. A

Stachella sp. nov.

Macrochilina sp.

Ptychomphalina sp.

Pelecypods: Astartila sp.  
Heteropecten? sp. ind.

Scaphopods

Fossil wood

L377 (Lat. 20°07'S, Long. 127°50'E, 6.4 km ENE of Old Balgo Mission)

Gastropods: Stachella sp. nov.

Pelecypods: Atomodesma sp. ind.

Scaphopods

L383 (Lat. 20°05'S, Long. 127°52'E, 8 km S of Lake Maddox)

Gastropods: Stachella sp. nov.

Pelecypods: Pectinid gen. et sp. ind.

L384 (Lat. 20°05'S, Long. 127°53'E, 8 km SSE of Lake Maddox)

Brachiopods: Neochonetes sp. nov.

Pelecypods: Atomodesma mytiloides Beyrich, 1865

L385 (Lat. 20°09'S, Long. 127°54'E, 11.2 km S of Lake Maddox)

Pelecypods: Pectinid gen. et sp. ind.

L526 (Lat. 20°58'S, Long. 128°04'E, Thomas Peak)

Trace fossils

L607 (Minad A68), (Lat. 20°13'S, Long. 127°59'E, 6.4 km SE of Balgo Mission)

Gastropods: Mourlonia (Mourlonia) sp. nov. A

Ptychomphalina sp. nov.

Macrochilina sp. nov.

Stachella sp. nov.

Warthia sp.

Pelecypods: Schizodus kennedyensis Dickins, 1956

Phestia cf. waterhousei (Etheridge  
Jnr, 1888)

Vacunella cf. nuraensis (Dickins,  
1963)

Aviculopectinid gen. et sp. ind.

Streblopteria

Elasmobranch tooth plates

L610 (Lat. 20°09'S, Long. 127°56'E, 1.2 km S of Narelli Rockhole)

Brachiopods: Lialosia kimberleyensis (Prendergast, 1943)

Neochonetes sp. nov.

Spiriferid gen. et ap. ind.

Notospirifer sp.

Gastropods: Mourlonia (Mourlonia) sp. nov. A

Ptychomphalina sp. nov.

Pelecypods: Atomodesma mytiloides Beyrich, 1865

Aviculopecten sp. ind.

Nautiloids

L611 (Lat. 20°09'S, Long. 127°56'E, 0.8 km SSE of Narelli Rockhole)

Brachiopods: Lialosia kimberleyensis (Prendergast, 1943)

Neochonetes sp. nov.

Pelecypods: Atomodesma mytiloides Beyrich, 1865

Aviculopecten sp.

Astartila sp. B.

L613 (Lat. 20°13'S, Long. 127°49'E, 8 km SSE of Old Balgo Mission Ruins)

Gastropods: Stachella sp. nov.

Mourlonia (Mourlonia) sp. nov. A

Pelecypods: Astartila sp. B.

Aviculopectinid gen. et sp. ind.

Trace fossils

L616 (Lat. 20°09'S, Long. 127°55'E, 12 km SSW of Narelli Rockhole)

Brachiopods: Neochonetes sp. nov.

Pelecypods: Atomodesma mytiloides Beyrich, 1865

Streblopteria? sp. nov.

Schizodus? sp. nov.



L617 (Lat. 20°14'S, Long. 127°55'E, 12.9 km SW of Balgo Mission at base of mesa at headwaters of Durba Creek).

Gastropods: Stachella sp. nov.  
Ptychomphalina sp. ind.

Pelecypods: Astartila sp. ind.

Stan Q5A (Lat. 21°06'S, Long. 127°54'E, northern end of Stansmore Range close to main fault)

Unidentifiable shell fragments

Trace fossils

S317 (Lat. 20°13'S, Long. 127°58'E, 19.3 km ENE of Point Moody)

Pelecypods: Astartila sp.

L352 (Lat. 21°11'S, Long. 127°59'E, 19.3 km ENE of Point Moody)

Pelecypods: Astartila sp.

L351 (Lat. 21°14'S, Long. 128°00'E, 19.3 km east of Point Moody)

Pelecypods: Astartila sp. A

Fossil wood

B116 (Lat. 19°55'S, Long. 127°52'E, 8 km SE of Mount Mueller)

Brachiopods: Neochonetes sp. nov.  
Notospirifer sp.  
Permorthotetes sp.  
Lialosia kimberleyensis (Prendergast, 1943)

Aulosteges sp. ind.

Gastropods: Ptychomphalina sp.

Stachella sp. nov.

Mourlonia (Mourlonia) sp. nov. A

Pelecypods: Atomodesma mytiloides Beyrich, 1865

Astartila sp. A

Etheripecten cf. subquinguelineatus  
(M'Coy, 1847)

Pectinid sp. ind.

Acanthodian fish spines

Trace fossils

Liveringina Formation

Balgo Member

L610 (Lat.  $20^{\circ}00'S$ , Long.  $127^{\circ}55'E$ , 17.7 km SE of Mt Mueller)

Brachiopods: Aulosteges? sp. ind.  
Gastropods: Mourlonia (Mourlonia) sp. nov. A  
Stachella sp. nov.  
Pelecypods: Astartila sp. ind.  
Etheripecten sp. ind.

Trace fossils

C1 (Lat.  $20^{\circ}52'S$ , Long.  $127^{\circ}49'E$ , head of large claypan W of Pownall Creek)

Gastropods: Warthia sp.  
Pelecypods: Astartila sp. A  
Astartila sp. B  
Atomodesma mytiloides Beyrich, 1865  
Atomodesma exarata Beyrich, 1865  
Stutchburia muderongensis Dickins,  
1956  
Streblopteria sp. nov.

L100 (Lat.  $20^{\circ}14'S$ , Long.  $127^{\circ}48'E$ , 21 km SW of Balgo Mission)

Trace fossils

L1 (Lat.  $20^{\circ}13'S$ , Long.  $127^{\circ}49'E$ , 9.6 km NE of Gunnawarrawarra Rockhole)

Gastropods: Stachella sp. nov.  
Pelecypods: Atomodesma cf. mytiloides Beyrich,  
1865  
Astartila sp. ind.  
Vacunella? sp.

Trace fossils

L308 (Lat.  $20^{\circ}59'30"S$ , Long.  $127^{\circ}46'E$ , Stretch Range)

Pelecypods: Atomodesma sp. ind.

L325 (Lat.  $20^{\circ}56'S$ , Long.  $128^{\circ}01'E$ , 6.4 km WNW of Thomas Peak)

Gastropods: Mourlonia (Mourlonia) sp. nov. A

Pelecypods: Atomodesma mytiloides Beyrich, 1865

Straight nautiloids ind.

L340 (Lat.  $20^{\circ}12'S$ , Long.  $127^{\circ}43'E$ , 2.4 km W of Micha Bore)

Trace fossils

L342 (Lat.  $20^{\circ}09'S$ , Long.  $127^{\circ}45'E$ , 6.4 km WSW of Old Balgo Mission)

Trace fossils

L343 (Lat.  $20^{\circ}09'S$ , Long.  $127^{\circ}45'E$ , 0.8 km north of L342)

Trace fossils

L350 (Lat.  $20^{\circ}17'S$ , Long.  $127^{\circ}47'E$ , 4.8 km ESE of Gunnawarrawarra Rockhole)

Gastropods: Warthia sp.

Pelecypods: Atomodesma exarata Beyrich, 1865

Stutchburia muderongensis Dickins,  
1956

Scaphopods ind.

Fossil wood

L362 (Lat.  $20^{\circ}10'S$ , Long.  $127^{\circ}57'E$ , 2.4 km S of Balgo Mission)

Gastropods: Warthia sp.

Unidentifiable shell fragment

L365 & L368 (Lat.  $20^{\circ}13'S$ , Long.  $128^{\circ}00'E$ , Namalook Rockhole)

Gastropods: Mourlonia (Mourlonia) sp. nov. A

Stachella sp. nov.

Scaphopods

L374 (Lat.  $20^{\circ}03'S$ , Long.  $127^{\circ}45'E$ , 12.9 km ENE of Condren Pinnacles)

Trace fossils

Unidentifiable shell fragments

L376 (Lat. 20°03'S, Long. 127°46'E, 14.5 km ENE of Condren Pinnacles)

Unidentifiable shell fragments

L382 (Lat. 20°04'S, Long. 127°47'E, 0.6 km WSW of Lake Maddox)

Pelecypods: Atomodesma sp.  
Phestia sp.

L387 (Lat. 20°01'S, Long. 127°53'E, 3.2 km NE of Lake Maddox)

Unidentifiable pelecypods

L606 (Minad Al). (Lat. 20°10'S, Long. 127°56'E, 3.9 km W of Namalook Rockhole)

Gastropods: Stachella sp. nov.  
Mourlonia (Mourlonia) sp. nov. A  
Machrochilina sp.  
Warthia sp.  
Ptychomphalina sp. ind.  
Naticopsis? sp.

Pelecypods: Phestia sp.

Scaphopods

Bryozoans

Trace fossils

L612 (Lat. 20°09'S, Long. 127°56'E, 1.2 km SSE of Narelli Rockhole)

Aviculopectinid gen. et sp. ind.

S622-642 (Lat. 21°15'S, Long. 127°47'E, various outcrops of the Point Moody breakaways)

Gastropods: Mourlonia (Mourlonia) sp. nov. A  
Stachella sp. nov.

Pelecypods: Atomodesma exarata Beyrich, 1865  
Atomodesma mytiloides Beyrich, 1865  
Stutchburia sp.  
Astartila sp. A  
Astartila sp. B  
Etheripecten cf. hardmani (Etheridge, 1907)

Trace fossils

ST 320 (Lat.  $21^{\circ}57'S$ , Long.  $127^{\circ}43'E$ , Waterlander Breakaway 27.3 km SW of Carnegie Bluff)

Trace fossils

S101 (Lat.  $21^{\circ}44'S$ , Long.  $127^{\circ}58'E$ , 9.6 km N of Carnegie Bluff)

Trace fossils

S102 & 103 (Lat.  $21^{\circ}15'S$ , Long.  $128^{\circ}02'E$ , near edge of Stansmore Fault)

Trace fossils

ST113 (Lat.  $21^{\circ}04'S$ , Long.  $127^{\circ}37'E$ , White Hills)

Aviculopectinid ind.

S309 (Lat.  $21^{\circ}12'S$ , Long.  $127^{\circ}51'E$ , 0.6 km NE of Point Moody)

Trace fossils

S312 (Lat.  $21^{\circ}29'S$ , Long.  $128^{\circ}01'E$ , 11.3 km W of Warri Peak)

Trace fossils

S350 (Lat.  $20^{\circ}17'S$ , Long.  $127^{\circ}47'E$ , 4.8 km ESE of Gunnawarrawarra Rockhole)

Pelecypods: Etheripecten sp. nov.

Trace fossils

S503 & 504 (Lat.  $21^{\circ}22'S$ , Long.  $128^{\circ}06'E$ , northern tributaries draining into Wilson Glen)

Pelecypods: Etheripecten

S652 (Lat.  $21^{\circ}49'S$ , Long.  $127^{\circ}57'E$ , Carnegie Bluff)

Gastropods: Warthia sp.

Pelecypods: Stutchburia muderongensis Dickins,  
1956

Streblopteria sp. nov.

Atomodesma exarata Beyrich, 1865

Trace fossils

S653 (Lat.  $21^{\circ}29'S$ , Long.  $128^{\circ}07'E$ , near Warri Peak)

Gastropods: Stachella sp. ind.

Pelecypods: Astartila sp. A

S654 (Lat.  $21^{\circ}29'S$ , Long.  $128^{\circ}06'E$ , near Warri Peak)

Pelecypods: Etheripecten sp. nov.

Trace fossils

S907A (Lat.  $21^{\circ}30'S$ , Long.  $128^{\circ}04'E$ , headwaters of Warri Creek near Warri Peak)

Pelecypods: Stutchburia muderongensis Dickins,  
1956

Etheripecten sp. nov.

Astartila sp. ind.

Trace fossils

Condren Sandstone:

S618 (Lat.  $21^{\circ}01'S$ , Long.  $127^{\circ}50'E$ , on northern edge of Stansmore Range)

Trace fossils

NOONKANBAH FORMATION

LIVERINGA FORMATION

Species and Genera	Lower	Upper	Balgo Member
<u>Mourlonia (Mourlonia)</u> <u>sp. nov. B</u>			
<u>Warthia</u>			
<u>Stachella</u>			
<u>Atomodesma mytiloides</u>			
<u>Astartila sp. C</u>			
<u>Praeundulomya</u> <u>concentrica</u>			
<u>Phestia</u>			
<u>Streblopteria</u>			
<u>Mourlonia (Mourlonia)</u> <u>sp. nov. A</u>			
<u>Stachella sp. nov. A</u>			
<u>Lialosia kimberleyensis</u>			
<u>Neochonetes sp. nov.</u>			
<u>Schizodus kennedyensis</u>			
<u>Schizodus sp. nov.</u>			
<u>Streblopteria? sp. nov.</u>			
<u>Notospirifer</u>			
<u>Astartila sp. A</u>			
<u>Astartila sp. B</u>			
<u>Etheripecten cf.</u> <u>subquinguelineatus</u>			
<u>Macrochilina</u>			
<u>Ptychomphalina</u>			
<u>Phestia cf. waterhousei</u>			
<u>Vacunella cf. nuraensis</u>			
<u>Permorthotetes sp.</u>			
<u>Atomodesma exarata</u>			
<u>Stutchburia</u> <u>muderongensis</u>			
<u>Etheripecten sp. nov.</u>			
<u>Etheripecten cf.</u> <u>hardmani</u>			
<u>Vacunella</u>			

## DISCUSSION

Although several localities yielded numerous well-preserved specimens, in others highly weathered unidentifiable material gave rise to the large number of questionable and open nomenclatural assignments. The conclusion on faunal distinctions, therefore, may be affected by future discoveries of well preserved material.

Locality L371, considered on field evidence to be stratigraphically near the base of the Noonkanbah Formation, is characterized by several forms which are not found in any other collection. Praeundulomya concentrica and species of Mourlonia (Mourlonia) and Astartila are indicative of this faunal distinction. Mourlonia (Mourlonia) sp. nov. B has a more rounded whorl cross-section than Mourlonia (Mourlonia) sp. nov. A, and Astartila sp. C is higher and more inflated just anterior and posterior to the umbos than either Astartila sp. A or B.

The distinction between the upper Noonkanbah and Balgo faunas is more obvious. However, it may still be difficult to define in the field unless the whole faunas are known, as no single locality appears to contain the entire fauna characteristic of the formation. The fauna of the upper Noonkanbah Formation is characterized most reliably by Lialosia kimberleyensis, Neochonetes sp. nov. A, Notospirifer sp., Etheripecten cf. subquinguilineatus, Streblopteria? sp. nov. and Schizodus. The Balgo Member of the Liveringa Formation contains a fauna characterized by Atomodesma exarata, Stutchburia muderongensis, Etheripecten sp. nov. (very large), Etheripecten cf. hardmani and a lack of brachiopods.

Many of the major elements are common between the Upper Noonkanbah and Balgo faunas, but on an overall survey the faunas are distinguishable. The three distinguishable faunas of the collections are summarized in Figure 1.



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