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Section 5 — Palaeontology

FAUNAL HORIZONS IN THE PERMIAN OF THE KINGSTON AREA, TASMANIA

by M. J. Clarke

Faunal samples were collected from nine localities throughout the area (see map, fig. 38). The exposures examined mainly comprise variable, yet broadly similar mudstones and siltstones in which small pebbles sometimes occur. The pebbles are usually rare, but occasionally they are sufficiently numerous to form thin, discontinuous bands. The faunas are essentially indigenous with beds of strophalosiids and both fenestillid and trepostome bryozoa, often in growth positions. Gastropods and more or less complete spiriferids are scattered throughout, more especially at localities 2, 5 and 6. Numerous lamelliibranchs, often with the two valves still in articulation, together with abundant ostracods suggest very quiet, perhaps restricted lagoonal sedimentation. Rare thin bands of detrital siltstone and sandstone which are markedly pebbly and gritty in places also occur, notably at localities 3, 4, 7 and 8. In these, broken and rolled bryozoan colonies and other shelly debris are clear evidence of reworking.

The broad similarity of lithological character and faunal phase reflects a persistent environment of sedimentation. The persistence of a given sedimentary environment tends to mask what elsewhere are stated to be palaeontological differences. In the more varied lithological sequences of some other parts of southern Tasmania where calcareous intercalations occur (the Darlington and Berriedale Limestones), faunal differences are more readily apparent; but they are in all probability the effect of phasal and not chronological criteria. Thus it is necessary to consider the character of a group (or groups) of fossils at various intervals throughout the succession, rather than attempt a comparison of the total assemblages with those of a different phase elsewhere. In this respect, the strophalosiids, and to a lesser extent, the spiriferids, are the most important. On this basis the localities can be divided into two groups:—

- (1) A lower horizon at locality 1 which yields a *Strophalosia* similar to, but not identical with, *Strophalosia preoalis* Maxwell.
- (2) The remaining localities which yield forms offering comparison with *Strophalosia jukesi* (Etheridge), *Strophalosia concava* Maxwell, and *Strophalosia typica* (Booker).

[Very recently, Brunton (1966), has discussed the characters and taxonomy of *Strophalosia gerardi* W. King 1844, the genotype of *Strophalosia* (ICZN, 1962, Opinion 625). Brunton agrees with the previous observations of R. H. King (1938), and Waterhouse (1964), that the genoholotype lacks spines on the brachial valve, thus necessitating a considerable redefinition and restatement of the subfamilial classification of the strophalosiids. Some figured and described Australia forms (Maxwell, 1954; Coleman, 1957) clearly possess spines on both valves, and must therefore be referred to the *Dasyalosiinae* Brunton (*op. cit.*), and not to the *Strophalosiinae* Schuchert (= *Heteralosiinae* Muir-Wood and Cooper, 1960; Muir-Wood in Williams *et al.*, 1965). The re-erection of the genus *Wyndhamia* may therefore be in order, but the name *Strophalosia* Auctorum non W. King is here retained pending a revision of the Australian forms.]

(1) In Queensland, *Strophalosia preoivalis* Maxwell is restricted to the Sakmarian and Lower Artinskian (Maxwell, *op. cit.*). Assuming a similar age allocation, locality 1 correlates with the lower parts of the Golden Valley Group which in the Hobart area is the Bundella Mudstone (Banks, 1962). This allocation is given added cogency in that *Strophalosia* aff. *preoivalis* is the characteristic strophalosiid of the Golden Valley type section (Wells, 1957; Clarke 1968), and also occurs in the lower parts of the Golden Valley Group at Scolyers Hill, near Oonah (personal observation); in the common occurrence of *Stenopora tasmaniensis* (Lonsdale) and *Keeneia platyschismoides* Etheridge, forms which are restricted to the Lower Permian of Tasmania (Banks, Hale and Yaxley, 1955); and in the common occurrence of *Grantonia* sp. nov., a form which is also abundant in the type section of the Golden Valley Group in N.W. Tasmania. In addition it is the only locality which yields *Eurydesma cordatum* Morris. An apparent anomaly is the occurrence of a small rugosan, possibly *Euryphyllum*, which is normally confined to the Cascades Group.

(2) *Strophalosia jukesi*, *Strophalosia concava* and *Strophalosia typica* are all essentially Artinskian forms although they range from the uppermost Sakmarian to the Lower Kungurian in Queensland (Maxwell, *op. cit.*). Correlation with various parts of the Cascades and Malbina Groups is therefore indicated. This conclusion is supported by the occurrence of *Grantonia hobartensis* Brown (locality 6), *Ambikella* cf. *mantuanensis* (Campbell) (locality 7), a variety of productoids including *Anidanthus*, *Cancrinella* cf. *cancriniformis* (Tchernyschew) and *Terrakea brachythaerus* (Morris) (localities 3, 5, 6 and 9), *Spiriferellina* (localities 2, 6), a massive encrusting trepostome which is probably *Stenopora crinita* (Lonsdale) (locality 7), and *Pterospirifer avicula* (G. B. Sowerby) Auctorum (localities 7, 8, 9). An interesting occurrence is a species of *Gilledia* with an ornament similar to that of *Gilledia homevalensis* Campbell. It differs, however, in being very strongly biplicate. The *Strophalosia* from localities 5 and 6 are identical with forms from Rathbone Quarry, Granton.

In the absence of a calcareous facies within the Cascades Group an accurate correlation of the various localities is necessarily tentative since those fossils characteristic of the Berriedale Limestone are absent. Localities 5 and 6 most nearly approach the Grange Mudstone in lithology, whilst localities 3, 4, 7 and 9 are more

readily assigned to the Malbina Group. Locality 2, whilst nearest the Grange Mudstone lithologically, is demonstrably above locality 3 in an unbroken succession and must therefore apparently be included within the Malbina Formation. Locality 8 is not obviously related to either the Grange Mudstone or the Malbina Formation, but does yield *Warthia micromphala* (Morris) in some abundance. *Warthia* is a characteristic fossil of the Malbina Formation (Banks and Read, 1962).

The essentially non-marine Mersey (Faulkner) Group cannot be distinguished lithologically or palaeontologically within the area, but this is not inconsistent with the palaeogeography postulated by Banks (1962).

CONCLUSIONS

Golden Valley Group (Bundella Mudstone): Locality 1.
 Cascades Group (Grange Mudstone): Localities 5, 6.
 Malbina Group: Localities 2, 3, 4, 7, 9, probably 8.

Faunal Lists

BRYOZOA

Fenestellids 2, 3, 4, 5, 7.
Protoretetpora spp. 2, 3, 4, 5.
Stenopora cf. *crinita* (Lonsdale) 7.
 Cf. *Stenopora tasmaniensis* (Lonsdale) 1.
Stenopora spp. 1, 2, 4, 5, 7, 8.

BRACHIOPODA

Anidanthus sp. 6.
Cancrinella cf. *cancriniformis* (Tchernyschew) 3.
Strophalosia jukesi (Etheridge) 2, 3, 5, 7.
Strophalosia concava Maxwell 6.
Strophalosia aff. *preovalis* Maxwell 1.
Strophalosia cf. *typica* (Booker) 3, 5, 7 (= *Wyndhamia dalwoodensis* Booker).
Terrakea sp. 3, 5.
Terrakea brachythaerus (Morris) 9.
Grantonia hobartensis Brown 6.
Grantonia sp. nov. 1.
Grantonia sp. 1, 3, 4, 5, 8.
Pterospirifer avicula (G. B. Sowerby) Auctorum 7, 8, 9.
Spiriferellina sp. 2, 6.
Ambikella angulata (Campbell) Group 1, 2, 4, 5, 7, 8.
Ambikella cf. *mantuanensis* (Campbell) 7.
Ambikella oviformis (M'Coy) 7.
Ambikella spp. 5, 6.
 ?*Schuchertella* sp. 1, 5, 6.
Gilledia sp. aff. *G. homevalensis* Campbell 6.
Gilledia spp. 1, 3, 5.

MOLLUSCA

Astartila (?) *obscura* Dickins 4, 5.
 ?*Atomodesma* sp. 4.
Aviculopecten tenuicollis (Dana) [= *sprentii* Auctorum].
 1, 3, 5, 6, 8.
Deltopecten limaeformis (Morris) 1, 5, 6, 8.

- Eurydesma cordatum* Morris 1.
Merismopteria macroptera (Morris) 5, 6, 7.
Merismopteria cf. *carrandibbiensis* Dickins 1.
Modiomorpha ornatissima Johnston 5.
Streblopteria mortoni Johnston 2, 5.
 ?*Mourlonia* sp.
Peruvispira spp. 1, 3, 5.
Keeneia platyschismoides Etheridge 1.
Straparollus (?*Leptomphalus*) sp. 5, 7.
Warthia micromphala (Morris) 8.

OTHERS

- Conularia tenuistriata* M'Coy 3.
 ?*Euryphyllum* sp. 1.
 Ostracods 2, 5, 6, 8.

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