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PALÆONTOLOGIA NOVÆ CAMBRIÆ MERIDIONALIS—OCCASIONAL DESCRIPTIONS OF NEW SOUTH WALES FOSSILS—No. 7.[1]

BY

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(Plates xxviii.-xxx.)

PERMO-CARBONIFEROUS MOLLUSCA.

I.—*Genus* Dielasma, *King*, 1861.

(Proc. Dublin Zool. Bot. Assoc., i., 1861, p. 256.)[2]

Dielasma jervisensis, *sp. nov.*

(Plate xxviii., fig. 4.)

Sp. Chars.—Brachial valve broad-oval, of low even convexity; margins well and evenly rounded, presenting all but a circular circumference; dental sockets small and elongate; crura in all probability short (represented by their bases only); muscular platform well developed occupying exactly one-third the length of the valve, triangular wedge-shaped; regular concentric laminæ of growth, unevenly spaced apart.

Obs.—This is undoubtedly a very uncommon form of the genus, the broad, low-convex surface, and the almost circular outline distinguish this internal cast of a brachial valve from any other *Dielasma* occurring in our Permo-Carboniferous rocks.

Loc.—Cabbage Tree, ten miles from Jervis Bay, Shoalhaven (*R. Barnes*).

Hor.—Upper Marine Series.

Dielasma inversa, *de Koninck, sp.*

(Plate xxix., fig. 3 and 4.)

Rhynchonella inversa, de Koninck, Pal. Foss. Nouv. Galles du Sud, 1877, pt. 3, p. 82, pl. xi., figs. 11, 11*a* and *b*.

Dielasma inversa, Eth. fil., Rec. Geol. Survey N.S.Wales, v., pt. 4, 1898, p. 175, pl. xix., figs. 1-13.

Obs.—Two specimens, but neither perfect, are figured to illustrate the size to which this remarkable shell attained, and the variability of the folds of the brachial valve, when compared with the largest figure given

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[1] Continued from Vol. xi., p. 219.

[2] *Teste* Marshall, Nomenclator, 1873, p. 113. In two previous publications, at least, Geology and Pal. Q'land, 1892, p. 225, and Bull. Geol. Survey W.Austr., No. 27, 1907, p. 19, I gave an incorrect generic reference to King's genus.

either by de Koninck or myself. The lateral folds are always conspicuous in median sized specimens, less marked in young examples, but in large individuals it may be either the one or the other. In Fig. 3, the lateral folds are hardly perceptible, whereas in Fig. 4, they are decidedly pronounced. *D. inversa* and *D. cymbæformis*, Morris, appear to be close allies.

Loc.—Wollongong *(W. S. Dun).*

Hor.—Upper Marine Series. *D. inversa* also occurs in the Lower Marine Series at Harper's Hill, near Allandale, West Maitland District.

II.—*Genus* Martiniopsis, *Waagen*, 1883.

(Salt Range Foss. (Pal. Indica), i., pt. iv., fas. 2, 1883, p. 524.)

Martiniopsis strzelecki, *de Koninck.*

(Plate xxviii., fig. 1.)

Martiniopsis strzelecki, de Koninck, Foss. Pal. Nouv. Galles du Sud, pt. 3, 1877, p. 97, pl. xiii., figs. 1, 1*a*.

Obs.—The very marked slits left by the dental supporting plates in the pedicle valve and the equally well developed septal plates in the brachial valve, and which combined tend to distinguish *Martiniopsis* from *Spirifera*, clearly indicate this species as a member of the former. The fold is remarkably large and produced as compared with the cast figure of the brachial valve given by de Koninck, and is rather an apt illustration of the great variability that occurs in most of our Permo-Carboniferous members of the Spiriferidæ.

The fossil represented in Pl. xxviii., fig. 1, I regard as an extreme variety of those internal casts called by de Koninck *Spirifer strzelecki*. I restrict my remarks to the internal casts, because it has still to be shown that the testiferous example, figured under the same name, and the cast are one and the same species.

Attention does not appear to have been called to the remarkable divergence of the Australian Martiniopses in form and other external characters from the typical species described by Dr. Waagen. Had it not been for his hint of the possible generic affinity of some of our species, then known simply as *Spirifera*, it is more than probable that the relationship would have been overlooked. The form and external appearance of the Indian and Australian shells are respectively so very unlike, that were it not for the internal similarity of structure one would be tempted to separate them.

Martiniopsis, as constituted by Waagen, was defined as comprising "more or less globular, or thick lenticular, smooth" punctate shells. None of our species are globular, the nearest approach being *M. oviformis*, McCoy, and all are more or less costate, least apparent, however, in *M. subradiata* (s.s.). The thick lenticular form may perhaps be found in *M. subradiata*, var. *transversa*, mihi.[3] The species most commonly met with

[3] Etheridge—Geol. Pal. Q'land, etc., 1892, p. 239.

in a testiferous condition is *M. subradiata*, in the Gerringong beds, and although I have examined a very large number of examples, I have not observed a perforated test, from the locality in question. It would appear as if some layers of the test were fibrous, others punctate, hence I used the term "punctate-fibrous.[4]" Waagen wrote:—"The shell is coated with an epidermis, which exhibits a very distinct punctation . . . The median shell layers show this punctation less distinctly, though it can be well observed in places." No Australian *Martiniopsis*, passing through my hands, has been sufficiently well preserved testiferally to exhibit an epidermis, but in examples from Greta (Upper Marine Series), which often have the test in a fairly good state of preservation, there is visible on the exteriors a remarkably delicate and fine, longitudinal, tear-like sculpture (Pl. xxviii., figs. 2-3), which may be of an epidermal nature, but it is not accompanied by perforations,[5] so far as I can see.

If my determination of the subject of Pl. xxviii., fig. 1, as *Spirifera strzelecki*, de Kon., be correct, then this species certainly becomes a *Martiniopsis*, as we are accustomed to view the genus, although in outward appearance it departs more than usual from the form of the Indian shells. It is pauciradiate, with only two costæ on either side of the fold, and a possible indication of a third.

The original of Pl. xxviii., fig. 1, is in the Berry School of Arts, and was obligingly lent to me by the then Hon. Curator, Mr. T. R. Lewers.

Loc.—Nowra Hill, Shoalhaven, Illawarra District.

Hor.—Upper Marine Series.

Martiniopsis subradiata, *var.*

branxtonensis, *var. nov.*

(Pl. xxviii., figs. 5 and 6, and Pl. xxix., figs. 1 and 2.)

Obs.—A very remarkable development of our characteristic Permo-Carboniferous *Martiniopsis subradiata* occurs in both the Upper and Lower Marine Series of the Maitland District.

The fossils are always in the condition of limonitic (internal) casts, or kernels, and whilst representing more than one of the larger varieties of *M. subradiata*, they are invariably small, but at the same time there is amongst them a wonderful general uniformity in size. This is one of the outstanding features, although there are, here and there, specimens of larger examples of *M. subradiata*. These Brachiopods are not the only organisms of both the Lower and Upper Marine beds, at Farley and Branxton, in this dwarfed condition, a phenomenon it is difficult to account for other than on the supposition that glacial conditions known to have existed at, or about, the time of the deposition of the strata in question were conducive to it.

Amongst the casts are examples of the equivalents of the following varieties of *M. subradiata* proper:—

[4] Etheridge—Geol. Pal. Q'land, etc., 1892, p. 238.

[5] Perforations were observed by Morris.

a. Non-plicate, almost smooth casts, a condition seen in examples from Gerringong Cliffs, as figured by Morris.[6] (Pl. xxviii., figs. 5 and 6).

b. Laterally uni-plicate, similar to an illustration by de Koninck.[7]

c. Laterally bi-plicate, answering to the var. *darwinii*, mihi.[8]

d. Nuilteradiate laterally (Pl. xxx., fig. 2).

e. Transversely-oblong, similar to var. *transversa*, mihi.[9]

I have catalogued these five varieties all as var. *branxtonensis*, rather than attempt to attach the existing varietal names of the mature-form, the characters so running into one another at times that differentiation is difficult.

The surfaces of many of these casts show pittings and short groovings without and around the muscular impressions; they appear to be confined to these areas and are probably connected with the ovarian systems.

Locs.—Farley Railway Cutting at Farley, and Branxton, Hunter River District.

Hors.—Lower and Upper Marine Series respectively.

III.—*Genus* Mæonia, *Dana*, 1847.[10]

(American Journ. Sci. (2), iv., 1847, p. 158).

Mæonia morrisii, *sp. nov.*

(Plate xxviii., figs. 7 and 8.)

Sp. Chars.—Shell (internal cast), short, gibbous, the valves strongly arched diagonally; anterior ends convex between the boldly rounded margins and the median, oblique, open cinctures, which strongly insinuate the ventral margins; posterior ends comprising nearly two-thirds of each valve, rising gradually to the cord-like, prominent, slightly sigmoidal diagonal ridges; posterior slopes large, slightly concave, and each medianally traversed by a subsidiary diagonal ridge following the outline of its principal; when viewed posteriorly, the united posterior slopes bounded by the cord-like diagonal keels present a strongly cordiform outline; anterior muscular scars quite marginal, elongately triangular in a longitudinal direction, and concentrically ridged; posterior scars oval, rather retired from the posterior margins.

Obs.—This remarkable shell was brought to my notice by Mr. W. S. Dun; it is form Harper's Hill, and is clearly of the type of *Mœonia carinata*, Morris, but much shorter, and in comparison with the latter far wider across the united valves. The diagonal keels are very prominent and the posterior slopes so far flattened, or slightly concave, that when viewed

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[6] Morris—Strzelecki's Phys. Descrip. N.S.Wales, etc., 1845, pl. xvi., fig. 1.
[7] de Koninck—Foss. Pal. Nouv. Galles du Sud, pt. 2, 1876, pl. xii., fig. 1.
[8] Etheridge—Geol. Pal. Q'land, etc., 1892, p. 240.
[9] de Koninck—*Loc. cit.*, pl. xii., fig. 1*b*.
[10] As *Myonia*.

end-on the resemblance to the posterior end of a *Conocardium*, with its siphonal tube removed is striking.

In the present instance we are either dealing with a very remarkable variety of *Mœonia carinata*, or a quite new form. The difficulty of arriving at a satisfactory conclusion on this point arises from the fact that examples of *M. carinata* so seldom display the true outline of the species, but are usually met with as more or less crushed or distorted casts.

I rely on the following features for the specific stability of this shell:—(1) short form and gibbosity as compared with length; (2) very marked median cinctures; (3) remarkably prominent cord-like diagonal keels; (4) markedly cordiform outline of the united posterior slopes.

Loc.—Harper's Hill, near Allandale, West Maitland District *(W. S. Dun)*.

Hor.—Permo-Carboniferous tufaceous sandstone of Lower Marine Series.

Mæonia carinata, *Morris*, *var.* minor, *var. nov.*

(Plate xxix., figs. 5-8.)

Obs.—*Mœonia carinata* (s.s.) appears to be practically restricted to the Upper Marine Series, for instance, as at Gerringong and Jamberoo in the Illawarra District, and Bundanoon in the Berrima Land District. The peculiar and exaggerated form just described is, as previously stated, from the Lower Marine Series at Harper's Hill, near Allandale Railway Station, West Maitland District.

The variety, or race represented in Pl. xxix., figs. 5-8, is never of large size, with an unmistakable tendency to "stumpiness," with prominent diagonal ridges, approaching those of *M. morrisii*, but the flanks to all intents and purposes in one plane, as in *M. carinata*, and not traversed by wide, pronounced cinctures, similar to those in the former.

It would be interesting to institute a comparison between this variety and the original of a *Mœonia* from the Huon Road, Tasmania, referred by Mr. R. M. Johnston to *M. carinata*,[11] with a slightly sigmoidal and outstanding diagonal keel; they are very much alike.

Locs.—Bundanoon Gully, about one and a half miles from Bundanoon Railway Station, Berrima Land District, New South Wales *(W. W. Thorpe)*.

Hor.—Upper Marine Series. In the Lower Marine Series at Farley are casts of lesser size than Pl. xxix., figs. 5-8, but possessing characters of a very similar appearance.

Mæonia morrisii, *var.* (?)

(Plate xxx., figs. 1 and 2.)

Obs.—In this instance we are either dealing with a distinct species or a variety of *M. morrisii* (Pl. xxviii., figs. 7 and 8), notwithstanding the

[11] Johnston—Systematic Acc. Geol. Tas., 1888, pl. xi., fig. 15*a*.

length in relation to the width is so much more disproportionate than in *M. morrisii* proper. Some little distortion has taken place, but even allowing for this the cinctures, strong keel-like diagonals, and nearly flat posterior slopes, are self evident. The concentric lines of decoration are remarkably fine and even, and quite unlike those of the *M. carinata* group, at Farley are again internal casts, which also allowing for some distortion are very similar to this Lochinvar specimen.

For the present I prefer to regard this shell simply as a variety of *M. morrisii*, but the long, almost "snout-like" posterior end, lends so marked an appearance to this bivalve that in all probability separation will be necessary in the future.

Loc.—Lochinvar, Hunter River, County Northumberland; ? Farley Railway Cutting.

Hor.—Lower Marine Series.

IV.—*Platyschisma oculus*, G. B. Sowerby, *P. rotundatum*, Morris, and *P. depressum*, Dana.

When describing *Platyschisma oculus*, Morris remarked[12] that his *P. rotundatum*, might, after all, be but a variety of the first-named. After examining a number of specimens of both, I believe them to be distinct species.

Platyschisma oculus.[13]—The last, or body-whorl is of even and low convexity above, and flatter, or less convex even below, the two surfaces meeting at an obtuse peripheral angle, keel, or edge, over which the lines of growth pass.

Platyschisma rotundatum.[14]—In this form the body-whorl is distinctly rounded, or convex, above and below, there is no peripheral angle, or keel, and "the inner part of the outer lip appears to have been periodically thickened leaving sulcations in the cast." I have never seen this thickening in any example possessing the definite characters of *P. oculus*.

Platyschisma depressum.[15]—At first sight Dana's figure of this species might be supposed to represent a univalve crushed from above; such was my opinion previous to receiving a type replica, but the description, "very much depressed, almost disk-form," with flattened whorls, "the outer of which has the back subtruncate" is strictly accurate.

An example of a very depressed, although imperfect shell from Lochinvar agrees with this description, and is provided with a peripheral band, truncating the entire edge or keel, and evidently corresponding to Dana's expression, "back subtruncate"; in fact, I believe there are traces of this band on the replica. The sculpture of the Lochinvar fossil, where the test is preserved consists of the usual lines of growth, coinciding with the lip margin on the upper surface of the whorl, *i.e.*, curving forwards, but on passing over the truncated band-like periphery they are regularly

[12] Morris—Strzelecki's Phys. Descrip. N.S.Wales, etc., 1845, p. 286.
[13] Morris—*Loc. cit.*, pl. xviii., fig. 1.
[14] Morris—*Loc. cit.*, pl. xviii., fig. 2.
[15] Dana—Wilkes U.S. Explor. Expedn., x. (Geology), 1849, pl. x., figs. 2*a* and *b*.

deflected backwards as in an ordinary pleurotomarid band; the test is not preserved on the lower or flattened surface.

The presence of this peripheral band at once removes the species from the genus *Platyschisma*, and indicates *Keeneia*, mihi, as a suitable resting place, thus introducing a depressed form into an otherwise trochiform genus. Now, in *P. ocidus*, although the growth sculpture passes over the obtuse peripheral keel, there is no truncate periphery bearing a band.

Platyschisma rotundatum, var. *farleyensis*, var. nov. (Pl. xxviii., fig. 9).—Associated in numbers with the limonitic *Martiniopsis*, *Pleurophorus gregarius*, and *Stutchburia farleyensis* casts at Farley, are similar kernels of small *Platyschisma rotundatum*. All I have seen are of a common size, less than the normal dimensions of examples of the species obtained elsewhere. On these internal casts, the sulci resulting from the protrusion of the inner shelly ribs, described by Morris, are always in evidence and well displayed. The casts seldom exceed one and three quarter inches in greatest basal diameter, and three quarters of an inch in height, they appeal to me as a stunted growth of the ordinary *P. rotundatum*.

V.—Various Species described by Dana.

Amongst the Pelecypoda collected in New South Wales by Prof. J. D. Dana were two species described as *Cardinia (?) recta*[16] and *C. (?) cuneata*,[17] and as *Solecurtus* two species, *S. (?) ellipticus*[18] and *S. (Psammobia ?) planulatus*.[19] To *Cypricardia* were also referred *C. acutifrons*,[20] *C. imbricata*,[21] *C. arcodes*,[22] *C. prærupta*,[23] *C. simplex*,[24] *C. (Avicula ?) veneris*,[25] and *C. siliqua*.[26] Of the above I have already dealt with *Cardinia simplex*, referring it to a new genus, *Stutchburia*.

The following remarks on ten of the above are based on replicas of Dana's types. These were most obligingly supplied by the United States National Museum, Washington, where Dana's gatherings are located.

1. [*Cardinia*] *recta*, Dana.—When describing *Stutchburia farleyensis* I alluded to *Cardinia (?) recta*, and *C. (?) cuneata* as possibly referable to *Stutchburia*, "in which case the generic characters of the latter, will of necessity require to be slightly modified" to allow of the inclusion of more or less similar bivalves, but with nasute posterior ends. This suggestion will stand good with regard to *C. (?) recta*, but not I now believe in the case of *C (?) cuneata*. By incorporating the first of these bivalves in *Stutchburia* it will not be necessary to enlarge the generic characters in question. I have before me a cast of one of Dana's types of his *C. (?) recta*[27] (Pl.

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16 Dana—Wilkes U.S. Explor. Expedn., x. (Geology), 1849, pl. iv., figs. 5, 5*a* and *b*.
17 ,, ,, ,, pl. iv., figs. 6, 6*a-d*.
18 ,, ,, ,, pl. ii., fig. 9.
19 ,, ,, ,, pl. ii., fig. 10.
20 ,, ,, ,, pl. viii., figs. 4*a* and *b*.
21 ,, ,, ,, pl. viii., fig. 5.
22 ,, ,, ,, pl. viii., fig. 8*b*.
23 ,, ,, ,, pl. viii., fig. 10.
24 ,, ,, ,, pl. ix., fig. 2.
25 ,, ,, ,, pl. ix., figs. 3*a* and *b*.
26 ,, ,, ,, pl. ix., figs. 1*a* and *b*.
27 ,, ,, ,, pl. iv., fig. 5.

xxx., fig. 7) and accept this in preference to the figure cited, which, I regret to say, is most misleading in that the cardinal, or dorsal, line is not arcuate, or inclined, but straight as in *Stutchburia* proper. The anterior end does not terminate just before the adductor scar, but extends some way still forwards; the flanks are not cinctured as the figure shading would indicate, and the radii are distinctly visible extending over two thirds of the surface; so far as I can see the shell was edentulous as in *Stutchburia*. As regards Dana's Fig. 5*a* I make no comment.

Loc.—"Illawarra."

2. [*Cardinia ?*] *cuneata*, Dana.—In this instance the illustrations and type casts are strictly in accord with one-another. Several casts are in the collection (Pl. xxx., figs. 4-6) similar in all features to Dana's description and figures, compressed valves, arcuate dorsal margins and nasute posterior ends, but with radiate sculpture, which, according to Dana, was not present on his specimens (Pl. xxx., fig. 3); this is borne out by the replicas before me. I am unable to explain this discrepancy, for there can hardly be two forms, otherwise exactly alike, and differing only in the one feature. Although the hinge was edentulous [*C. ?*] *cuneata* can hardly be placed in *Stutchburia*, or at any rate only provisionally.

Loc.—Wollongong, Illawarra District *(W. S. Dun)*.

Hor.—Upper Marine Series.

3. *Solecurtus (?) ellipticus*, Dana.—Provided the replica is a faithful reproduction of the original, the latter can only be regarded as a meaningless impression without character or structure; the name may be struck off the list of our Permo-Carboniferous fossils.

4. *Solecurtus planulatus*, Dana.—Drawn from a featureless impression as represented by the replica; another name to be deleted.

5. [*Cypricardia*] *simplex*, Dana.—Already referred to *Stutchburia*.

6. [*Cypricardia*] *prærupta*, Dana.—In the absence of any negative characters, I tentatively refer this to *Stutchburia*. Dana described the anterior adductor scars as circular, but they appear to be much more of the "leg of mutton" shape, so characteristic of the foregoing genus. The published figure is much too lithodomoid, and the ventral margin is not inflected as shown in the illustration.

Loc.—"Illawarra."

7. [*Cypricardia*] *acutifrons*, Dana.—The figures are again most misleading in that the anterior ends in the replica do not terminate in acute prolongations, the antero-ventral margins are not inflected to the degree represented, and the actual margins of the united valves and therefore the true outlines are not preserved. The species is again referred to on a succeeding page.

Loc.—"Illawarra."

8. [*Cypricardia*] *imbricata*, Dana.—As a representation of the original,[28] portions of the two valves united, this figure is also erroneous. It is less perfect than represented, the concentric sculpture rendered far too

[28] Dana—*Loc. cit.*, pl. viii., fig. 5.

plain and the posterior wing more or less restored, but probably correctly so. I suggest its identity with de Koninck's figure of *Pterinea macroptera*, but not with Morris's bivalve of the same name. Again, it is not far removed from the smaller of the two figures of *Modiola crassissima*, which, it is almost needless to say is not a *Modiola*.

Loc.—Harper's Hill.

9. [*Cypricardia*] *veneris*, Dana.—Another of Dana's illustrations that puzzled me for many years; I have not a replica of this specimen, but some light is, I think, thrown on [*C.*] *veneris* by a shell collected at Wollongong by Mr. W. S. Dun (Pl. xxxi., fig. 8). This is a very transversely-elongate, more or less siliquiform bivalve, attenuated at the anterior ends, and thence slightly expanding to the posterior. The cardinal margins are more or less eroded but they were long, straight and apparently edentulous. The anterior ends are peculiarly lobe-like, and obtusely pointed, whilst the posterior comprise quite nine-tenths of the valves. The sculpture was both concentric and radiate, the oblique radii from the umbos extending over the median and posterior surfaces. Although Dana's figure was evidently drawn from a poor and imperfect specimen, still, the same insinuated ventral margins as existing here, the tendency to a siliquiform outline, and the large number of radii, only equalled by those of *Stutchburia costata*, will, I believe, uphold the accuracy of this reference. The generic identity of this fossil must remain open for the present.

Loc.—Glendon, Hunter River.

There are also in the collection other Stutchburia-like shells of doubtful identity, three of which may be mentioned to attract the attention of collectors.

Stutchburia, 1. In form like *S. costata*, Morris, but stouter, and each valve traversed by three well marked radii only, from the umbos to the middle of the ventral margins.

Loc.—Wollongong, Illawarra District *(W. S. Dun)*.

Hor.—Upper Marine Series.

Stutchburia (?) 2. A small and oblique form with about six radii occupying a similar position to those on No. 1. The concentric sculpture is very regular and fine, and on crossing the radii, a coarse decussation is apparent.

Loc. and *Hor.*—As in No. 1.

Stutchburia (?) 3.—Of the *S. costata* type in general, but pod-shaped, and with the whole of the posterior two-thirds of the valve surfaces radiate, the most anterior radii striking the ventral margins, at about their middle points; the first four radii are distinctly spaced apart.

Loc. and *Hor.*—As in No. 1.

VI.—*Cypricardia acutifrons*, Dana, *C. arcodes*, Dana, *C. imbricata*, Dana, and *Pterinea macroptera*, Morris, Dana, and de Koninck, in relation to the genus *Merismopteria* and to one-another.

Pterinea macroptera, Morris, was selected by me as the type of the genus *Merismopteria* in 1892,[29] and since then I have not seen any reason to doubt the propriety of the step taken.

Morris recorded his species from Spring Hill, Tasmania, and although in common with others, I have been in the habit of listing pterinform fossils of Permo-Carboniferous age found in New South Wales, under the name in question, I have now, after a close study of the matter, come to the conclusion *Merismopteria macroptera*, is not a New South Wales fossil, or at any rate if so, excessively rare, but confined to Tasmania. Even the illustration of this shell by the late Mr. R. M. Johnston in his work on the Geology of Tasmania is but a copy of Morris' Fig. 2.

Dana was the first to introduce *Pterinea macroptera* into the New South Wales list in 1849. The replica impression represents a somewhat imperfect shell, but notwithstanding, it is the nearest approach to Morris' Fig. 2, I remember to have seen, and may possibly be the species.

Loc.—" Illawarra."

[*Cypricardia*] *imbricata*, Dana, a true *Merismopteria*, is intermediate between *M. macroptera*, Morris, and [*Cypricardia*] *acutifrons*, Dana. It is less transversely oblique than the first-named, and although the anterior end projects to some extent, it lacks the peculiar lobate appearance of *M. macroptera*, proper.

Loc.—Harper's Hill.

Pterinea macroptera, de Koninck, from the " neighbourhood of Maitland," is again not that of Morris, but is the species first referred to, *M. imbricata*, Dana, when allowance is made for the relative positions of the anterior adductor scar and clavicle impression.

Do both Morris' figures of his *Pterinea macroptera*, represent one and the same species ?; it will not surprise me to learn from an examination of the type specimens that they do not. His Fig. 3, if a correct representation of the original appears to be so disproportionately long in comparison with Fig. 2, that doubt of its specific identity is aroused. In connection with this, arises the question, what is *Cypricardia acutifrons*, Dana ? Long a puzzle to me, the type replica reveals its *Merismopteria* affinity, but distinct from both *M. macroptera*[30] and *M. imbricata*, and is a moderately common New South Wales fossil. It is remarkable for the extent of its transverse obliquity, extended cardinal margins, and gently insinuated ventral outline. Dana obtained his specimen at " Illawarra."

[*Cypricardia*] *arcodes*, Dana, is another *Merismopteria*, and distinct from any of the foregoing. It is a pronounced *Merismopteria*, and although a smaller, it is a much more robust species, its chief features being a more " nuggety " outline and proportions, with evenly rounded and gibbous posterior diagonal slopes; the clavicle cavity is deep and wide.

Loc.—Harper's Hill.

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[29] Etheridge—Geol. Pal. Q'land, 1892, p. 271.

[30] de Koninck suggested the identity of *Pterinea macroptera*, Morris, and *Cypricardia acutifrons*, Dana (*Foss. Pal. Nouv. Galles du Sud*, pt. 3, 1877, p. 168).

EXPLANATION OF PLATE XXVIII.

Martiniopsis strzelecki, *de Koninck.*

Fig. 1. Brachial valve and portion of pedicle valve exhibiting the slits left by the decay of the dental plates in the pedicle valve, and those of the septal plates in the brachial valve. A cast from the Upper Marine Series of Nowra Hill, Shoalhaven, in the Berry School of Arts.

Martiniopsis subradiata.

,, 2. Portion of weathered test of a specimen of *Martiniopsis subradiata*, from Farley, exhibiting lines radiating in two directions enclosing acutely rhomboidal spaces, highly magnified.

,, 3. A similar specimen of this species from Farley exhibiting long tear-like tubercles which apparently represent the junctions of the converging lines seen in Fig. 2, highly magnified.

Dielasma jervisensis, *Eth. fil.*

,, 4. Cast of a broad oval brachial valve of low convexity, a very uncommon form of the genus. Cabbage Tree, Jervis Bay.

Martiniopsis subradiata, *var.* branxtonensis, *Eth. fil.*

,, 5. Brachial valve and umbo of the pedicle valve of a dwarf form, representing the average size attained by the variety.

,, 6. Pedicle valve of the same.

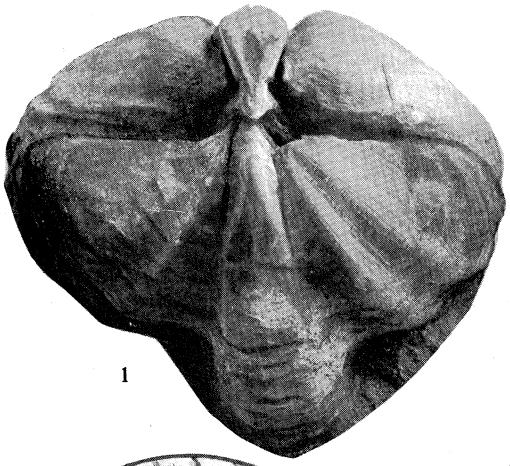
Mæonia morrisii, *Eth. fil.*

,, 7. Lateral view of right valve, with patches of test remaining, short, gibbous, and prominent diagonal ridge. Harper's Hill.

,, 8. Cardinal or dorsal view of the united valves of the same specimen; the strongly curved prominent ridges are well displayed.

Platyschisma rotundatum, *var.* farleyensis, *Eth. fil.*

,, 9. Internal limonitic cast, exhibiting the average normal size of the variety with the sulci resulting from the inward protrusion of the shelly ribs.



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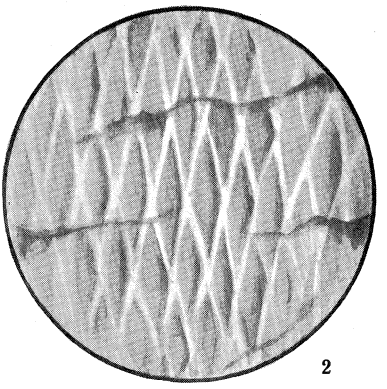

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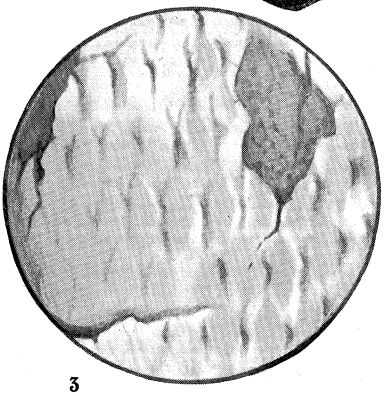

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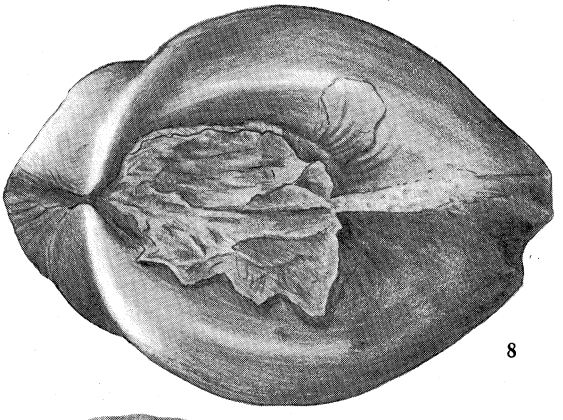

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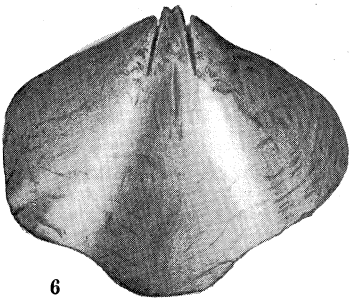

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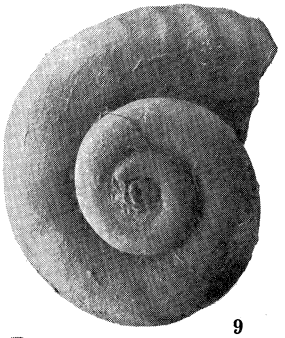

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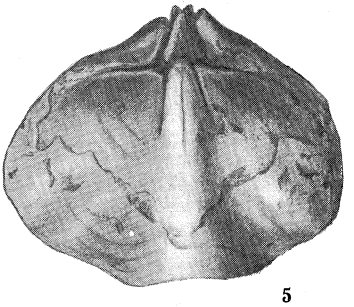

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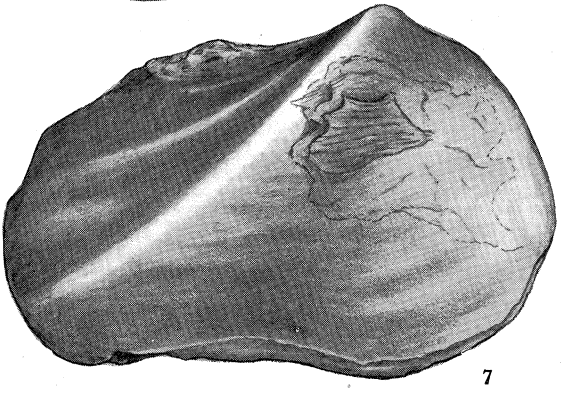

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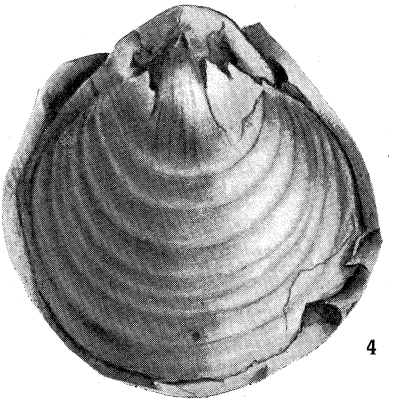

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EXPLANATION OF PLATE XXIX.

Martiniopsis subradiata, *var.* branxtonensis, *Eth. fil.*

Fig. 1. View of brachial, and umbonal region of pedicle valve; the former is bi-plicate. Branxton.

,, 2. A similar specimen to that represented in Fig. 1, multiplicate. Farley.

Dielasma inversa, *de Koninck.*

,, 3. Brachial, and umbonal portion of pedicle valve, with little or no trace of lateral folds. Wollongong.

,, 4. A similar specimen to that represented in Fig. 3, with lateral folds more marked. Wollongong.

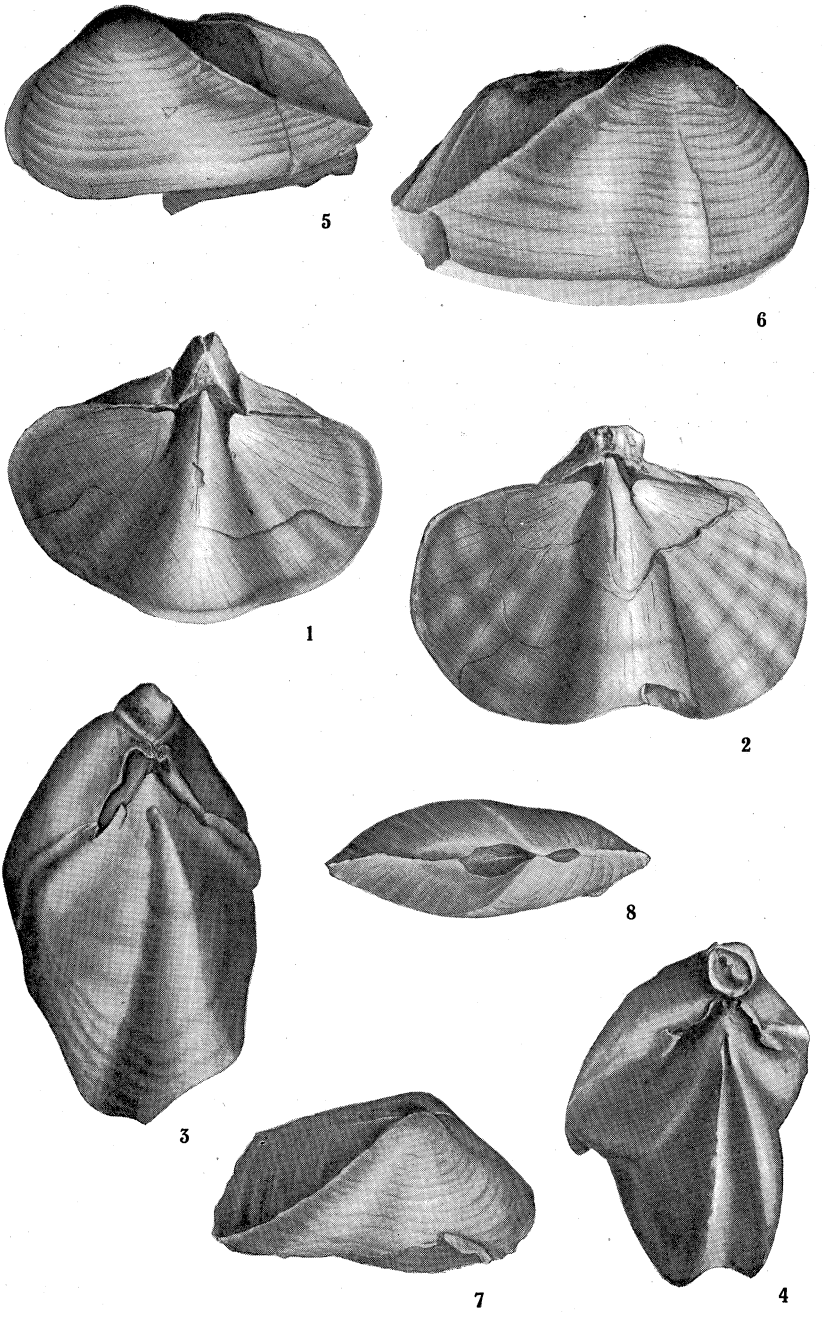
Mæonia carinata, *var.* minor, *Eth. fil.*

,, 5. Left valve. Bundanoon Gully.

,, 6. Right ,, ,, ,,

,, 7. Left ,, ,, ,,

,, 8. Dorsal or cardinal view. Bundanoon Gully.



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EXPLANATION OF PLATE XXX.

Mæonia morrisii, *Eth. fil.*, *var.* ?

Fig. 1. Right valve. Notice the proportional elongation and wide curvature of the diagonal ridge. It is probably a distinct species. Lochinvar.

„ 2. The same specimen, dorsal view.

[Cardinia] cuneata, *Dana.*

„ 3. Drawn from a reproduction of one of Dana's type specimens (Wilkes U.S. Explor. Expedn., x., Geology, pl. iv., fig. 6) by which, it will be seen, there are no radii.

„ 4. Natural cast in the Museum Collection of the same species as that represented by Fig. 3, but with radii. Wollongong.

„ 5. Another example similar to Fig. 4. Wollongong.

„ 6. A third radiate example. Wollongong.

[Cardinia] recta, *Dana.*

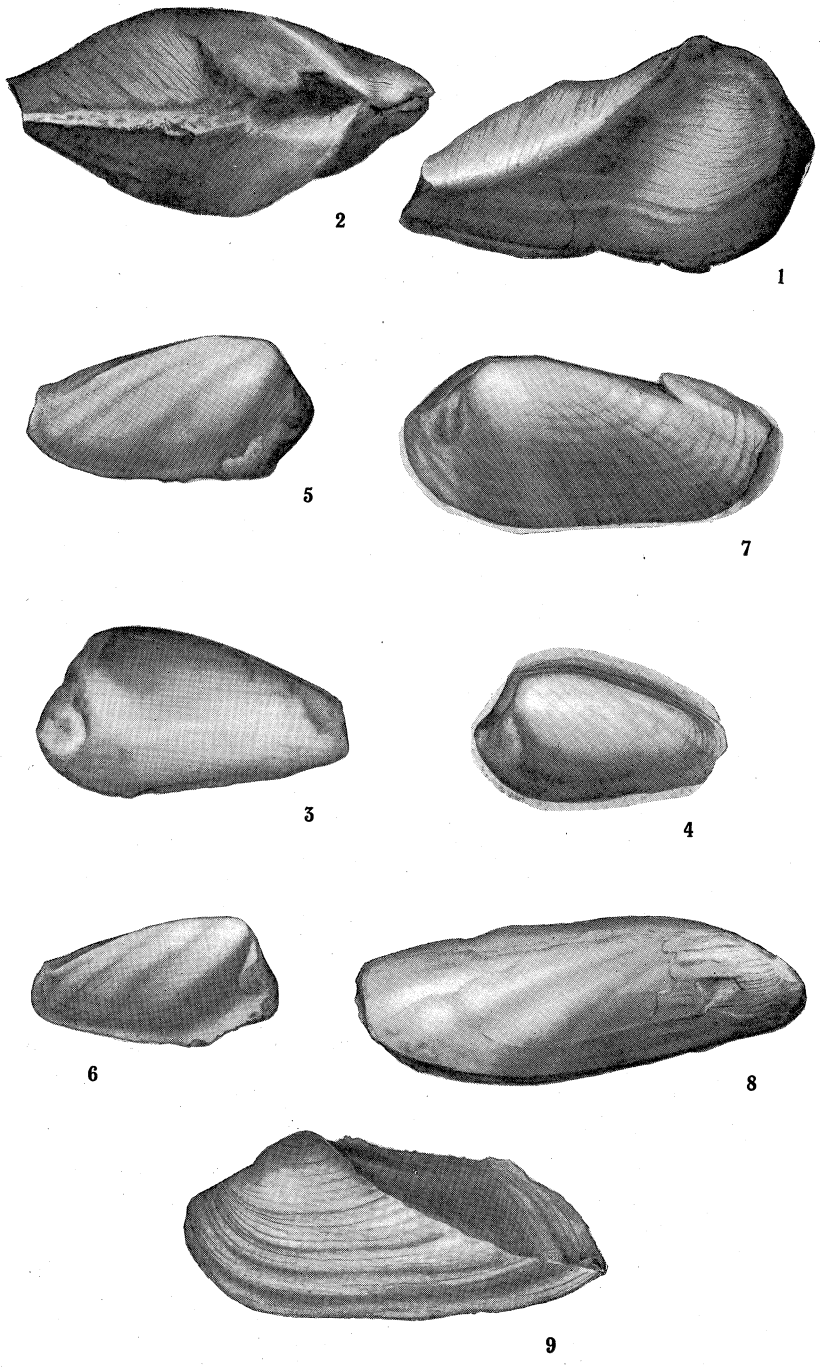
„ 7. Drawn from a reproduction of one of Dana's type specimens (Wilkes U.S. Explor. Expedn., x., Geology, pl. iv., fig. 5). "Illawarra."

[Cypricardia] veneris, *Dana.*

„ 8. A very transversely elongated, siliquiform bivalve, probably a *Stutchburia*, but distinct from both *S. costata* and *S. compressa*. Wollongong. $\frac{1}{2}$ nat.

Mæonia carinata, *var.* minor, *Eth. fil.* ?

„ 9. Possibly a sub-variety, narrower and more elongate. A left valve. Bundanoon Gully.



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