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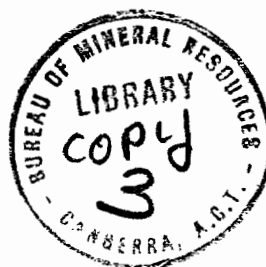
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DEPARTMENT OF NATIONAL DEVELOPMENT.  
BUREAU OF MINERAL RESOURCES  
GEOLOGY AND GEOPHYSICS.

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RECORDS.

1960/69



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# CRETACEOUS MARINE MACROFOSSILS FROM THE GREAT ARTESIAN BASIN IN QUEENSLAND

By J.M. Dickins

RECORDS 1960/69

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## SUMMARY

Fossils have been identified from 78 localities in the Great Artesian Basin, from the Boulia-Springvale area in the north-west part to the Gregory Range area in the north-east and the Roma area in the south-east. Special attention has been given to the use of the fossils in stratigraphical sub-division and mapping. The faunal distinction between the Roma "Formation" and Tambo "Formation" made by previous workers is confirmed. Few species are common to both. It has not been possible to differentiate the fauna of the upper part of the Blythesdale "Group" and its equivalents from that found in the Roma "Formation" but the present material can by no means be considered as exhaustive in this regard. In the Boulia-Springvale area the lower part of the Wilguna Formation is to be equated on faunal evidence with the Roma "Formation" and the Toolebuc Member and the upper part of the Wilguna Formation are together to be equated with the Tambo "Formation". Although faunally it may be possible to differentiate the Toolebuc Member from the overlying part of the Wilguna Formation, no other faunal subdivisions are apparent within the formations.

## INTRODUCTION

The fossils considered in this report have been collected by joint Bureau of Mineral Resources and Geological Survey of Queensland field parties. Operating in 1958, the Georgina Basin Party comprised J.N. Casey (leader), M.A. Reynolds, P.W. Pritchard, R.J. Paten and K.G. Lucas; and in 1959, the Springvale Party comprised M.A. Reynolds and R.J. Paten. The locality information has been supplied by M.A. Reynolds. M.A. Reynolds has also supplied field and stratigraphic information. The fossils have been considered from areas within the Basin, and for each of these areas they have been arranged according to their stratigraphic units. The numbers used are the numbers given by the field parties.

Special attention has been given to the value of the fauna for the subdivision and mapping of the sequence and especially to their use in identifying boundaries between the subdivisions used. The use of the faunas for zoning the sequence has also been examined.

The two main faunas are that found in the Tambo "Formation" and its equivalents, and that found in the Roma "Formation" and the upper part of the Blythesdale "Group" and their equivalents. The details of these faunas are given later in the report. The fauna of the top part of the Blythesdale "Group" and the Roma "Formation" are referred to together as the Roma type of fauna.

An account of the stratigraphy and the subdivisions used in this report are given by Reynolds (1960 a, b & c). An asterisk precedes a field identification supplied by M.A. Reynolds.

No attempt has been made to subdivide the Aucellinas in the way Brunnschweiler (1959) has done for the specimens in the Oodnadatta Bore. The occurrence of large specimens in the Toolebuc Member, however, has been noted.

### IDENTIFICATIONS

#### Gregory Range Area, Northern Queensland

True Blue Hills (2 miles north of Croydon on Norman-ton Road), about 10 feet of sandstone with small lenses of conglomerate and siltstone.

#### Pelecypods

<u>Nuculana?</u> sp. ind.	1 specimen
<u>Cucullaria</u> sp.nov. (different to <u>Grammatodon</u> <u>robusta</u> and " <u>Cucullaea</u> " <u>hendersoni</u> )	A few specimens
<u>Parallelodon?</u> Sp.ind. (has a distinct posterior carina)	1 specimen
<u>Maccoyella barklyi</u> var. <u>mariaeauriensis</u> Etheridge Jnr. 1892. (some specimens are rather like <u>M. corbiensis</u> )	Common
" <u>Ostrea</u> " sp.	A few specimens
<u>Trigonia</u> sp.A (differs from <u>T.cinctata</u> in lacking the sulcus and has different ribbing)	1 specimen
<u>Fissilunula clarkei</u> (Moore) 1870	A few specimens
<u>Cyrenopsis</u> sp.?	Rare

#### Gastropods

<u>Acmaea?</u> sp.	A few specimens
" <u>Natica</u> " of. <u>variabilis</u> Moore 1870. <sup>1</sup>	1 specimen
An incompletely coiled gastropod	A few specimens
Indeterminate forms	

#### Brachiopods

" <u>Rhynchonella</u> " <u>croydonensis</u> Etheridge Jnr. 1892	Very common
A fine ribbed terabratuloid	1 specimen

#### Other Forms

Burr owings

Geo 7. From sandstone (with siltstone lens) which forms the top 30 feet of Brennan's Knob, a small Cretaceous outlier about 35 miles north of Esmeralda; the sandstone caps a section of 90 feet of mainly sandstone with two benches, one at 50 feet and the other 80 feet above the base.

#### Pelecypods

<u>Maccoyella</u> sp.ind.	A few specimens
<u>Plagiostoma</u> sp.	Two specimens
<u>Entolium</u> sp.	Two specimens

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<sup>1</sup>Dr. N.H. Ludbrook of the Geological Survey of South Australia (pers.comm.) suggests this species should be placed in the genus Euspira.

<u>Trigonia</u> sp.B (may be <u>T.nasuta</u> but material is not well preserved)	A few specimens
<u>Panope?</u> sp. (may not be specifically identifiable)	A few specimens
<u>Fissilunula clarkei</u> (Moore) 1870	1 specimen
<u>Cyrenopsis</u> cf. <u>meeki</u> (Etheridge Jnr.) 1892	1 bivalved specimen

## Cephalopods

<u>Peratobelus</u> sp. (large rounded guards)	A few specimens
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## Wood

Fragments showing fibrous structure and with fine holes

## Burrows or Tracks?

Mt. Angus. Croydon 4-Mile Sheet, about  $1\frac{1}{2}$  miles south-east of Croydon: about 2 feet of fine-grained sandstone with coarser bands; cross-bedded; in part indurated; it forms a cap on Croydon Felsite (upper Palaeozoic).

## Pelecypods

<u>Maccoyella</u> sp.ind.	A few specimens
<u>Trigonia</u> sp.B	A few specimens

*Gastropod cf. <u>Siphonaria</u> noted	A few specimens
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## Brachiopods

"Rhychonella" croydonensis Etheridge Jnr. 1892

## \* Silicified wood fragment impressions

The faunas from True Blue Hills, Geo 7 and Mt. Angus, all occur in sandstone and have common faunal elements; Maccoyella is found in the three samples; Fissilunula clarkei occurs at True Blue Hills and Geo 7; Trigonia sp.B is present at Geo 7 and Mt. Angus; and "Rhychonella" croydonensis occurs at True Blue Hills and Mt. Angus.

Maccoyella barkleyi, Fissilunula clarkei and Cyrenopsis meeki are species characteristic of the fauna of the Roma "Formation". In addition this fauna contains Cucullaria sp.nov. which in these collections has not been found in the Roma "Formation". At present it is not possible to say whether the presence of Cucullaria is stratigraphically significant.

Geo.13 ( $2\frac{1}{2}$  miles west of the Gilbert River at the edge of the main road from Georgetown to Croydon) from white, leached shale.

## Pelecypods

<u>Pseudavicula</u> cf. <u>anomala</u> (Moore, 1870) many small, probably juvenile specimens. Common	
<u>Pseudavicula papyracea</u> Etheridge Jnr. 1907	1 specimen
<u>Pleuromya?</u> sp.	3 specimens
<u>"Tellina"</u> sp.	2 specimens - 1 bivalved

## Gastropods

One indeterminate specimen

Except for P.papyracea it is not possible to identify any of these species with reference material.

The form identified as P.papyracea would indicate the rocks are not substantially older than the Aptian Roma "Formation" and it seems likely that a Roma type of fauna is represented in this sample.

Gil. 8. Grey to brown and yellow silty limestone with irregular clay pellets and rich in belemnites. 6 miles north of Burleigh on road to Middle Park.

#### Pelecypods

"Mytilus" sp.ind. 1 specimen

#### Cephalopods

Peratobelus sp. (cylindrical not very large guards) Very common

#### Algae?

Gil.11 South bank of Mill Mill Creek about 200 yards east of track between Pialah and Etheldale; interbedded fine-grained silty sandstone and silty shale with limestone lenses which show cone-in-cone structure.

#### Pelecypods

Maccoyella umbonalis (Moore) 1870 3 specimens  
Maccoyella cf. corbiensis (Moore) 1870 1 specimen

#### Cephalopods

Peratobelus sp. (as in Gil.8) 1 specimen  
Australiceras sp. 2 specimens

#### Vermes

\*Rhizocorallium and small pelecypod? in sandstone interbeds.

M.umbonalis, M.corbiensis and Australiceras, found in Gil.11, are characteristic of the Roma "Formation" and are not found in the Tambo "Formation". None of the fossils identified in Gil. 8, however, are useful in indicating what subdivision is represented.

#### Roma Area.

Blythesdale-Roma Transition Beds.

Rom.8b. Near Roma-Injune road opposite Euthulla Railway Station.

#### Pelecypods

Fissilunula clarkei (Moore) 1870? 1 specimen  
Cyrenopsis cf. meeki<sup>1</sup> (Etheridge Jnr) 1892 2 specimens

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<sup>1</sup> Included under this specific name are specimens which show considerable variation in shape. It is possible that this group could be subdivided into a number of species. All varieties, however, have a similar type of dentition and during growth there is an increase in height relative to length. None of the specimens correspond exactly to the type specimens of Cyrenopsis meeki (Etheridge Jnr. 1892, pl.27, figs.2 & 3) but the specimens referred by Etheridge (1902, pl.6, figs 8-13) to Cyrena(?)meeki and ?Unicardium Etheridge Jnr. (1892, pl.26, figs.13-14) and later referred by him to Corbicula? meeki (1902, p.30) would be included within this group.

## Gastropods

"Natica" variabilis Moore 1870 1 specimen

## Brachiopods

"Lingula" sp. A number of good specimens

## Wood

Rom.9b Low hill, north-east of railway viaduct south of Euthulla Station and west of Roma-Injune road.

## Roots

9c.

"Lingula" sp.

★Wood 6' x 1½' in situ

Rom.15. Minmi crossing of Bungil Creek about 4 miles north of Roma on Durham Downs road; fossils from unfenced gully ½ mile north of crossing in west bank of creek, and from east bank of creek at the crossing.

## Pelecypods

"Malletia" cf. elongata (Etheridge Snr.) 1872 (pointed or compressed end) 1 specimen  
Pseudavicula anomala (Moore) 1870 1 specimen  
Panope? sp.ind. 1 specimen

## Gastropods

"Natica" variabilis (Moore) 1870 1 specimen

## Wood Fragments

Rom.16 Warooby Creek, north side of Roma-Blythedale Road.

Belemnite and fossil wood

## Roma "Formation"

Rom 10. 7½ miles from Roma on road to Injune; on north side of hill below crest ¼ mile south of railway crossing; gullies at road side.

## Pelecypods

"Yoldia" cf. randsi (Etheridge Jnr.) 1892<sup>1</sup> 1 specimen  
Pseudavicula sp.? 1 specimen  
 Indet. 3 specimens

## ★Trails and Burrows?

## Wood

Rom.11. 7 miles from Roma on road to Injune; shallow gullies west of road.

## Pelecypods

Tatella? sp.ind. 1 specimen

## Gastropods

"Natica" variabilis Moore 1870 1 specimen

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<sup>1</sup> Etheridge Jnr. (1902, p.26) places this species in synonymy with "Malletia" elongata (Etheridge Snr.) 1872. This study suggests a similar conclusion.

## Wood impressions

Rom. 13 Bungeworgorai Creek (west bank) south of concrete bridge on main Roma-Mitchell road.

## Pelecypods

<u>"Yoldia" cf. randsi</u> (Etheridge Junr.) 1892	
(rounded at back and rather slim	1 specimen
<u>Pseudavicula anomala</u> (Moore) 1870?	1 specimen
<u>Maccovella unbonalis</u> (Moore) 1870	2 specimens
<u>"Mytilus" cf. inflatus</u> Moore 1870	2 specimens
<u>Syncyclonema? cf. socialis</u> (Moore) 1870	1 specimen
<u>Fissilunula clarkel</u> (Moore) 1870?	A few specimens
<u>Cyrenopsis cf. neeki</u> (Etheridge Junr.) 1892	Common
<u>Tatella aptiana</u> Whitehouse 1925	2 specimens
(1 specimen shows the hinge)	
Small oval not very convex pelecypod	Common
A <u>Lucina</u> -like pelecypod	1 specimen

## Gastropods

<u>"Natica" variabilis</u> Moore 1870	Several specimens
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## Cephalopods

<u>Peratobelus</u> sp.	Common
(rather rounded cross-section with two grooves which do not extend far onto guard)	

## Wood

Portion 77, Parish Roma, about 2 miles south of Roma on the Mt. Abundance Road, right side in paddock near McCabe's Homestead (locality supplied by R. Day).

<u>Maccovella cf. corbiensis</u> (Moore) 1870	A few specimens
<u>Modiola</u> sp.	1 specimen
<u>Trigonia</u> sp.	1 specimen
<u>Fissilunula clarkel</u> (Moore) 1870	Common
<u>Cyrenopsis cf. neeki</u> (Etheridge Junr.) 1892 (Appears to have same type of hinge as <u>Cyrenopsis opallites</u> Etheridge Junr. 1902)	Very common
<u>Tatella aptiana</u> Whitehouse 1925	1 specimen
(1 specimen shows hinge similar to that illustrated by Etheridge for <u>T. marancana</u> . Appears to be most closely related to the <u>Tancrediidae</u> .)	
Small oval, not very convex pelecypod as in Roma 13	Common

## Gastropods

<u>"Natica" variabilis</u> (Moore) 1870	Common
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## Cephalopods

<u>Peratobelus</u> sp. (rounded guards)	Common
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Near Railway Bridge, Railway Mark, 430 M. ( $\frac{1}{4}$  mile west of Pickanjinie Station) The specimens are not in situ but from rock fill.

## Pelecypods

<u>Maccovella?</u> sp. ind.	1 specimen
<u>Syncyclonema? cf. socialis</u> (Moore) 1870	1 specimen

## Brachiopods

"Rhynchonella" cf. rustica (Moore) 1870 4 specimens

## Sponges

Purisiphonia sp. A number of specimens

Near Railway Mark 435, 300. 44. (between Pickanjinie and Blythesdale). Not in situ but from rock fill.

## Pelecypods

Syncyclonema? cf. socialis (Moore) 1870 1 specimen

## Brachiopods

"Rhynchonella" cf. rustica (Moore) 1870 1 specimen

## Belemnite Fragment

## Wood

With the exception of "Lingula" sp. all the identifiable forms of the Blythesdale-Roma transition beds occur in the "Roma Formation", so that faunally, in the samples represented, there is little to choose between the faunas of these two subdivisions.

Surat Area. On the south bank of Balonne River below and west of bridge on road into Surat from Roma.

## Pelecypods

Pseudavicula anomala (Moore) 1870 Common

Pseudavicula papyracea Etheridge Jnr. 1907

Common

(The above two species seem to grade into each other at this locality)

Tellina? sp. ind. 2 specimens

## Gastropods

Vanikoropsis? sp. nov. 1 specimen

(ornament somewhat like Vanikoropsis? stuarti but whorls more symmetrical and spire is higher)

★ Laminae rich in carbonised plant fragments, occur just above fossiliferous horizon.

The occurrence of P. anomala and P. papyracea indicate this is the Roma type of fauna. Lithologically the sample is very similar to that of Roma 15. It may be assumed that the sample is from the Griman Creek Group of Jenkins (1959); it is similar both faunally and lithologically to the transition beds of the Blythesdale "Group".

Tambo Area.

Roma "Formation". 7½ miles N.W. of Tambo along road to Blackall.

## Pelecypods

"Yoldia" cf. randsi (Etheridge Jnr.) 1892 1 specimen

Pseudavicula cf. papyracea Etheridge Jnr

1906

Very common

(specimens small as for P. papyracea but some show faint radial ribbing)

Maccovella cf. corbiensis (Moore) 1870 A few specimens



<u>Inoceramus</u> sp. (distinct close rugae and grooves and markedly prosocline. This species may not be represented in the Tambo)	1 specimen
<u>Amussiidae</u> gen et sp. (a small shell like <u>Protoamusium?</u> <u>gradatum</u> Etheridge Jnr. 1902)	1 specimen
<u>Trigonia</u> sp.ind.	1 specimen
<u>Fissilunula</u> <u>clarkei</u> (Moore) 1870	1 specimen
<u>Cyrenopsis</u> cf. <u>meeki</u> (Etheridge Jnr) 1892	A few specimens
<u>Tatella</u> sp. (not as convex as <u>T.apertiana</u> )	1 specimen
" <u>Cytherea</u> " <sup>1</sup> <u>woodwardiana</u> Hudleston 1884) and/or " <u>Tellina</u> " <u>mariaeauriensis</u> Etheridge 1872 )	Very common
<u>Tancredia?</u> sp. nov. A <sup>2</sup> (this species is likely to be <u>Corbula superconcha</u> Etheridge Jnr 1907 which does not appear to have been figured).	4 specimens
cf. <u>Corimya</u> <u>primula</u> Hudleston? Etheridge Jnr. 1892 (pl.28, fig.11)	1 specimen
cf. <u>Cardium?</u> <u>browni</u> Etheridge Jnr.1902	rare
<u>Panope</u> <u>aramacensis</u> (Etheridge Jnr)1892	2 specimens

## Gastropods

" <u>Natica</u> " <u>variabilis</u> Moore 1870	A few specimens
<u>Vanikoropsis?</u> sp.nov. (described by Etheridge Jnr as <u>Vanikoropsis?</u> <u>stuarti</u> but the whorls are more discrete and more evenly rounded)	A few specimens

## Scaphopods

Doubtfully represented

## Cephalopods

<u>Peratobelus</u> sp. (Belemnites with large more or less rounded guards)	Very common
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Tam.24. 14 miles north of Tambo along road to Alpha.  
Sample from road-side (may be Blythesdale-Roma transition beds)

"Lingula" sp.ind.

<sup>1</sup> Cytherea Lamarck 1806 is a homonym of Cytherea Fabricius 1794 (Insecta) and Bolten 1798 (Mollusca). According to Piveteau (1952, p.306) Cytherea Lamarck is replaceable by Meretrix Lamarck 1789. Although Etheridge Jnr. does not discuss the relationship it is difficult to see how "Cytherea woodwardiana" differs from Pachydomella chutus Etheridge Jnr. (1907, p.325, pl.52, figs.4-8). The type species of his new genus Pachydomella. Pachydomella itself is a homonym of Pachydomella Ulrich 1891 (Ostracoda) and for it Finlay (1927, p.526) has proposed the replacement name Barcoona.

<sup>2</sup> At first it was considered that the forms referred to Tancredia? were Corbulids. Examination, however, of the hinges of specimens collected by Mr. R. Day of the Geology Department of the University of Queensland suggest they belong in the Tancrediidae. The dentition and shape indicates they are closer to Tancredia Lycett 1850 than to Corbicellopsis Cox 1929 (= Corbicella Moore and Lycett 1854). Tatella Etheridge Jnr. 1901 is probably related also to the Tancrediidae.

Tam.15. Along road to Minnie Downs 1 mile from turn-off from Tambo-Blackall road; sample from road-side.

#### Pelecypods

<u>"Yoldia"</u> cf. <u>randsi</u> (Etheridge Jnr.) 1892A	few specimens
<u>Pseudavicula anomala</u> (Moore) 1870	may be
<u>Pseudavicula papyracea</u>	) same A few specimens
Etheridge Jnr. 1907	) species
<u>Trigonia</u> sp.	3 specimens
<u>Cyrenopsis</u> cf. <u>opallites</u>	A few specimens
(Etheridge Jnr.) 1902	
<u>Tellina?</u> sp.	1 specimen
<u>"Cytherea"</u> <u>woodwardiana</u> Hudleston 1884	Common
<u>Tancredia?</u> nov.sp.A (appears to be	
less elongated than T.nov.sp.B.	1 specimen
which occurs in Tambo "Formation")	
cf. <u>Glycimeris</u> sp.ind. Etheridge Jnr.	
1892 (pl.28. fig.6)	1 specimen

#### Gastropods

<u>"Natica"</u> cf. <u>variabilis</u> Moore 1870	1 specimen
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Tam.15a. Probably from same locality as 15.

#### Pelecypods

<u>Pseudavicula anomala</u> (Moore) 1870	Common
<u>Maccoyella</u> sp.ind.	1 specimen
<u>Cyrenopsis</u> cf. <u>meeki</u> (Etheridge Jnr.	
1892	2 specimens
<u>Cyrenopsis</u> cf. <u>opallites</u> (Etheridge	
Jnr.) 1902	A few specimens
(may be young <u>Cyrenopsis</u> cf. <u>meeki</u> )	
<u>"Cytherea"</u> <u>woodwardiana</u> Hudleston 1884	Common
<u>Tancredia?</u> sp.nov. A	1 specimen
cf. <u>"Glycimeris"</u> sp.ind. Etheridge	
Jnr. 1892, pl.28, fig.6	

#### Cephalopods

<u>Peratobelus</u> sp. Belemnites guards with	Common
rounded cross section	

#### Tambo "Formation"

Tam.13. Along road to Minnie Downs 4½ miles from turn-off from Tambo-Blackall road; shallow cutting on small rise south side of road.

#### Pelecypods

<u>Inoceramus</u> sp. (a rather upright form	
different to common Tambo forms)	3 specimens
<u>Pleuromya?</u> sp. (with a strong ridge at	
front)	2 specimens

#### Cephalopods

<u>Ammonites</u>	
<u>Beudanticeras</u> sp.	1 specimen
<u>Belemnites</u>	
A rounded guard	
Burrow or Scaphopod	

Tam.12. Along Minnie Downs road, 7 miles from turn-off from main Tambo-Blackall road; shallow cuttings south of road.

Pelecypods

Inoceramus sp. (type common in Tambo) A number of specimens  
Panope? maccoyi (Moore) 1870? 1 specimen  
 (this specimen is the same species as illustrated by Etheridge Jnr. 1902, as Glycimeris McCoyi)

Ammonites.

Labeceras sp. 1 specimen

★ Fossil wood and carbonised plant fragments.

Tam.11. Along road to Minnie Downs, 8 $\frac{3}{4}$  miles from turn-off from main Tambo-Blackall road; samples from road side.

Pelecypods

"Yoldia" cf. randsi (Etheridge Jnr.) 1902 Rare  
"Yoldia" sp. nov. (short squat form with rather pointed posterior) Several specimens  
Grammatodon cf. robusta (Etheridge Snr.) 1872 Rare  
Aucellina hughendenensis (Etheridge Snr.) 1872 Common  
Amussioid sp. ind. 1 specimen  
Trigonia sp. ind. 1 specimen  
Cyrenopsis sp.? 1 specimen

Ammonites

Beudanticeras sp. 1 specimen  
Gen et sp.? 1 specimen

Tam.11a.

Pelecypods

Inoceramus sp. ind. 1 specimen  
Aucellina? sp. ind. 1 specimen  
Fulpia sp. nov. Common

Indeterminate Gastropods

Belemnites

Dimitobelus sp. (distinctly oval cross-section - i.e. the forms are clavate)

★ Fossil wood

Tam.10. Along road to Minnie Downs; samples from road-side from 9 to 10 $\frac{1}{2}$  miles from turn-off from Tambo-Blackall road.

Pelecypods

Inoceramus sp. about 6 specimens  
Aucellina hughendenensis (Etheridge Snr. 1872 (large specimens, non-gyrphaeoid umbo) about 6 specimens

## Ammonites

Prohysterocheras? sp. 1 specimen

A piece of rock contains numerous cylindrical clayey pellets about 1 mm. long (?coprolites)

Tam.10a.

## Pelecypods

"Malletia" cf. elongata (Etheridge 1 specimen  
Senr.) 1872

Tam.10b.

## Pelecypods

Aucellina? sp.ind. 1 specimen

"Yoldia" cf. randsi (Etheridge Jnr.) 1 specimen  
1892

Tam.9. Small quarry  $\frac{1}{4}$  mile east of Tambo-Minnie Downs road just south of Cranmore turn-off, and slopes north of quarry.

## Pelecypods

Mucula cf. truncata Moore 1870 2 specimens  
(as illustrated by Etheridge Jnr.  
1902, pl.3)

"Yoldia" cf. randsi (Etheridge Jnr.) Common  
1892

"Yoldia" sp.nov. (short, squat form Common  
probably with chondrophore)

Aucellina hughendenensis (Etheridge Common  
Senr.) 1872

(small forms tend to be gryhaeoid  
and larger non-gryhaeoid)

Trigonia cinctuta<sup>1</sup> Etheridge Jnr. 1902 Common

Cyrenopsis hudsoni (Etheridge 2 specimens  
Jnr.) 1892

Corbula? sp.nov. (small, fat form) A few specimens

## Gastropods, Scaphopods and Belemnites

Indeterminate

## \*Fossil plant fragments

Tam.8. From road-side on small rise  $1\frac{1}{4}$  miles south of Cranmore turn-off (and small quarry) on Tambo-Minnie Downs road.

## Pelecypods

Mucula sp. cf. N? sp.ind. Etheridge Jnr. 4 specimens  
1902 (rather oval species)

Inoceramus sp. Very common

Aucellina hughendenensis (Etheridge Common  
Senr.) 1872

Trigonia cf. cinctuta Etheridge Jnr. Common  
1902

Cyrenopsis hudsoni (Etheridge Jnr) 3 specimens  
1892

Tancredia? sp.nov.B A few specimens

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<sup>1</sup> Cox (1952, p.62) has recently proposed Nototrigonia for a genus of the Trigoniidae with Trigonia cinctuta Etheridge Jnr. (1902, p.28, pl. 4, figs.4-6) as the type species.

## Belemnites

Small slightly tapering guards with  
rounded cross-section Common

## Vertebrates

A tooth

Tam.5. From walls of earth tank 5 miles along road to  
Jynoomah homestead from turn-off on Tambo-Minnie Downs road.

## Pelecypods

<u>Nucula</u> sp. cf. <u>Nucula?</u> sp. ind. Etheridge Jnr. 1902	Common
" <u>Yoldia</u> " cf. <u>randsi</u> (Etheridge Jnr.) 1892	Common
" <u>Yoldia</u> " sp. nov.	Common
<u>Modiola</u> cf. <u>rugocostata</u> (Moore) 1870 (different to Roma forms)	1 specimen
<u>Inoceramus</u> sp. (up to 8" long ★)	Very common
<u>Aucellina</u> <u>hughendensis</u> (Etheridge Snr.) 1872	Very common
<u>Maccoyella?</u> sp. (ribs eroded almost entirely away)	1 specimen
<u>Trigonia</u> <u>cinctuta</u> Etheridge Jnr. 1902	Common
<u>Cyrenopsis</u> <u>huddlestoni</u> (Etheridge Jnr.) 1892	2 specimens
Small carinate pelecypod	Rare

## Gastropods

Genus et sp. (like <u>Vanikoropsis?</u> <u>stuarti</u> Etheridge 1902 but lacks transverse-vertical ribs)	Common
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## Scaphopods

## Belemnites

Dimitobelus sp. (large, distinctly clavate  
guards, rounded however near alveolus)

## Vermes

Burrows, trails (photographs available) 1 specimen

## ★ Wood &amp; plant fragments

Tam.4. Bed of creek and  $\frac{1}{4}$  mile either side of road to  
Jynoomah homestead, 6 miles from turn-off from Tambo-Minnie  
Downs road, samples from large slabs of coquinoid sandy  
limestone.

## Pelecypods

<u>Nucula</u> cf. <u>truncata</u> Moore 1870	4 specimens
<u>Nucula</u> sp. cf. <u>N?</u> sp. ind. Etheridge Jnr. 1902	A number of specimens
" <u>Yoldia</u> " cf. <u>randsi</u> (Etheridge Jnr.) 1892 (has ligament pit)	Common
" <u>Yoldia</u> " sp. nov. (has ligament pit)	Common
<u>Grammatodon</u> <u>robusta</u> (Etheridge Snr.) 1872	2 specimens
<u>Modiola</u> cf. <u>eyrensis</u> Etheridge Jnr. 1902	A few specimens
<u>Inoceramus</u> sp.	Common
<u>Aucellina</u> <u>hughendenensis</u> (Etheridge Snr.) 1872	Very common

<u>Maccoyella</u> sp.ind. (both specimens are smooth, probably due to abrasion)	
<u>Amussiid</u> gen et sp. (smallish form)	A few specimens
<u>Trigonia cinctuta</u> Etheridge Jnr. 1902	Common
<u>Cyrenopsis huddlestoni</u> (Etheridge Jnr.)	Common
<u>Tancredia?</u> sp.nov.B 1892	A few specimens
<u>Corbula?</u> sp.nov.	A few specimens

## Gastropods

<u>"Natica" variabilis</u> Moore 1870	Common
<u>Vanikoropsis? stuarti</u> Etheridge Jnr. 1902	Common
<u>Anchura wilkinsoni</u> Etheridge Jnr. 1892	Common
<u>Actaeon depressus</u> Moore 1870	A few specimens

## Belemnites

<u>Dimitobelus</u> sp. (large clavate guards)	Common
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## Scaphopods

A few specimens

## Vertebrates

Pieces of bone  
One tooth

Tam.3. From surface exposures east of road opposite Duck Pond Dam; along road to Jynoomah homestead, 7 miles from turn-off from Tambo-Minnie Downs road.

## Pelecypods

<u>"Yoldia" sp.nov.</u>	Common
<u>Aucellina hughendenensis</u> (Etheridge Snr.) 1872	Very common
<u>Maccoyella</u> sp.ind. (both abraded)	2 specimens
<u>Inoceramus</u> fragments	
<u>Trigonia cinctuta</u> Etheridge Jnr. 1902	A few specimens

## Belemnites

<u>Dimitobelus</u> sp. (large distinctly clavate guards)	Common
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Tam.2. Homestead Dam,  $\frac{1}{2}$  mile south of Jynoomah Homestead.

## Pelecypods

<u>Nucula</u> sp.ind.	Rare
<u>"Yoldia" sp.nov.</u>	Common
<u>Grammatodon robusta</u> (Etheridge Snr.) 1872	1 specimen
<u>Inoceramus</u> sp.	Common
<u>Aucellina hughendenensis</u> (Etheridge Snr.) 1872	Common

## Belemnites

## Carbonised plant fragments

Jynoomah Homestead (Creek bed about 200 yards west of Manager's House)

## Pelecypods

<u>Nucula</u> cf. <u>truncata</u> Moore 1870	1 specimen
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" <u>Yoldia</u> " cf. <u>randsi</u> (Etheridge Jnr.) 1892	Common
" <u>Yoldia</u> " sp. nov.	Common
<u>Grammatodon robusta</u> (Etheridge Snr.) 1872	1 specimen
<u>Inoceramus</u> sp.	A few specimens
<u>Aucellina hughendenensis</u> (Etheridge Snr.) 1872	Common
<u>Maccovella</u> sp.	1 specimen
<u>Lima?</u> sp.	Rare
<u>Trigonia cinctuta</u> Etheridge Jnr. 1902	A few specimens
<u>Cyrenopsis hudsoni</u> (Etheridge Jnr.) 1892	A few specimens
Other indeterminate pelecypods	

## Gastropods

" <u>Natica</u> " <u>variabilis</u> Moore 1870 (includes some large specimens)	A few specimens
cf. <u>Rissoina australis</u> Moore 1870	1 specimen
<u>Actaeon depressus</u> Moore 1870	A few specimens
<u>Actaeon hochstetteri</u> Moore 1870	A few specimens
<u>Melantria?</u> sp. (High spired form with strong transverse and faint spiral ornament, differs from immature specimens of <u>Anchura wilkinsoni</u> )	1 specimen

## Belemnites

<u>Dimitobelus</u> sp. (large oval guards)	A few specimens
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## Wood and bone material

Boulia-Springvale Area

## Longsight Sandstone

B.532. 1½ miles east of Rocky Bore on Alderley Station;  
from sandstone over cavernous dolomite.

Burrowings or sponges?

G.142. 1 mile east of Stock Route road from Roxburgh Downs  
to Glenormiston (east side of Georgina River) 9 miles south  
of boundary.

Feeding and other burrows and organic marks.  
Rhizocorallium?

G.156. About 15 miles west of Cotton Bush Bore, Alderley  
Station, Glenormiston 4-mile sheet.

Feeding burrows and other burrows and organic marks.  
Pelecypod? indet.  
Belemnite mould (may have a distinct central groove  
like Belemnopsis)

☆ ?Rhizocorallium

G.158. About 12 miles west of Tripod bores on Buckingham  
Downs.

Burrowings and/or concretions.

G.432. About 10 miles west of Tripod bores (Buckingham  
Downs) and 20 miles from McCabe's Knob to the west.

## Pelecypods

"Mytilus" cf. primulafontensis (Etheridge Jnr.) 1902  
(not very different to M. inflatus Moore 1870 or  
Mytilus planus Moore 1870)

Fissilunula clarkei (Moore) 1870  
Cyrenopsis cf. opallites (Etheridge Jnr.) 1902

The three species identified are characteristic of the Roma "Formation".

W.160. On Marion Downs country, 4 miles east of Polly's Lookout; near south end of sand dunes  $1\frac{1}{2}$  miles north of Bullock waterhole (doubtful Long-sight Sandstone).

Asterozoan  
 Organic tracks and markings

W.164.  $6\frac{1}{2}$  miles south-east of Polly's Lookout.

Shell fragments  
 ? Fissilunula clarkei (Moore) 1870 (one incomplete specimen)

W.165.  $2\frac{3}{4}$  miles south-south-east of Polly's Lookout on Glenormiston-Marion Downs boundary.

Burrowings

W.289.  $3\frac{1}{2}$  miles N.N.W. of Polly's Lookout near north end of sand dune; small section exposed about  $\frac{1}{4}$  mile south of Marked Tree Yard track and 1 mile west of Sun Hill.

Wood  
 Indet. pelecypod (could be a fragment of Fissilunula clarkei)  
 ? Wormy tubes

Polly's Lookout. (14 miles south-east of Glenormiston homestead) on Mt. Whelan 4-mile sheet area.

Burrows and tracks

The Longsight Sandstone is characterized by the presence of plants, widespread animal burrowings and tracks, and near the top by a marine fauna of pelecypods and gastropods, all the species of which apparently occur also in the Roma "Formation".

In the present samples the marine fauna is only well developed in G.432, but marine fossils are also found in a number of samples examined and reported on by Professor Dorothy Hill (1960). The top of the Longsight Sandstone is thus marine and the lithology and fauna indicate it was laid down in a marginal environment compared to the overlying bottom part of the Wilguna Formation which was deposited in off-shore shelf conditions. It is possible also that the lower part of the Longsight which has plants, burrows and tracks was laid down in an area marginal to the sea rather than in a distinctly non-marine environment.

Wilguna Formation below Toolebuc Member

B.502. 1 mile south-east of Nine-Mile Bore on Fort William Station.

Shell fragments

W.26. Coogiebung Tank, 5 miles, south-east of Mt. Cooley.

Fish scales  
 Bone or wood  
 Crab or lobster fragment  
 Burrow



The present samples do not afford any evidence on the stratigraphic position and correlation of the lower part of the Wilguna Formation. The fossils, identified by D. Hill (1960), however, indicate that the lower part of the formation contains a fauna characteristic of the Roma "Formation".

Upper part of Longsight Sandstone or Lower part of the Wilguna Formation.

W.37. 12 miles west of Coogiebung Tank and 8½ miles north-east of Mt. Whelan.

#### Pelecypods

<u>Maccovella</u> cf. <u>barklyi</u> (Moore) 1870	Common
Amussiidae gen et sp.	Rare
A small anisomyarian pelecypod	1 specimen

An indeterminate belemnite, doubtful gastropods and crinoid ossicles.

#### Toolebuc Member

B.721. 4 miles north-east of Kheri on stock-route road to Toolebuc Station.

#### Pelecypods

Aucellina hughendenensis (Etheridge Snr.) 1872

#### Vertebrates

Fish scales (?with uranium mineralization)

W.107. Base of 12 Mile Mountains, east side; ¾ mile west of Hilary Tank (Government).

#### Pelecypods

Aucellina hughendenensis (Etheridge Senr.) 1872  
Lima or gastropod (same as in S.1)  
 Indet. fragments

#### Belemnites

Dimitobelus sp.

#### Vertebrates

Bone

W.109. Bellvue Tank (Marion Downs Station)

#### Pelecypods

Aucellina hughendensis (Etheridge Snr.) Common  
 1872?

#### Belemnites

Indet. fragments

#### Vertebrates

Fish scales

S.1. About 2 miles north-west of Spring Creek (Government) Bore on Boullia-Springvale road; from small rise.

Pelecypods

Aucellina hughendenensis (Etheridge Snr.) 1872  
(very common and includes some large specimens)  
Lima or gastropod (as in W.107)

Belemnites

Dimitobelus sp.

Vertebrates

Fish scales  
Vertebral discs?

Wood

S.30. From surfaces outcrops just east of homestead on Canary Station near Bingo Creek.

Pelecypods

Inoceramus sp.

Ammonites

Myloceras sp.  
Labeceras? sp.ind.

Vertebrates

Fish scales

S.107. From small rise west of No.1 Creek, 8 miles south of Springvale homestead and west of track to Junction yard.

Pelecypods

Aucellina hughendenensis (Etheridge Snr.) Common  
1872. (some very large specimens)  
Inoceramus sp. Common

S.216. Elizabeth Springs, outcrops south-east side.

Pelecypods

Aucellina hughendenensis (Etheridge Snr.) Common  
1872  
Inoceramus sp. 1 specimen  
Indet. fragments

Belemnites

Dimitobelus sp.ind. 1 specimen

Vertebrates

Fish scales, bones and spines A few specimens  
Vertebral discs and teeth.

S.219. Small rises 2 miles west-south-west of Spring Creek (Government) Bore; from side of track along netting fence to Canary homestead.

## Pelecypods

<u>Aucellina hughendenensis</u> (Etheridge Snr.) 1872 (some rather large specimens)	Common
<u>Inoceramus</u> sp.	A few specimens

## Ammonites

<u>Labeceras</u> ( <u>Appurdiceras</u> ) sp.	Several specimens
<u>Puzosia?</u> sp.	2 specimens
<u>Aconeceratidae</u> gen et sp. ind.	1 or 2 specimens

## Vertebrates

## Fish Scales

S.220. 1 $\frac{1}{2}$  miles from Dingo Creek bore along track to Jack's bore (Canary Station); surface outcrops of fossiliferous limestone.

## Pelecypods

<u>Aucellina hughendenensis</u> (Etheridge Snr.)	A few specimens
<u>Inoceramus</u> sp.	1 specimen
<u>Maccoyella</u> sp.?	1 specimen
<u>Rocellaria?</u> sp. <sup>1</sup>	

## Ammonites

<u>Labeceras?</u> sp.ind.	1 specimen
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## Burrows?

## Vertebrates

## Fish scale

S.221. Samples collected at Lorna Downs homestead and on rise between homestead and King Creek from side of track to Pelican Waterhole.

## Pelecypods

<u>Aucellina hughendenensis</u> (Etheridge Snr.) 1872 (1 shell, probably a small <u>Aucellina</u> , shows a scar of attachment)	Common
<u>Inoceramus</u> fragments	

## Gastropods

A capulid gastropod

## Ammonites

<u>Labeceras</u> sp.	1 specimen
<u>Labeceras</u> ( <u>Appurdiceras?</u> ) sp.	1 specimen
cf. <u>Falciferella</u> sp.	A few specimens
<u>Desmoceratidae</u> gen et sp.?	1 or more specimens

## Vertebrates

Fish scales  
Bone  
Vertebral disc

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<sup>1</sup> According to Etheridge Jnr. (1892, p.319) Rocellaria is to be placed in the pelecypod order Pholadacea.

S.222. Bed of small creek  $\frac{1}{2}$  mile east of Dilarobidgerrie Waterhole (Lorna Downs Station); just north of track where it descends small scarp.

Pelecypods

Aucellina hughendenensis (Etheridge Snr.) 1872 A few specimens  
Indet. fragments

Gastropods

A capulid gastropod

Belemnites

A thin tapering specimen with a circular cross-section

\* Silicified wood

S.225. Calendula Tank (Government),  $27\frac{1}{2}$  miles south of Marion Downs homestead on Bedourie road.

Capulid gastropod  
cf. Falciferella sp.  
Fish scales  
\* Inoceramus

S.238. West side of Spring Creek at south end of Elizabeth Springs.

Pelecypods

Aucellina hughendenensis (Etheridge Snr.) 1872 Common  
(some very large specimens)  
Inoceramus sp. (a few shells and many fragments)  
Pectinid gen. et sp.? (a small fat form.)

Vertebrates

Fish scales and bones

Hilary Tank (Government) 14 miles south of Marion Downs on Bedourie road.

Pelecypods

Inoceramus sp.  
Aucellina hughendenensis (Etheridge Snr.) 1872

The Toolebuc Member is distinguished by the presence of abundant Aucellina and Inoceramus, which serve to separate it from the Roma "Formation" and its equivalents (including the lower part of the Wilguna Formation), and unite it with the Tambo Formation and its equivalents (including the overlying part of the Wilguna Formation). Aucellina does not occur in the Roma "Formation" and Inoceramus is rare. The ammonites identified and the belemnite Dimitobelus also indicate that, faunally, the Toolebuc Member is to be placed with the Tambo "Formation".

Faunally the Toolebuc Member has a number of special features. Relative to the beds above and below, it has a restricted number of species, although at some localities the number of shells is large, also it is characterized by fish remains and ammonites. The whole of the evidence suggests sedimentation with a relatively poor supply of

land-derived clastic material, probably in relatively deeper water conditions than is general for the Roma "Formation". According to the observations and reading of author, Inoceramus appears to favour these conditions and this may explain its rarity in the Roma "Formation".

Some of the Aucellina from the Toolebuc Member are much larger than those from elsewhere in the Basin, and perhaps should be separated at least as a variety of A. hughendenensis. Apparently the environment of the Toolebuc Member was favourable for Aucellina.

Wilguna Formation above Toolebuc Member

S.32. 3½ miles west of No.6 bore Springvale; from heads of small creeks at top of low rise.

#### Pelecypods

<u>Nuculana?</u> sp.nov.	1 specimen
<u>Inoceramus</u> sp.	Common
<u>Cyrenopsis</u> sp.?	1 specimen
Elongated tubular pelecypod Gen et sp,?	1 specimen

#### Ammonites

<u>Myloceras</u> sp.	Common
<u>Beudanticeras?</u> sp.	1 specimen
<u>Labeceras</u> sp.	2 specimens
cf. <u>Falciferella</u> sp.	1 specimen

#### Vertebrates

Vertebral disc?

#### Wood

S.36. From Ida Creek crossing of track to No.9 bore, Springvale.

#### Pelecypods

<u>Nucula</u> cf. <u>truncata</u> Moore 1870	1 specimen
<u>Nucula</u> cf. <u>quadrata</u> Etheridge Smr.1872	1 specimen
<u>Nuculana?</u> sp.nov.	A few specimens
" <u>Yoldia</u> " sp.nov.	1 specimen
<u>Inoceramus</u> sp. (1 specimen, very elongated transversely)	Common

#### Ammonites

<u>Myloceras</u> sp.ind.	Fragments
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Bd.3. 5 miles south-west of Canuto Waterhole (Sandringham Station) on east edge of low rise, capped with silicified sandstone and covered by sand dune further west.

#### Pelecypods

" <u>Yoldia</u> " sp.nov.	1 specimen
<u>Inoceramus</u> sp.	A few specimens
<u>Aucellina?</u> sp.ind.	Fragment

#### ☆ Gastropods

#### Ammonites

<u>Myloceras</u> ( <u>Aletoceras?</u> ) sp.
<u>Labeceras</u> sp.

Labeceras (Appurdiceras?) sp.  
 cf. Bolitoceras daintreei (Etheridge Snr.) 1872  
 (does not appear to be very different to  
Beudanticeras flindersi)  
 cf. Falciferella sp.

★Fish scales?

Bd.4. Canuto Waterhole (Sandringham Station).

Pelecypods

Aucellina hughendenensis (Etheridge Snr.) 1872 A few specimens

Ammonites

Myloceras sp. 1 specimen  
Labeceras sp.

As the lithology is similar, the presence of the pelecypods Aucellina and "Yoldia" sp.nov., the abundance of Inoceramus, and the ammonites Myloceras, Labeceras and cf. Bolitoceras indicate the Wilguna Formation, above the Toolebuc Member, is to be equated with the Tambo "Formation". Thus the Toolebuc Member and the upper part of the Wilguna Formation are together equivalent to the Tambo "Formation" and hence, the Roma-Tambo boundary should be placed at the base of the Toolebuc Member.

Upper part of Wilguna Formation (probably above Toolebuc Member).

S.108. Just north of Ida Creek, 2 miles north of Cartenari Yard, Springvale.

A large number of Inoceramus prisms making up a large part of the rock.

S.109. From south of S.107 rise (10 miles south of Springvale homestead); between No.9 bore paddock and No.1 Creek.

A large number of Inoceramus shell fragments.  
 Compare samples from S.207, S.208, S.213.

S.150. From creek crossing at Cartenari Yard (Springvale).

Myloceras? sp. ind. 1 or 2 specimens

S.205. Samples from ferruginous rocks between hills  $\frac{1}{2}$  mile east of No.4 bore, Lucknow Station.

Pelecypods

Grammatodon robusta (Etheridge Snr.) 1 specimen  
 1872  
Inoceramus fragments?

★Wood

S.206. Steep-sided gully and bed of creek  $1\frac{1}{2}$  miles east of No.4 bore, Lucknow.

Pelecypods

"Yoldia" sp. ind. 1 specimen  
Inoceramus? sp. ind. 1 specimen  
 Indet. shells 2 specimens

## Star fish

One brittle starfish

## \* Tracks

S.207. Small rise about 1 mile east of No.4 bore Lucknow; between S.205 and S.206 localities.

## Pelecypods

Grammatodon cf. robusta (Etheridge Snr.) 1 specimen  
1872

Inoceramus sp. & numerous large shells Common  
(some layers almost coquinoïd)

Cyrenopsis sp.B (seems to be inflexed 2 specimens  
more towards the front than  
other species)

## Gastropods

An indet. high spired and low spired form.

## Scaphopods

Very common

## Ammonites

Labeceras sp. 1 specimen

## \* Vertebrate teeth

There are rock samples from this locality which are made up mainly of Inoceramus prisms. Compare S.109, S.208, S.213.

S.208. Low rise north of treble-creek crossing on track from No.4 bore to No.5 bore, Lucknow Station,  $2\frac{3}{4}$  miles from No.5 bore.

## Pelecypods

"Yoldia" cf. "Y" sp. nov. 2 specimens

Grammatodon cf. robusta (Etheridge Jnr.) 1872 1 specimen

Inoceramus sp. Common

Cyrenopsis sp. B A few specimens

Indet. shells

## Gastropods

Indet. shells

## Belemnites

Thin tapered guard A few specimens

The rock has a very large number of Inoceramus prisms.

S.209. One mile south of No.5 bore in creek bed, near track to No.4 bore (Lucknow)

## Pelecypods

"Yoldia" cf. "Y" sp. nov. 2 specimens

S.212. From sandy limestone surface outcrops between bores Nos. 3 and 9, Lucknow.

Vertebrate tooth  
Indet. gastropods and pelecypods  
★ Some thin bands rich in carbonaceous matter (plant fragments)

S.213. Samples from 2 to 6 miles south-west along netting fence from Lucknow-Brighton Downs corner.

Indet. pelecypods  
Inoceramus sp.  
★ with rock very rich (coquinoid) in  
Inoceramus prisms

S.214. 1 mile east of No.6 bore, Brighton Downs

★ Inoceramus and wood

S.217a. ?Trails in ironstone on low rise  $1\frac{1}{2}$  miles north west of Warra Hill.

S.234. 6 miles south-east of No.8 bore, Springvale, along track to No.7 bore; from surface outcrop on top of hill.

Pelecypods

Grammatodon cf. robusta (Etheridge Snr.) 1 specimen  
1872  
Inoceramus sp. 1 specimen

Scaphopod

★ Thin-bedded parts with carbonised plant fragments.

These samples were examined to see whether they could belong to the Toolebuc Member. Faunally they can be separated by the presence of "Yoldia" and Grammatodon and according to M.A. Reynolds (personal communication) it seems likely that stratigraphically they lie above the Toolebuc Member. It is quite possible that the faunal difference is rather due to environment than any distinct difference in age.

Wilguna Formation, Toolebuc Member or Above.

W.110. 'Three Sisters', 4 miles north of No.5 bore, Breadalbane.

Pelecypods

Inoceramus sp.  
Aucellina cf. hughendenensis (Etheridge Jnr.) 1872  
Indet. shell

S.38. About 1 mile west of No. 2 Tank, Springvale.

Indet. belemnite mould  
Wood



## CONCLUSIONS

The outstanding feature of the present examination is that it shows clearly the faunal difference between the Roma and Tambo "Formations" or their equivalents (the lower part of Wilguna Formation and the Toolebuc Member together with the upper part of the Wilguna Formation respectively). Stratigraphically the change in fauna is a sharp one and every sample examined could be placed on one or other side of this break. This confirms the work of previous authors (Whitehouse, 1926, p.196; 1954, p.10, Brunnschweiler, 1959, p.10, and the suggestion made by Hill, 1960) and is most important both to the understanding of the stratigraphy and to the subdivision and mapping of the sequences found in the Great Artesian Basin. The difference in the faunas is shown clearly in the chart prepared by M.A. Reynolds (1960b). A copy of the chart is included at the back of this report.

Of the 15 species found in the Roma "Formation" of the Roma area and 29 in the Tambo "Formation" of the Tambo area only 3 species definitely occur in both. To this can possibly be added another 1 or 2. In the Roma "Formation" in the Tambo area, in addition to the 15 species of the Roma area, there are another 12 species, none of which was found in the Tambo Formation. A few genera are confined to one or other. If faunas from areas outside Roma and Tambo are considered, the number of species occurring only in one or other is increased whereas the number of species occurring in common remains the same. Not a single species or genus of ammonite is common to both faunal subdivisions. Although, no doubt, this picture will be modified by later information, it is an unusually clear one for a break in which not more than part of a stage is involved, and it is of a kind that can be used by some one familiar with the fossils for mapping in the field.

Whitehouse (1926, p.196; 1954, p.10), on the basis of his examination of the ammonites, indicates a time gap is present between the Roma and the Tambo. The present examination appears to confirm this suggestion for if sedimentation were continuous a more gradual change might be expected in the fauna. Other possible explanations, however, which might be considered, are changes in the depth of the basin bringing in a new environment and fauna, a breakdown of a barrier to migration, or a rapid change of climate - of course one or more of these might be combined with a gap in sedimentation.

There is some evidence which is discussed with reference to the Toolebuc Member that there was a rather rapid deepening of basin at about the Roma-Tambo boundary. Both a poor supply of sediment and an environment unfavourable to the previously existing fauna might have resulted from this deepening - thus explaining the break in the sedimentation and fauna. A similar explanation has been put forward by Brunnschweiler (1959, p.11).

A detailed correlation with deposits outside Australia has not been attempted but the relationships of the pelecypods and gastropods are compatible with a general Aptian-Albian age for the marine sequence in the Artesian Basin.

In the present collections there are no differences which can be regarded as distinctive in the fauna of the Roma "Formation" and that of the marine fossils in the underlying

transition beds of the Blythesdale "Group" and its equivalents. All the species identified from the transition beds of the Blythesdale "Group" and the upper part of Longsight Sandstone appear to be present in the Roma "Formation". The differences between the fauna of the top part of the Gilbert River Formation and the Roma "Formation" are not as great as between different samples within the Roma "Formation".

However, only a few samples of "transition beds" and their assumed equivalents have been available for study and more intensive collection and detailed work might make it possible to distinguish the two faunas.

The sample from the Surat area ("Griman Creek Group") has only a few fossils but faunally and lithologically it is similar to the transition beds of the Blythesdale "Group" in the Roma area.

Apart from the broad subdivision between the Roma type of fauna and the Tambo type of fauna no faunal zoning has been found possible. Such a fine subdivision would, of course, demand detailed and accurate stratigraphic and faunal information which, because of the nature of the outcrop, is difficult to obtain in the Great Artesian Basin.

As indicated however, in discussion on the Toolebuc Member, it seems possible that this unit may become separable faunally. Although the ammonites do not seem to differ from those above, the unit is distinguished by a very large form of Aucellina hughendenensis and by its faunal association.

#### REFERENCES

(References cited in the identifications are not given, these are obtainable from the bibliography prepared by R.A. McTavish, B.M.R. Records - in preparation).

- BRUNNSCHWEILER, R.O., 1959 - New Aconecerasatinae (Ammonoidea) from Albian and Aptian of Australia. Bur.Min.Resour.Aust.Bull. 54.
- \_\_\_\_\_, 1959 Changes in Shape with Time in Australian species of Aucellina Pompeckj (Auculopectinidae) J.Malac.Soc.Aust. 3, 10-22.
- COX, L.R., 1929 The Mesozoic Family Tancrediidae. Ann.Mag.Nat.Hist., Ser.10, 3, 569-594.
- \_\_\_\_\_ 1952 Notes on the Trigoniidae, with outlines of a classification of the Family. Proc.Malac.Soc.Lond., 29 (2 & 3), 45-70.
- FINLAY, H.J., 1927 New Specific Names for Austral Mollusca. Trans.N.Z. Inst., 57, 488-533
- HILL, D., 1960 Appendix in CASEY, J.N., REYNOLDS, M.A., DOW, D.B., PRITCHARD, P.W., VINE, R.R. and PATEN, R.J., Geology of the Boulia Area, North-west Queensland. Bur.Min.Resour.Aust.Rec. 1960/12 (to be published).

- JENKINS, T.B.H., 1959 New Names in Queensland Stratigraphy, Part 4, Surat (Thallon) Basin. Aust.Oil.Gas.J., 5(11), 29-30.
- PIVETEAU, J. 1952 TRAITE DE PALEONTOLOGIE, 2. Paris, Masson et Cie.
- REYNOLDS, M.A., 1960a Mesozoic and Younger Sediments of the Gilberton and Georgetown 4-mile Sheets, Queensland. (in manuscript).
- \_\_\_\_\_, b Review of the Type Localities of the Blythesdale Group, Roma and Tambo Formations, and the stratigraphy of the Cretaceous of the Great Artesian Basin in Queensland (in manuscript).
- \_\_\_\_\_, c Geology of the Springvale 4-Mile Sheet Area, Queensland. (in manuscript).
- WHITEHOUSE, F.W., 1926 Cretaceous Ammonoidea of Eastern Australia. Mem.Qld.Mus., 8, 195-242.
- \_\_\_\_\_, 1954 The Geology of the Queensland Portion of the Great Artesian Basin. Appendix G to "Artesian Water Supplies in Queensland", Dept. of Co-ordinator-General of Public Works.