A NEW PERMO-CARBONIFEROUS GENUS (*KEENEIA*) OF PLEUROTOMARIIDÆ, AND A *STRAPAROLLUS* IN NEW SOUTH WALES.

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(Plates xxxii. – xxxiii.)

The Lower Marine Series of our Permo-Carboniferous in the Maitland District has yielded a fine Gasteropod, that I believe constitutes a new sub-genus of *Pleurotomaria*, or genus of Pleurotomariidæ, as the idiocyncracies of the reader may lead him to regard it. The characteristic univalve of the series mentioned is *Platyschisma oculus*, Sby., sp., but occurring side by side with this, and in some respects like it, is another much larger and more massive shell, quite undescribed with us, that I propose to designate as *Keeneia platyschismoides*. The generic name is given in honour of the late Mr. William Keene, for many years Examiner of Coal Fields for New South Wales, and whose researches, combined with those of the late Mr. C. S. Wilkinson, laid the foundation for our present knowledge and classification of the New South Wales Coal Measures. Mr. Keene's writings will be found in the early publications of the Department of Mines, Sydney, the Quarterly Journal of the Geological Society of London, and various Exhibition Catalogues and Reports referring to New South Wales.

Keeneia is an umbilicate Pleurotomaria, and hence need only be compared with those so-called sub-genera of the genus in chief possessing an umbilicus. The principal features in the so-far only known species, irrespective of its size and umbilicus are:—(*a*) visible presence of the band only on the body-whorl; (*b*) band in the same plane as the surface of the body-whorl, not raised or bordered by carinæ; (*c*) sutural and concealed position of the band on the other whorls; (*d*) absence of a keel surrounding the umbilicus.

The umbilicate "sub-genera" of *Pleurotomaria*, with which it is necessary to compare *Keeneia*, are:—*Mourlonia*, de Koninck; *Rhineoderma*, de Koninck; *Yvania*, Bayle; *Luciella*, de Koninck; *Leptomaria*, Deslonchamps, and others named below, but I omit from consideration *Talantodiscus*, Fischer; *Pyrgotrochus*, Fischer; *Entemnotrochus*, Fischer; and *Pleurotomaria* proper, as typified by *P. anglica*, Desh. The relation may be expressed in the following table:—

—	Keeneia platyschismoides.	Mourlonia, *De Kon.*	Rhineoderma, *De Kon.*	Yvania, *Boyle.*	Luciella, *De Kon.*	Leptomaria,[1] *Desl.*	Gyroma, *Œhlert.*
Shell ..	Turbinate.	Conical.	Turbinate.	Conical turriculate.	Trochiform (more or less).	Heliciform conical.	Turbinate.
Whorls ..	More or less rounded.	More or less rounded.	Depressed above, convex below.	Gradate.	Depressed lamellar	Rounded.	Rounded.
Base.. ..	Flattened more or less.	Convex.	Convex.	Convex.	Concave (more or less).	Convex.	Convex.
Umbilicus ..	Infundibuliform, deep.	Infundibuliform, deep.	More or less straight-walled, deep, and keeled.	Small and pit-like.	Infundibuliform and open.	Infundibuliform.	Small generally.
Band on body whorl ..	Flat, near centre of whorl.	Central and flat, or often bordered by keels.	Median and projecting.	Large, and on the more or less horizontal portion of each whorl.	Under the sharp peripheral edge.	Central and linear	Inframedian.
Band on upper-whorls	Concealed, sutural.	Immediately above suture, and not concealed.	Median and ill-defined.	Ditto.	Ditto.	Ditto.	Ditto.

[1] Type—*Pleurotomaria obesa*, Deslonchamps.

—	Stenoloron, *Œhlert.*	Platyloron, *Œhlert.*	Lophospira, *Whitfield.*	Liospira, *Ulrich and Scofield.*	Euconia, *Ulrich*	Eotomaria, *Ulrich & Scofield.*	Clathrospira, *Ulrich & Scofield.*	Seelya, *Ulrich.*
Shell ..	Discoid or arched (surbased)	Band infra- or submarginal, otherwise like *Stenoloron.*	Turrited, last whorl often disconnected.	Low, sublenticular.	Sub-trochiform	Depressed conical to sublenticular.	Band vertical, and on the periphery, otherwise like *Eotomaria.*	Turbinate.
Whorls ..	Rounded.		Convex gradate	Flat, or gently convex.	Sharply angular.	Turbinate.		Rounded, or ventricose.
Base.. ..	Convex.		—	Convex.	Nearly flat.	More or less convex.		Convex.
Umbllicus ..	Large, revealing the whorls.		Small.	Small, sometimes covered by a callosity.	Large.	Small or wanting.		Concave, inframedian.
Band on body whorl ..	Narrow, infra- or submedian.		Central, between keels.	Scarcely distinguishable; on narrow outer edge of whorls	On upper side of peripheral edge.	Conical; on apical side of periphery.		Central, and concave.
Band on upper-whorls	Ditto.		Median and ill-defined.	Ditto.	Ditto.	Ditto.		Concave, inframedian.

A glance at this table will indicate that the concealed sutural position of the band on the earlier whorls at once separates *Keeneia* from the other "sub-genera" named.

At first sight, ill-preserved examples of *K. platyschismoides* may be mistaken for *Platyschisma oculus*. In the latter, however, there is no band on the obtuse peripheral angle of the body-whorl. To be certain on this point, a very large number of *P. oculus* were carefully examined by Messrs. C. Hedley and W. S. Dun, irrespective of myself, and in no single instance did any shell that could satisfactorily be referred to *P. oculus*, present even the semblance of a band, but only a slight inflection, or curving backwards of the growth laminæ and striæ on passing over the obtuse periphery, and corresponding to the slight insinuation in the outer lip, when perfect, in accordance with the generic definition of *Platyschisma*, as given by McCoy.[2]

In *Keeneia platyschismoides*, on the other hand, there is a flattened band along the obtuse periphery of the body-whorl, defined by faint impressed encircling lines. The transverse sculpture, instead of passing over simply with a roll, as in *P. oculus*, is, on arriving at this band, deflected backwards; and on the opposite side of the band or base of the shell, directed forwards to pursue its regular course. On the band the striæ are deeply concave backwards. As before stated, this band is only visible on the body-whorl, for on arriving at the penultimate whorl it becomes sutural, and concealed by the overlap of the body-whorl. That such is the case is abundantly proved by examples in which the test of the body-whorl has been broken away, when the band is, as a rule, beautifully exposed on the penultimate whorl. On the other hand, if specimens of *P. oculus* in a like state of preservation are examined, no trace of a band whatever is observable.

As the facts now recorded have been tested through the medium of a number of specimens, it is legitimate to assume that we have here a shell entirely distinct generically and specifically from *Platyschisma oculus*.

Genus KEENEIA, *gen. nov.*

Gen. Char.—Shell turbinate or trochiform, umbilicate. Whorls few, more or less tumid and rounded. Mouth large, oblique; outer lip subacute, insinuated by a rather wide and shallow sinus; inner lip thickened but not reflected, or with a callosity. Band median or submedian on the body-whorl only, sutural and concealed on the others. Umbilicus infundibuliform, without keel.

Type.—*Keeneia platyschismoides.*

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[2] McCoy—Synop. Carb. Lime. Foss. Ireland, 1844, p. 38.

KEENEIA PLATYSCHISMOIDES, *sp. nov.*

(Plate xxxii.; Plate xxxiii., figs. 3 – 5).

Sp. Char.—Shell very large, massive, turbinate, and the base to some extent flattened. Spire short, of five or six whorls, the apical whorls depressed, and displaying a great discrepancy in size as compared with the penultimate and body-whorl; sutures close and nonchanneled. Body and penultimate whorls with gently convex surfaces, or the latter at times inclined to become rather straight-walled, shoulder-like around the sutures, where the whorl surfaces are either flat, or slope somewhat inwards; periphery of the body-whorl obtusely-carinate. Band broad and flat, occupying the obtuse keel, and defined by two or more circumferential impressed lines. Mouth very large and obliquely quadrangular, transversely elongated; outer lip thickened in the region of the sinus, and judging by the lines of growth, the sinus was wide but not deep or slit-like; inner lip thickened. Umbilicus subinfundibuliform. Sculpture of rather coarse growth striæ directed obliquely backwards on the upper portion of the body-whorl, forming a sharp bend in the same direction at the band, resuming their course on the base in a faint sigmoidal curve forwards, and gathered in a puckered manner around the umbilicus, laminar and very pronounced contiguous to the outer lip, no cancellation; on the band, whether exposed or concealed, the striæ are strongly concave backwards. Height, 4″; breadth (across mouth), 4½″; breadth (fore and aft) 4½.″

Obs.—The relation of this shell to *Platyschisma oculus* proper has already been described, and need not be referred to further. Dana's illustration, however, of the latter[3] has every appearance of being a peculiarly drawn example of *Keeneia platyschismoides*. Previous to making the acquaintance of this fine Mollusc in its mature state, I had seen a young example that I mistook for an exceptionally well preserved and young individual of *P. oculus*,[4] but on receipt of the specimens now under description, the mistake I had made became manifest. In this young condition, not only the backwardly directed striæ of the band are visible, but also the shoulder around the suture on the body-whorl, the transversely elongated, oblique, rhomboidal mouth, and thickened inner lip.

Dana also described a second species of *Platyschisma* from the Lower Marine Series as *P. depressum*, Dana, sp.[5] Some imperfect individuals have come under my observation that may be this form, and if this surmise be correct, then possibly a second species of *Keeneia* exists. In such a case, a further

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3 Dana—Wilkie's U.S. Explor. Exped., Geology, x., 1849, pl. x., f. 1.

4 Etheridge, Junr.—Rec. Geol. Surv. N.S.W., v., pt. 4, 1898, pl. xix., f. 14 - 17.

5 Dana—*Loc. cit.*, pl. x., f. 2 *a* and *b*.

question arises: What are the generic relations of *Pleurotomaria carinata*, Etheridge[6] (*non* Sby.), from the Gympie Series?

So many of our Australian Permo-Carboniferous species were, through necessity, described from imperfect materials, that it becomes very difficult at times to identify more perfect specimens with them, in the absence of the types. The disappearance and loss through accident of many of the latter, has been a great blow to Australian Palæontology. Dana's collection was burnt, so was Clarke's third collection described by De Koninck, whilst Daintree's is, I believe, somewhere at the bottom of the sea.

Loc.—Allandale, near Harper's Hill, near West Maitland, New South Wales. Lower Marine Series.

Genus STRAPAROLLUS, *De Montfort*, 1810.

(Conch. Syst., ii., 1810, p. 174).

STRAPAROLLUS AMMONITIFORMIS, *sp. nov.*

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

Sp. Char.—Shell (partial internal cast) subdiscoid, with the apex depressed, and the base deeply umblicated. Spire very short, of five or six whorls (as preserved); whorls non-overlapping, with a sub-circular section in the young condition becoming transversely oval in the more mature state, from a flattening of the sides; back round, no carinæ; each whorl on its upper side is somewhat straight-walled around the suture, defined by a faint angulation. Sculpture not preserved, but the surface showing traces of coarse undulations of growth towards the terminal end. Size—$2\frac{3}{4}'' \times 2\frac{1}{4}''$

Obs.—The specimen is an internal cast wherever denuded of matrix; but where enveloped, with the test preserved and intervening. One more whorl certainly existed than those shown in the illustration (Plate xxxiii., fig. 1), as indicated by the line of junction running round both surfaces of the existing last whorl.

The shell is a *Straparollus* of the depressed section, illustrated by *S. æqualis*, Sby. It does not possess a plain keel on the upper surface only, as in *Euomphalus* proper, or on both aspects as in *Schizostoma*, or tuberculated keels on both aspects as in *Phymatifer*, nor is the coil open as in *Phanerotinus*. It is a decided addition to the lowest portion of the Permo-Carboniferous System in New South Wales.

S. ammonitiformis was presented to the Trustees by Mr. —. Thomas, through Mr. John Mitchell, Technical College, Newcastle.

Loc.—Duguid's Hill, near Harper's Hill, near West Maitland, New South Wales. Lower Marine Series.

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[6] Etheridge—Quart. Journ. Geol. Soc., xxviii., 1872, p. 331, pl. xv., f. 6.