

*Some Tertiary Mollusca, with Descriptions of New Species.*

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Plates 8-10.

## PINNA.

IN his *Catalogue of the Tertiary Mollusca and Echinodermata of New Zealand*, 1873, page 26, Hutton described three species of *Pinna*—viz., *lata*, *plicata*, and *distans*. Suter, in the "Revision of the Tertiary Mollusca of New Zealand," *Geological Survey Bulletin No. 3*, part 2, page 53, points out that *plicata* is a fan-shaped fucoid, and must be removed from the list of fossil Mollusca. Of the other two species, the type of *lata* appears to have been lost. Hutton's description is exceedingly brief, and there has always been some doubt as to the identity of the species; but fortunately Buchanan left a drawing of the type specimen (here reproduced), which is the clue to the species. The species *distans*, the type of which is preserved in the Geological Survey collections, and is also figured by Buchanan, proves to be a large fragment of a cast, in fine greyish-brown rather soft sandstone, the anterior and posterior ends broken off. No part of the shell is preserved, and the sculpture is therefore the radiating furrows on the interior surface of the valves. For the loan of the drawings prepared by the late Mr. Buchanan I am indebted to Mr. P. G. Morgan, Director of the Geological Survey. I am also indebted to Mr. H. J. Finlay, of Dunedin, for the loan of specimens.

*Pinna lata* Hutton. (Plate 8, figs. 1, 2, and Plate 9, fig. 2.)

*Original Description*.—Broadly triangular, with concentric striae, anterior end rather excavated. Height, 8; length, 7.25; angle of apex, 60°. Locality, Cobden.

In view of the specimens before me, there appears to be no doubt that the above description refers to a large fragment of the wide posterior end. A close scrutiny of Buchanan's figure shows a very imperfect shell with some radiate riblets on the narrow end, of which Hutton makes no mention. A specimen received from Finlay, doubtfully from Caversham sandstone, closely agrees with Buchanan's figure, and the specimen can be perfectly matched with the posterior area of a well-preserved specimen from Awamoa. The latter in form and sculpture is widely different from Hutton's description, and it is necessary to redescribe the species. I offer the following:—

Shell large, narrowly triangular, angle of apex 33°, beak pointed, dorsal margin straight, posterior end oblique produced below, basal margin a little convex posteriorly. Clothed with a thick dark periostracum, nacreous beneath. Sculpture: Apical half and from median area dorsally with fine radiating riblets; crossed by smaller threadlets, both narrower than interspaces, on basal area irregular growth-lines and undulations rather strongly curved to median area, where they are wave-like and gradually widening posteriorly, postero-dorsal area with irregular growth-lines. The fine

transverse threadlets of dorsal area absent on the nacreous shell, the longitudinalinals less numerous, while basal sculpture is same as on periostracum.

Length, 280 mm. ; width, 140 mm. ; diameter, 40 mm.

Locality, fine sandy clay in bed of Awamoa Stream, about half a mile inland from the Coast Road, Oamaru. Collected by Dr. Marshall.

Specimen to be presented to the Wanganui Museum.

In the Geological Survey collections is an imperfect specimen, locality not recorded. In Mr. Finlay's collection is a large fragment from Wai-kouaiti sandstone, a small cast from Caversham sandstone, and the large fragment previously mentioned and doubtfully referred to the Caversham sandstone. These certainly represent the Awamoan horizon. Mr. Finlay writes that from the matrix he obtained *Alectrion socialis*, *Bulinella soror*, *Dentalium mantelli*, and *Malletia australis*.

**Pinna distans** Hutton. (Plate 9, fig. 3.)

*Original Description*.—Large, with distant plications, the ridges being much narrower than the furrows. Height, 9; length, 4.5; angle of apex, 40°. Locality, Caversham.

The type, as previously mentioned, is a cast only, and agrees perfectly with Buchanan's figure, which is here reproduced. There are about eleven prominent distant ridges on the dorsal area, and on the basal area a number of irregular upward-curving folds less strong than the radiations above. A fragment of a cast from Milburn limestone in Mr. Finlay's collection perfectly agrees in sculpture with the type. On present material little more can be added. The species appears to be closely allied to *lata*, the greater prominence of the radiations being the distinguishing feature. In the Suter collection are two small fragments from Waihora River, two miles from Te Karaka, Poverty Bay. They are casts of the apex, and are labelled "*distans*," but the radiating sculpture appears to me identical with the Awamoan specimen, which I refer to *lata*.

CHALAMYS.

**Chlamys oamarutica** n. sp. (Plate 9, fig. 4.)

Shell (left valve) small, thin, nearly equivalve, very little inflated, ears unequal, triangular, posterior small and very oblique; dorsal margins of disc descending slightly concave, anterior, posterior, and basal margins rounded. Sculpture consists of thirteen or fourteen small radiate ribs, sparsely gemmate and much narrower than interspaces, in the latter one, two, or three smaller riblets on basal half of disc, in addition the whole shell is adorned with an exceedingly delicate lacework-like sculpture. Anterior ear with about six small riblets, posterior ear with three somewhat scaly riblets. Interior hinge-line somewhat oblique, narrowly grooved within margin, resilifer-pit small and slightly oblique, adductor-scars indistinct, radiate grooves correspond with external sculpture and lightly crenulate the margin.

Dimensions: Dorso-ventral, 26 mm. ; ant.-post., 24 mm.

Type to be presented to the Wanganui Museum.

Locality, Target Gully shell-bed, Oamaru.

It is with some hesitation that I describe this species from a single valve. Its sculpture, however, appears to distinguish it well from other of our Tertiary and Recent forms.

*Chlamys grangei* n. sp. (Plate 9, fig. 1.)

Shell (left valve) small, ovate, height and length about equal, somewhat inflated, almost equilateral, beak rather abruptly incurved, dorsal margins declining slightly convex, ends imperfect, basal margin rounded. Sculpture consists of about twenty narrow radiating riblets more slender on sub-marginal slopes, midrib on disc somewhat stouter and more prominent, grooves rather more than twice width of riblets with an occasional small radial not continuing to apex, in addition transverse sculpture of fine threadlets better marked in grooves. Ears: Posterior narrow, dorsal margin ridged, and with two or three indistinct threadlets; anterior imperfect, it has three or more riblets and transverse threadlets. Interior filled with matrix.

Dimensions: Dorso-ventral, 20 mm.; ant.-post., 20 mm.

Type to be presented to the Wanganui Museum.

Locality, gritty shell-limestone bed, Brighton. Collected by Dr. Marshall.

It appears not unlikely that this species is the same as recorded by Grange (*Trans. N.Z. Inst.*, vol. 53, p. 163, 1921), and with it a species of belemnite. The little that is known of the fauna of this horizon suggests that it is Cretaceous.

## VERCONELLA.

*Verconella marshalli* n. sp. (Plate 10, figs. 1-3.)

Shell fusiform, spire short, whorls convex, body inflated, canal produced. Sculpture consisting of fine spiral cords slightly variable, and with one, at times two, small threads in grooves; axials feeble or growth-striae only on body, higher whorls of spire with well-developed rounded costae. Whorls about eight in all, protoconch small, of about two and a half smooth rounded coils. Sutures not deep, usually rather more impressed on higher whorls. Aperture oval, produced into fairly long open canal curved somewhat backward and to left; outer lip effuse and lirate within, margin more or less excavate above and narrowly channelled at suture; columella concave, wall with a thin callus not concealing spiral sculpture, or with series of denticles only near outer margin, occasionally a small callus nodule near suture.

Length, 74 mm.; width, 34 mm. (A small specimen, length 49 mm., width 21 mm.)

Locality, Castlecliff blue sandy clays; also in the Kai Iwi, Okehu, and Nukumarū beds.

Type in the Wanganui Museum.

This species is not uncommon in the Castlecliff beds. It appears to be nearest to *V. mandarina* Duclos, from which it may readily be distinguished by the small spire and inflated body-whorls; small or juvenile specimens with less inflated body may be distinguished by the finer sculpture and less impressed sutures; it has been confused with *mandarina* and with *valedicta*.

It also occurs Recent, a few specimens having been obtained by dredging in Hauraki Gulf (16 fathoms) by Mr. La Roche, of Auckland. In the Dominion Museum, under the name of *Siphonalia valedicta* Watson, are three specimens, exact locality not recorded. In colour the Recent specimens are a light reddish-brown, and within the aperture in young individuals pale pink. The operculum is oval, rather pointed at the ends,

and the nucleus apical. A fossil specimen is chosen for the type on account of the large series available.

I name this handsome species after my friend Dr. P. Marshall.

#### ERATO.

*Erato neozelanica* Sut. (Plate 10, fig. 4.)

*E. neozelanica* Sut., *N.Z. Geol. Surv. Pal. Bull. No. 5*, pt. 1, p. 12, pl. iii, figs. 6, 7.

The holotype was collected by Marshall in the Target Gully shell-bed, Oamaru, and presented to the Otago University Museum. Another specimen is now recorded from the sandy clays in the bed of the Awamoa Stream, near Oamaru. It is rather smaller than the type: length, 11 mm.; width, 7 mm. It has also been found to occur in the railway ballast-pit near to the Okehu Station (a single specimen—length, 12 mm.; width, 7 mm.). This horizon appears to be a little above the *Rotella* bed of Park as exposed in the coastal cliff at the boat-sheds, Nukumaru. The species would appear to be rare, but has a fairly wide distribution.

In the Suter collection are two small specimens labelled "*E. neozelanica*, 'paratype,' Target Gully shell-bed, Oamaru." They are pygmies compared with the typical form. One specimen is certainly fully adult. They appear to me to be quite distinct from *neozelanica*, and I treat them as an undescribed species.

*Erato senectus* n. sp. (Plate 10, figs. 5, 6.)

Shell small, pyriform, without sculpture, spire about three whorls, short with blunt apex, coated with enamel, sutures lightly indicated, last whorl large, almost uniformly curved to the short beak, outer lip broad and rounded, exteriorly forming a ridge, on anterior area a few teeth-plications passing across it, its lower surface crossed by ten to a dozen stout teeth. Aperture narrow, oblique, almost uniform in width; columella a little excavated anteriorly, with three or four small plications, and a few or numerous denticles above.

Length, 4.5 mm.; width, 3.25 mm.

Locality, Target Gully shell-bed, Oamaru. Collected by Dr. Marshall.

Type in the Wanganui Museum, Suter collection.

Differs from *N. neozelanica* Sut. in its much smaller size, less narrowly produced anteriorly, and the outer lip heavier and more strongly plicated.

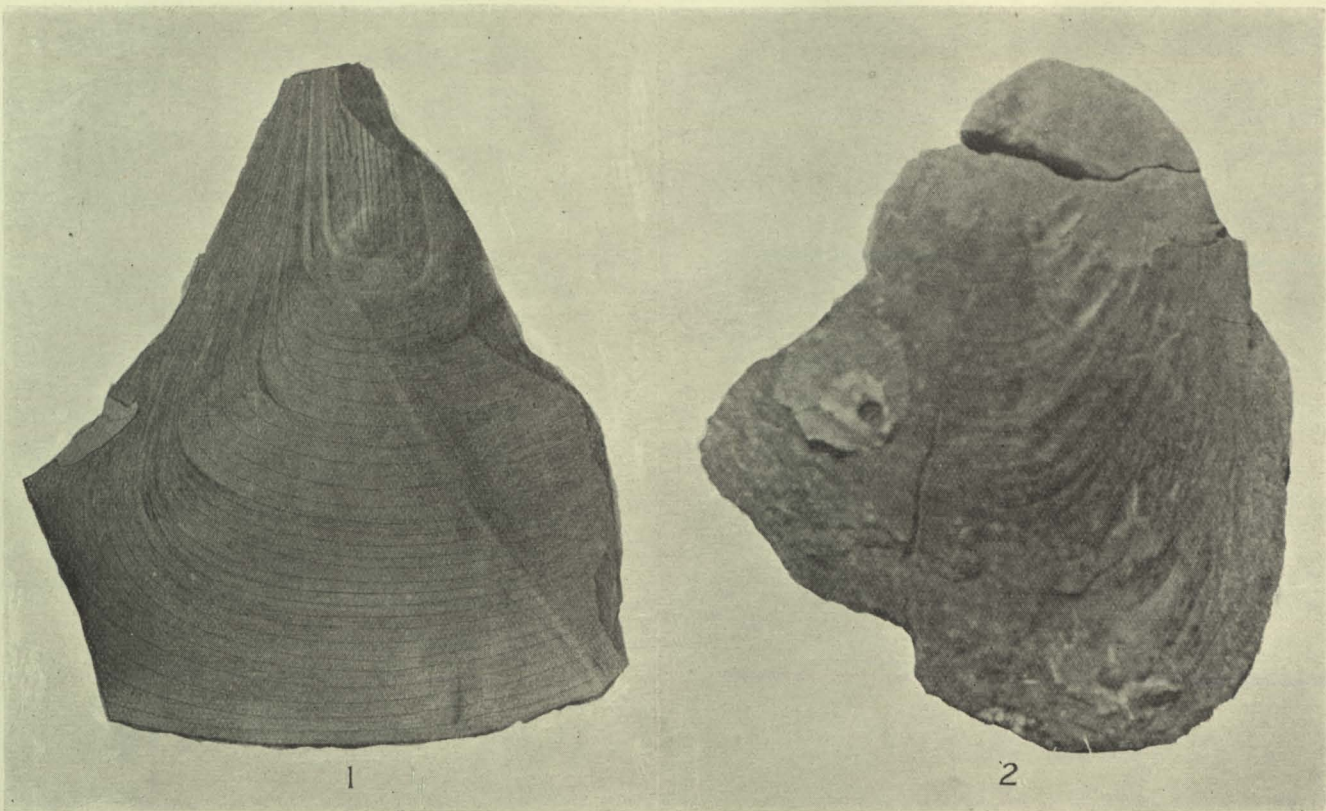


FIG. 1.—*Pinna lata* Hutt. From Buchanan's figure.  
FIG. 2.—*Pinna lata* Hutt. Specimen in Finlay's collection.

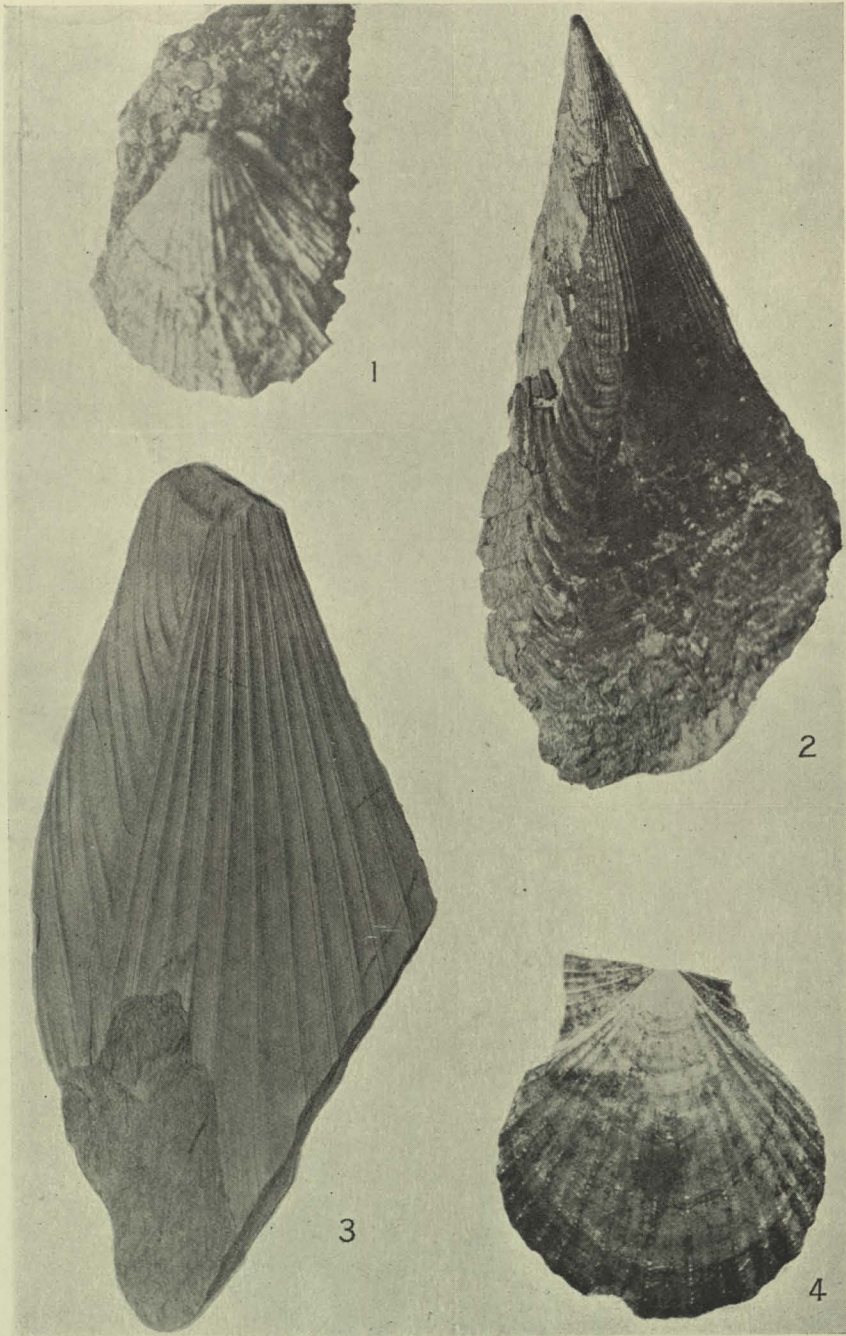


FIG. 1.—*Chlamys grangei* n. sp.  
FIG. 2.—*Pinna lata* Hutt. From Awamoa.  
FIG. 3.—*Pinna distans* Hutt. From Buchanan's figure.  
FIG. 4.—*Chlamys oamarutica* n. sp.

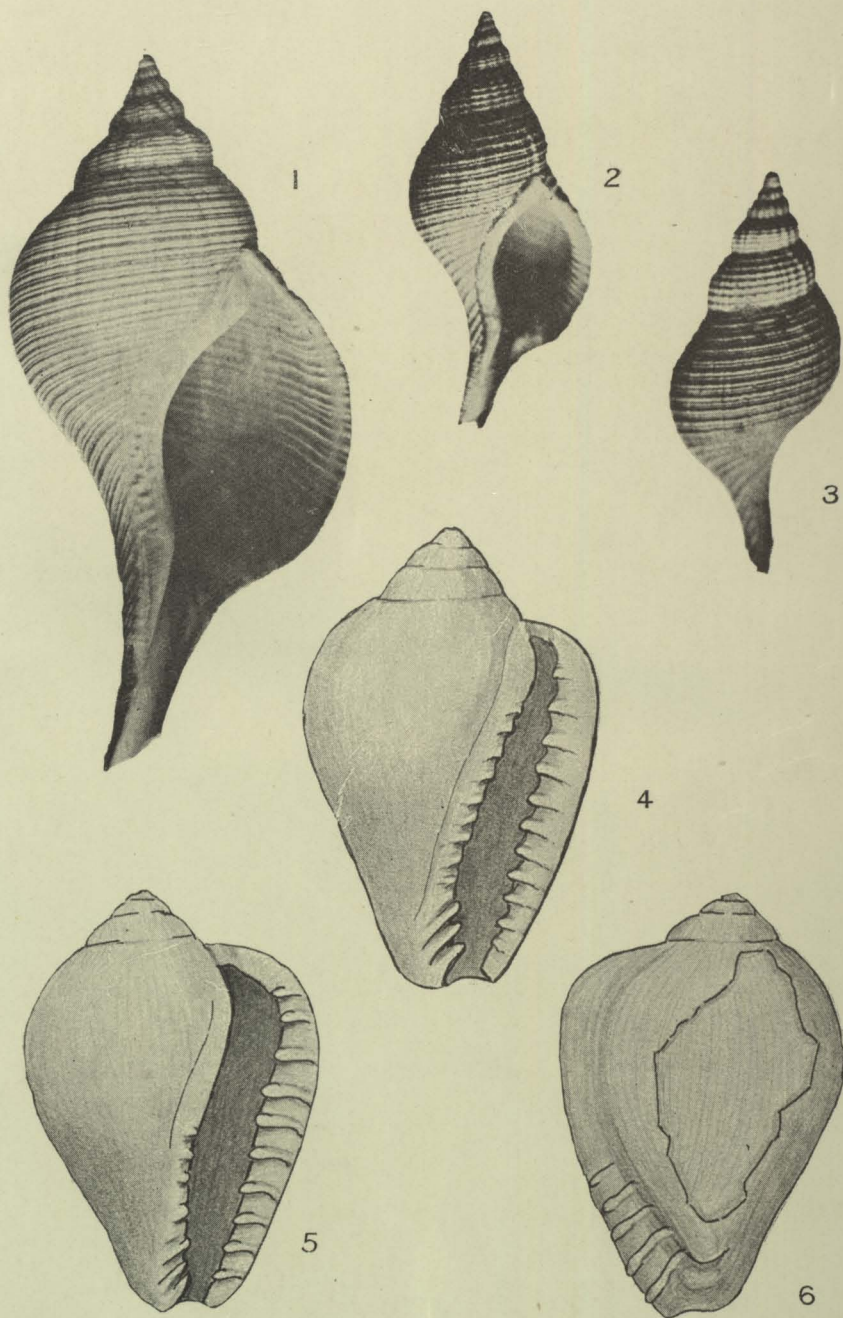


FIG. 1.—*Verconella marshalli* n. sp.  
 FIGS. 2, 3.—*Verconella marshalli* (juv.).  
 FIG. 4.—*Erato neozelanica* Sut. From Awamoa.  
 FIGS. 5, 6.—*Erato senectus* n. sp.