

DESCRIPTION OF NEW SPECIES OF MOLLUSCA
OF THE UPPER EOCENE BEDS AT TABLE
CAPE.

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POTAMIDES PYRAMIDALE.

The generic position, assigned to this very striking species, is not unassailable inasmuch as the aperture of the only specimen obtained is broken away; however, its strong resemblance to *P. ebeninium* will justify the congeneric reference. As in *P. ebeninium*, the last whorl of the fossil is distorted and there is a posterior groove within the aperture.

Spire acute, apical angle about 30° , of upwards of 10 flattened whorls; body whorl, with the outer lip slightly ascending. Surface ornamented with about 10 flat regularly disposed spiral ribs, crossed by obsolete obtuse sigmoid lines, and on the anterior half with large subacute nodulations, about 12 on the penultimate whorl; on the posterior whorls the nodulations are replaced by transverse ridges; the flat spiral ribs are about as wide as the interspaces, in each of which there is a thread. The last whorl has an asymmetrical variciform nodulation above the columella and anterior to the periphery, the space between it and the posterior angle of the aperture is without tubercles as in *P. ebeninium*. The inner lip is much thickened and reflected on the columella.

Length, less that of the canal, 85; *breadth* of last whorl, 40 millimetres.

Locality.—Table Cape. R. M. Johnston (*one ex.*).

This species differs from the living *P. ebeninium* in its relatively much greater width, in the nodulations being on the anterior half of the whorl instead of medial, and in its coarser spiral ornament.

POTAMIDES SEMICOSTATUM.

Spire acute, apical angle about 15° , of upwards of 12 flattened whorls; body whorl, with outer lip not or only slightly ascending. Surface ornamented with 10 or 12 spiral threads crossed by sigmoid rugæ which give rise to a reticulation beneath the posterior suture. The lower half of the anterior whorls with about 10 thick elevated nodulose ridges abrupt on the posterior side; on the posterior whorls the nodulations are replaced by transverse ridges. In other respects, this species resembles *P. pyramidale*.

Length, 67; *breadth* of last whorl, 22 millimetres.

Locality.—Table Cape, R. M. Johnston (*six exs.*).

TORCULA MURRAYANA

Spire acute, apical angle about 15° , of upwards of 12 flattish whorls, medially depressed and acutely elevated at about the anterior fourth; suture distinct, thread-like, or somewhat grooved. Surface ornamented by about 24 spiral threads with or without smaller intermediary ones, crossed by close-set sigmoid striæ, the latter on the anterior whorls thinly squamose. Last whorl bluntly truncated on the periphery; base with spiral threads and transverse striæ as on the upper part of the whorl. Aperture quadrately-oval, continuous; outer lip with a deepish subtriangular median sinus.

Total length, 60; *breadth* of last whorl, 17; *height* of last whorl, 12 millimetres.

The species varies in the shape of its whorls, from flat or slightly concave to somewhat quadrate, and corresponding thereto in the depth of the suture; the keel-like elevation is sometimes obsolete, but the median depression is always present.

Localities.—Table Cape. R. M. Johnston (*six exs.*). Very abundant in the middle and lower beds of the River Murray Cliffs from Overland Corner to Blanchetown; also at Muddy Creek, Corio Bay, and Schnapper Point (R.T.).

The Table Cape specimens have flattish or slightly concave whorls with or without the anterior keel, and fall within the limits of variation exhibited by the Murray examples, though they are usually broader in proportion the apical angle being as much as 18° .

TURRITELLA TRISTIRA.

Shell acuminate turreted; apical angle about 15° of upwards of 12 slightly convex whorls; suture linear. Surface ornamented with three conspicuous, spiral, acute ribs, and spiral and transverse striæ; the sulci on each side of the central rib are of equal breadth, but the anterior rib is separated from the suture by a distance less than that which separates one rib from the next, whilst the posterior rib is separated from its corresponding suture by a distance greater than the breadth of the medial sulci. Last whorl truncately angular at the periphery; base spirally ribbed and striated. Aperture quadrate; outer lip imperfect.

Length, 45; *breadth*, 12 millimetres.

Locality.—Table Cape. R. M. Johnston (*one example*).

This species is distinct from the few living species, which are conspicuously three-ribbed, by shape, ornament, and the unsymmetrical position of the revolving keels.

LEIOSTRACA JOHNSTONIANA.

Syn.—*Eulimella subulata*, Tenison-Woods (*non Mont.*).

Species named after Mr. R. M. Johnston, its discoverer and author of many papers on the Tertiary Geology of Tasmania.

Shell acuminate, thin, smooth, and shining; whorls 12, nearly flat, suture distinct; spire sharply acuminate; aperture elongately-ovate, slightly effuse in front; outer lip acute and simple; columella callous and slightly twisted.

Length, 9.0; *breadth*, 1.5 millimetres.

Localities.—Table Cape. R. M. Johnston. River Murray Cliffs, near Morgan, S. Aust.; Muddy Creek, Victoria. R. Tate.

This species has been confounded by the Rev. J. Tenison-Woods with the recent *L. subulata* of Western Europe, from which it differs in shape and suture; but it has a nearer relative in *L. acutissima*, Sowerby, living off the coasts of Eastern and South-Eastern Australia. It differs from that species by its smaller size and slender proportions. *L. acutissima* with 12 whorls has a length of 15.5 mm. by a breadth of 3 mm.; whilst *L. Johnstoniana* with 12 whorls has a length of 9.0 mm. by a breadth of 1.5 mm.

CYLICHNA WOODSII.

Syn.—*C. arachis*. Tenison-Woods (*non* Quoy).

Shell solid, elongately ovate, imperforate; regularly spirally sulcated, the intervening ridges flat and much broader, transversely ornamented with very fine close-set lines, which give the appearance of punctures within the sulci. Apex perforated; aperture narrow above, wider in front; outer lip thin, simple; columella thick, slightly expanded, a little twisted and abruptly truncate in front.

Length, 13.5; *breadth*, 5.5 millimetres.

The above definition is drawn from a Table Cape specimen identical with that which Tenison-Woods referred to the living species *C. arachis* of Quoy. *C. Woodsii* differs, however, in its more ovate outline, in its aperture and ornament, and in its truncated columella. The material at my command is not sufficient to warrant its generic separation which is suggested by the truncated columella.

CHAMOSTREA CRASSA.

Left valve rhomboidal, somewhat convex, very thick; pallial line and margins of adductor impressions crenulated, not striated, as in *C. albida*. Attached valve unknown.

Diameters.—40 and 36 millimetres.

Locality.—Table Cape. R. M. Johnston (*two examples*).

This determination adds to the Australian tertiary fauna, a genus hitherto only known by one species (*C. albida*) inhabiting the seas of Southern and Eastern Australia. Comparing samples of equal size of the two species, the fossil is dis-

tinguished by the great thickness of the test, the convexity of the valve and the crenulation of the pallial line—characters sufficiently striking to warrant specific appellation. The outline of the fossil shell falls within the limits of variation exhibited by the living species, and the external ornamentation is same.

CORBULA EPHAMILLA.

Shell solid, very inequivalve, inequilateral, ovately-triangular, rounded anteriorly, beaked posteriorly. Right valve with more than 20 very thick, rounded prominent concentric ridges, the whole surface striated concentrically. The ventral margin is outward-curved medially, and the ridges have a corresponding flexure. The posterior margin is obliquely truncated, carinated from the umbo to the post-ventral margin; posterior to the carina is a somewhat concave area on which the concentric folds are continued as multiplied lamellæ. The umbo is in the anterior third, flat, incurved, and with small ridges. Left valve ovately triangular, nearly flat, pointed behind, carinated from the umbo to the post-ventral margin; surface irregularly striated by lines of growth. Umbo flattish, from below which two distinct ridges radiate to the ventral margin, one or two additional but shorter ones sometimes occur. Right valve with an anterior pointed tooth; left valve with a stout posterior tooth, flattened and sulcated on its upper surface. Pallial sinus indistinct.

Length, 21; *breadth*, 16; *thickness* through both valves, 10 millimetres.

Localities.—Table Cape. R. M. Johnston. Abundant in the calciferous sand-rock of the River Murray Cliffs, near Morgan, and in the cotemporaneous deposits at Muddy Creek. (R.T.)

From the living *C. sulcata*, Lamarck, to which it has been referred, our fossil species differs in being less inequilateral, more pointed posteriorly, less gibbous, etc. A nearer ally among existing species is *C. fortisulcata*, E. Smith, from which it differs particularly in its truncated posterior margin.

LUCINA PLANATELLA.

Left valve orbicular-ovate, equivalve, moderately thin, nearly flat. Surface ornamented with regularly disposed, concentric, erect, lamelliform ridges of growth, crossed by equidistant radial threads, producing on the dorsal-half an open reticulated appearance; towards the front the concentric ridges are coarser and the descending striæ finer and nearly obsolete. Umbo depressed, acute; interior margin smooth.

Length, 33; *breadth*, 31 millimetres.

The fossil has no close ally among living congeners.

CHIONE (TIMOCLEA) HORMOPHORA.

Shell solid, ovate-oblong, inflated; truncately rounded in front, truncated behind, ventral margin arched, post-dorsal margin strongly arched, antero-dorsal margin straight, surface ornamented with numerous concentric lamellæ thickened and recurved, becoming erect and thin towards the posterior and anterior margins; the interstitial spaces with numerous flattish radial ridges, about equal in breadth to the intervening sulci, which are continued on to the bases of the concentric folds and to the free margin of the frills on their undersides. Lunule cordate, not much impressed under the umbo and indistinctly margined. Umbo is in the anterior fifth, large incurved and directed forwards. Inner margin of valves, excepting that of the post-dorsal region, is minutely crenulated. Posterior cardinal tooth in left valve is quadrate and bituberculated on the crown.

Greatest length, 65; *greatest breadth* at about 15 mm. behind the umbo, 57; *thickness*, 48 millimetres.

Locality.—Table Cape. R. M. Johnston (*a left valve*).

C. hormophora has a closely allied species in a common fossil at Muddy Creek, and near Morgan, which I name.

CHIONE (TIMOCLEA) DIMORPHOPHYLLA,

Which differs in its more regularly rounded front-margin, in the less inflated and more posteriorly placed umbo; in the more impressed and concave lunule, and in the relatively different dimensions.

Length, 58; *breadth*, 45; *thickness*, 32 millimetres.

LIMA JEFFREYSIANA.

Syn.—*Lima subauriculata*, Tenison-Woods (*non* Mont.). Species dedicated to Mr. Gwyn Jeffreys, F.R.S., the eminent conchologist, in acknowledgment of his assistance in its elaboration.

Shell thin, elongate-ovate with nearly straight sides, sub-equilateral by the slight obliquity of the hinge line, ventricose. Surface ornamented with distant, acute, longitudinal ribs and close-set, undulate, concentric striæ; the rays are very conspicuous on the middle and anterior parts, but become indistinct towards the posterior border; the intercrossing of the medial ribs and the concentric striæ form blunt imbricating serratures; the concentric striæ merge into strong folds towards the anterior border. Auricles of moderate size, equal, sharply angular. Umbos elevately and acutely produced.

Length, 23; *breadth*, 15; *thickness*, 16 millimetres.

Localities.—Table Cape. R. M. Johnston. Yorke Peninsula, Aldinga, River Murray Cliffs, Muddy Creek and Schnapper Point, Hobson's Bay. R. Tate.

L. subauriculata and *L. elliptica* differ from *L. Jeffreysiana* by their ribs, smooth sides, medial furrows, and more inflated umbos. Among recent Australian shells the fossil species approaches *L. Strangei*, from which it differs by its straighter sides, by its more numerous and acute ribs, and by being more ventricose.

The majority of the new species have considerable analogy with recent congeners; but especial interest attaches to the existence in a fossil state of the genus *Chamostrea*, hitherto represented by a single species proper to South-eastern and Southern Australia and to Tasmania. The presence of *Potamides* is also noteworthy; one of the fossil species is much larger than any known recent form. A few Table Cape species, in my hands, await elaboration; but as it is imperative that the fossils should be studied in comparison with living forms, it is obvious, unless the necessary material be readily available, that an immediate and satisfactory answer cannot be given to the question:—Which of them are now known to be living, and which of them are supposed to be extinct?

I shall be happy to work out any material, that the Society or other possessors of Table Cape fossils may entrust to me, and I may add that my very rich collection of tertiary fossils enables me to institute a comparison of the Tasmanian fossils with those from continental and other localities.

DESCRIPTION OF A NEW SPECIES OF ODAX.

BY ROBT. M. JOHNSTON, F.L.S., ETC.

[Read July 7, 1884.]

The following is a description of a new species of Odax, caught in the waters of the Derwent, and presented to me by Captain Beddome.

ODAX BEDDOMEI (*Nov. sp.*).

$D_{1\frac{1}{2}}^{20}$, A_5^3 , P12-14.
L. lat. 40. L. tr. $\frac{3}{5}$.

Body elongate. Praeoperculum entire. Snout much produced and finely pointed. Eye rather large. Height of body one-tenth of the total length, and length of head contained in the latter three and one-third times. Upper posterior margin of operculum produced into a flaccid membrane having a rayed appearance. Colour of body and fins reddish, becoming lighter below lateral line. There is a singular well