Tasmania

DEPARTMENT OF MINES

GEOLOGICAL SURVEY RECORD

No. 1

Marine Fossils from the Tasmanite Spore Beds of the Mersey River

BY

W. S. DUN

Palæontologist to the Geological Survey of New South Wales and
Lecturer in Palæontology, University of Sydney

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The Honourable E. MULCAHY, Minister for Mines

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LETTER OF TRANSMITTAL.

Geological Survey Office,
Launceston, Tasmania,
11th September, 1912.

SIR,

THIS is the first issue of Records, a class of publication which, in conformity with the usual practice followed by the Geological Surveys of the States of the Commonwealth, is to be devoted to general geology, stratigraphy, palæontology, petrology, and other matters which, although requiring permanent record and having a certain bearing on economic geology, are not always so intimately associated with it as are the contents of our periodical bulletins. These records will consequently present some of the more specialised sides of Tasmanian geology. In accordance with this plan, contributions received from writers of eminence in their respective branches will be published.

I have now the honour to submit to you for publication as a Geological Survey Record a "Note on Marine Fossils from the Tasmanite Spore-beds of the Mersey River," by Mr. W. S. Dun, Palæontologist to the Geological Survey of New South Wales.

Mr. Dun has on more than one occasion rendered valuable service in the determination of Tasmanian fossils, and the present Note is a further contribution by him to our Permo-Carboniferous palæontology.

Two forms new to the Tasmanian life record from the beds of this system are dealt with. His identification of an *Asterozoan* from the Nook tasmanite seam, akin to the Lower Marine *Etheridgaster* of New South Wales, is of

interest. Mr. Dun has also determined an individual of *Keeneia*, a new genus for Tasmania, but which in New South Wales is found in the Lower Marine beds. Mr. R. M. Johnston recorded the occurrence of *Eurydesma (Pachydomus) hobartense* from the tasmanite seam at the Mersey Bend. Mr. Dun has now identified a specimen from the Upper Permo-Carboniferous mudstone beds which immediately overlie the seam of tasmanite at that place.

I have the honour to be,
Sir,
Your obedient Servant,

W. H. TWELVETREES,
Government Geologist.

The Hon. E. MULCAHY, Minister for Mines.

NOTES ON MARINE FOSSILS FROM THE TASMANITE SPORE BEDS OF THE MERSEY RIVER.

By W. S. DUN.

THROUGH the kindness of Mr. W. H. Twelvetrees I have had the opportunity of examining the marine invertebrata collected during his examination of the tasmanite beds of the Mersey River district, Tasmania.

From this stage R. M. Johnston has recorded:—*Spirifera tasmaniensis*, Morris; *Cardiomorpha gryphoides*, De Koninck; *Pachydomus hobartensis* (?), R. M. Johnston (= *Eurydesma hobartense*); *Pleurotomaria morrisiana*, McCoy; *P. woodsii* (?), R. M. Johnston; *Pteronites latus*, De Koninck; *Aviculopecten latrobensis*, R. M. Johnston; *A. (Deltopecten) subquinquelineatus*, McCoy. (1)

Mr. Twelvetrees, in his "Outlines of the Geology of Tasmania," adds *Aviculopecten*, sp.(2)

Charles Gould in 1861 referred to the "Dysodile" as a marine deposit, and containing, though somewhat sparingly, the remains of *Productus*, *Pecten*, *Platyschisma*, *Pachydomus*, &c., which also occur in the beds immediately above and below it. (3)

1. ASTEROZOAN.

From Ray's farm, Nook-road, is an interesting specimen showing impressions of numerous plates of a starfish of the same type as De Koninck's *Palaeaster clarkei*, (4) regarded by Gregory as the type of the genus *Etheridgaster*. (5)

(1) Syst. Account Geol. Tas. 1888, p. 135, and Papers R. Soc. Tas. for 1886, p. 10.
(2) Page 28.
(3) Report on the Resinous Shales of the Mersey River, Tasmania (Hobart, 1861—by authority).
(4) De Koninck: Foss. Pal. N. Galles du Sud, 1877, p. 166, t. 7, ff. 6, 6a. *Monaster*, Etheridge, Jun. (Mem. Geol. Survey N.S. Wales, Pal. V., Pt. 2, 1892, p. 71, t. 14. ff. 1, 2; t. 15, f. 4).
(5) *Etheridgaster*, Gregory (Geol. Mag. 1899 VI. (4), p. 353).

The impressions of the, in most cases, separated plates show them to have been relatively heavy, hexagonal, and ornamented with low tubercles arranged on radiating and undulating ridges. The general appearance of the plates at once recalls that of the plates of the New South Wales *Etheridgaster clarkei* from the Lower Marine stage.

No remains of Permo-Carboniferous *Asterozoa* have been found to my knowledge above the Lower Marine.

2. AVICULOPECTEN SPRENTII, *Johnston*.

Etheridge and Dun (Mem. Geol. Survey N.S.W., Pal. V., Vol. 2, Pt. 1, p. 15—for synonymy).

In the collection there are four specimens which are referred to *A. sprentii*—impressions and internal casts.

The smallest, from the Tasmanian Shale and Oil Company's property, Latrobe, is an imperfect impression of the left valve—with a little shelly matter still remaining—having a width along the hinge line of 26 mm. The auricles are of the type figured in the memoir, with the anterior auricle more ridged than in the New South Wales form figured. (6) The general ornamentation of the shell—well-marked primary and secondary costæ, with fine decussations—is similar.

A larger imperfect specimen, with a height of about 50 mm., from the same locality, shows the outward sweeping of the costæ, which is so well-marked in the New South Wales type. (7) The primary costæ may be considered as 20 in number, with alternating secondaries.

From the same locality is also a well-preserved internal cast of a right valve. Dimensions:—

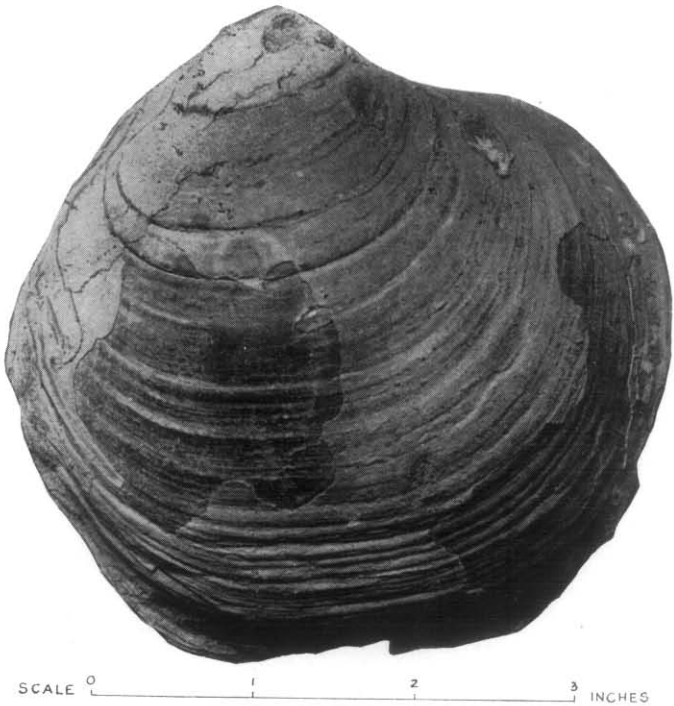
Length of hinge line	28 mm.
Length	46 mm.
Height	47 mm.

A left valve also comes from Ray's farm, Nook.

Though these forms are all referred to *A. sprentii*, it must not be forgotten that Johnston has already described *Aviculopecten latrobensis* from these beds (8). No direct comparisons were made with *A. sprentii*, and unfortunately I have been unable to trace any figures of the former species.

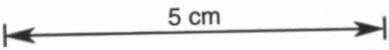
From his description it appears that *A. sprentii* from Porter's Hill has a "truncate-orbicular shell" as com-

(6) *Op. cit. supra*, t. 2, f. 7.
(7) *Op. cit. supra*, t. 13, f. 1.
(8) Papers and Proc. Roy. Soc. Tas. for 1886, p. 11.



Eurydesma Hobartense (*Johnston*).

Keeneia Twelvetreesi, sp. nov. (*Nat. size.*)



pared with the "sub-orbicular" of *A. latrobensis*, both longer than wide, the latter species being larger than the type of *sprentii*.

In New South Wales forms of this type considerable latitude has to be allowed for individual variation, and Mr. Twelvetrees' specimens so closely resemble our local types of *A. sprentii* that in the absence of types of *latrobensis* the reference of the Mersey specimens to *A. sprentii* is followed.

In New South Wales the species appears to be practically confined to the Lower Marine.

3. EURYDESMA HOBARTENSE, *Johnston, sp.*

(Plate I.)

Pachydomus, Johnston (Syst. Acct. Geol. Tas. 1888, t. 16, f. 2).

Eurydesma, Eth. fil. and Dun (Mem. Geol. Survey, N. S. Wales, Pal. V., Vol. 2, pt. 2, p. 75—for synonymy, &c.).

An impression of the right valve of this flat type of *Eurydesma* was collected on the property of the Tasmanian Shale and Oil Company, Latrobe, from mudstones overlying the seam of tasmanite shale.

This species has been recorded by Johnston from the Huon-road and Maria Island, and as common throughout Eastern Tasmania. In 1909 I was able to collect good specimens from the *Fenestella* zone about a mile to the east of Sandy Bay, where it was associated with *E. cordatum*. It is usual to regard these localities as belonging to the Lower Marine stage.

In New South Wales the dominant type of *Eurydesma* in the Lower Marine is the massive, highly convex *E. cordatum* and its variety *E. sacculum*, both of which seem to be replaced in the upper stage by a form very closely comparable with *E. hobartense*, still preserving the thinner shell and less tumid curvature, but with a tendency to develop a cincture.

The discovery of a typical impression in the Mersey Basin is of interest. Dimensions:—

Length	85 mm.
Breadth	91 mm. (9)

From the tasmanite seam, Mersey Bend, was obtained an internal cast of a Eurydesma-like shell, with indica-

(9) A cast of a larger individual has since been obtained from the same beds. It is figured at the end of this Record.

tions of a well-marked cardinal fold and of small but distinct muscle-pits on the sub-umbonal region. The material is insufficient to enable anything definite to be said as regards this interesting specimen, other than that it is a form of *Pteriid* shell new to Australia, with some affinities to *Eurydesma*.

4. KEENEIA TWELVETREESI, *sp. nov.*

(Plate II.)

Shell of moderate size, sub-turbinate, almost heliciform. Spire blunt, consisting of four whorls tapering rapidly. Body-whorl almost circular, forming more than half the height of the shell. Base strongly umbilicate. Mouth circular, outer lip thin with no trace of a sinus, inner lip callous.

Ornamentation consists of growth ridges, rounded, strongly inflected at centre of body-whorl, and forming a slightly raised band without lateral ridges or depressions. The band is sub-sutural on the preceding whorls.

This species is readily distinguished from Etheridge's *K. platyschismoides* (10) of the Lower Marine of New South Wales, in that the body-wheel is not carinate, nor is the base flattened to the same extent.

In general appearance *K. twelvetreesi* is more like the shell now known as *Platyschisma oculum*, Sby., so abundant in the Lower Marine of Tasmania and Victoria.

Comparison with the depressed type of *Keeneia* (11) figured by Etheridge from New South Wales is unnecessary. Dimensions:—

Height	21 mm.
Breadth	32 mm.
Aperture...	17·5 mm.

Johnston has recorded a *Pleurotomaria woodsii* from the Mersey (12), but I have not been able to find a description or figure of it.

The association of marine fossils in the tasmanite beds points to the conclusion that in spite of the conformity between the Upper and Lower Marine stages, there is reason to believe that the positive movement which led to the formation of freshwater beds (the Greta stage) did affect the distribution of marine life, and as a consequence it is

(10) Rec. Austr. Mus. 1902, IV., p. 199, t. 32.
(11) Rec. Geol. Survey, N.S.W., 1898, V., t. 19, ff. 14-17.
(12) Proc. Roy. Soc. Tas. 1886, p. 7; Syst. Acct. Geol. Tas., p. 135.

found that many pre-Greta species either disappear or are modified by the time of the initiation of post-Greta marine sedimentation (Upper Marine stage).

In Tasmania the freshwater sedimentation phase seems to be less marked than in the Hunter basin of New South Wales, so that it is probable that more complete zonal work will prove that certain species have a greater range in Tasmania than further north. Still, the fossils recorded already from the tasmanite series present a decidedly Lower Permo-Carboniferous facies.

The following table showing the ranges previously recorded in Australia of some of the tasmanite fauna may prove of interest:—

Form.	Tasmania.	New South Wales.
Asterozoan (Etheridgaster?) ...	—	Lower Marine
Productus	Lower and Upper Marine	Lower and Upper Marine
Spirifera tasmaniensis	Lower and Upper Marine	Lower and Upper Marine
Cardiomorpha gryphoides	Lower and Upper Marine	Lower Marine
Eurydesma hobartense	Lower Marine	Upper Marine
Pleurotomaria morrisiana	Upper and Lower Marine	Upper Marine
Keeneia.....	(?)	Lower Marine
Aviculopecten sprentii	Lower Marine	Lower Marine
Deltopecten subquinquelineatus	Lower and Upper Marine	Lower and Upper Marine
Pteronites latus	—	Carboniferous

Sydney, September, 1912.

JOHN VAIL,
GOVERNMENT PRINTER, TASMANIA