

Colonial Museum and Geological Survey Department.

JAMES HECTOR, M.D., F.R.S.,
DIRECTOR.

CATALOGUE

OF THE

TERTIARY MOLLUSCA AND ECHINODERMATA

OF

NEW ZEALAND,

IN THE COLLECTION OF THE COLONIAL MUSEUM.

BY

FREDERICK WOLLASTON HUTTON, F.G.S., C.M.Z.S.,
ASSISTANT GEOLOGIST.

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P R E F A C E .

THE Tertiary Fossils enumerated in the following Catalogue are all represented in the Colonial Museum, and, with a few exceptions, have been collected during the Geological Survey of the Colony. About eighty distinct localities for Tertiary Fossils have been examined, but the relative value of the collections from these places as palæontological evidence is very unequal, owing to the circumstances under which the collections were made. Thus in many cases the fossils are only a few chance specimens obtained during the exploration of remote and uninhabited districts; and in only a very few instances have the collections been sufficiently exhaustive to afford reliable materials useful in the stratigraphical comparison of widely separated fossiliferous deposits.

Additional uncertainty must also arise from the fact that in certain localities two or more distinct formations occur, which could not be discriminated at the time when some of the earliest collections were formed.

The classification of the Formations adopted by Captain Hutton from the numerical proportions of the species is therefore only to be considered as a provisional attempt, but this does not detract from the value which it is hoped the Catalogue will have for the collector. Hitherto, in the absence of all artificial excavation of the rock masses, the opportunities for obtaining fossils have been few in comparison with those available in more

fully settled countries; but the rapid extension of railway lines and roads throughout the Islands will display in future better sections of the strata for the inspection of the geologist, and open up many new localities rich in fossil remains.

A series of lithographed plates is being prepared of the most characteristic fossils mentioned in this Catalogue, including all the newly described species, and will be issued shortly.

JAMES HECTOR.

Colonial Museum, Wellington, 18th June, 1873.

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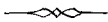


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ERRATA.

- Page 4. *Pleurotoma sulcata*. For "Broken River (L)" read "Broken River (V)."
- „ 6. *Purpura excursa*. This species must be expunged, as it is identical with *Struthiolaria senex*.
- „ 7. *Voluta pacifica*. For "Var. V." read "Var. C."
- „ 7. *Mitro enysi*. For "Broken River (V)" read "Broken River (L)."
- „ 8. Insert "Marginella" before "51. M. albescens."
- „ 14. *Crypta profunda* is found recent at Auckland.
- „ 18. *Mactra inflata* is found recent at Wellington.
- „ 24. *Lucina divaricata* : add "Broken River (L)."

INTRODUCTION.



SINCE the Synopsis of the younger formations of New Zealand was published in the Geological Reports for last year (Geological Reports, 1871-72, p. 182), I have visited the eastern parts of the Provinces of Marlborough and Nelson, and the north-east part of Canterbury, which districts include most of the more important localities for tertiary fossils; and this, together with further additions to the collection in the Museum, has enabled me to make several important corrections in the classification there proposed. In the first place, the additional fossils from Broken River, as well as the stratigraphical rearrangement by Dr. Hector of those from the same locality previously in the collection, and a personal examination of the Waipara and Weka Pass districts, have shown me that my Waitemata group must be broken up, and the larger part of it transferred to the upper portion of the Ototara group, while the remainder must go to the Hawke Bay group, or the Ahuriri formation, as I now propose to call it, in order to assimilate the name with those of the other formations.

An examination in the field of the Culverden beds, showed me that these also must be transferred to the Ototara group, and the Weka Pass building stone to the lower part of the same formation. This necessitated the transference of the Cobden limestone also into this formation; thus eliminating from the Waipara formation most of its tertiary looking fossils.* I have, therefore, grouped all these beds together under the name of the Oamaru formation, which I have divided into an upper or Trelissick group, and a lower or Ototara group. According to my present views, therefore, our tertiary rocks may be divided as follows:—

Probable Age.	Formation.	Group.
Newer Pliocene ...	Wanganui formation, 76 per cent. recent.	
Upper Miocene ...	Pareora formation, 34 per cent. recent ...	{ Awatere group. Kaniéri group.
Lower Miocene ...	Ahuriri formation, 23 per cent. recent.	
Upper Eocene ...	Oamaru formation, 9 per cent. recent. ' ...	{ Trelissick group. Ototara group.

The following are the localities in which they are found:—

Wanganui formation.—North Island: Shakespeare Cliff, Wanganui; Patea.

Awatere group.—South Island: Awatere; Motanau (x); Awamoa; Hampden; Port Hills, Nelson; Mount Caverhill.

Kaniéri group.—South Island: Kaniéri; Callaghan's Creek, Westland; Lyndon; Waikari; Lower Gorge of the Waipara; Pomahaka, Otago.

* I am, however, still of opinion that the Waipara formation belongs to the Upper Cretaceous period.

In addition to the above, the following belong to the Pareora formation, but it is uncertain in which group they should be placed :—

North Island : Upper Wanganui River ; Hautapu Falls, Upper Rangitikei ; Manawatu Gorge (upper end) ; White Cliffs, Taranaki.

South Island : Conway River ; Kokohu ; Pareora ; Waitaki ; Weka Pass (v).

Ahuriri formation.—North Island : Napier ; Castle Point ; Taipo, on the East Coast of Wellington ; Kawau ; Cape Rodney ; Orakei Bay, Auckland (?) ; Waitotara. South Island : Broken River* (v) ; Hurunui Mound ; Te Anau Lake (?).

Trelissick group.—South Island : Broken River* (L) ; Weka Pass (M) ; Mount Brown ; Deans, Waipara ; Kaipuki Cliffs ; Point Elizabeth ; Tata Island.

Ototara group.—North Island : Poverty Bay (L) ; Raglan ; Port Waikato ; Aotea ; Wangape Lake ; Wangarei ; Cape Kidnappers. South Island : Cobden ; Weka Pass (L) ; Waipara (L) ; Oamaru ; Caversham ; Curiosity Shop ; Brighton ; Waiholo Gorge.

In addition to the above, the following also belong to the Oamaru formation, but the evidence is not yet sufficient to say in which group they should be placed :—

South Island : Culverden ; Black-birch Creek ; Pahau ; Cape Farewell ; Takaka ; Lake Wakatipu† ; Cave Creek, Mount Somers ; Tokomairiro ; Winton.

In addition to the above, beds of Pleistocene (Post-pliocene) age are found at Wanganui, Motanau, and Cape Kidnappers.

The fossils from the Chatham Islands appear to be mixed, as shells characteristic of the Kanieri group, the Ahuriri formation, and the Trelissick group are all in the collection. I think it probable that two formations occur there, one belonging to the Pareora formation, and the other intermediate between the Ahuriri and Oamaru formations. If, however, there should be only one formation present, I should be inclined to refer it to the Ahuriri period.

In the following pages, when more than one *tertiary* formation occurs in a locality, I have marked the upper, middle, and lower formations by the letters (v), (M), and (L) respectively, immediately after the name of the locality. I have also included in the Catalogue descriptions of a few species taken to Europe by Dr. Hochstetter, but not represented in the collection of the Colonial Museum ; these species will be found pointed out in the text.

Wellington, May, 1873.

F. W. HUTTON.

* Same locality as Trelissick of previous lists.—J.H.

† The limestones of Lake Wakatipu may perhaps belong to the Upper Cretaceous period (Waipara formation), as the fossils are not very characteristic, and considerably distorted.

SUMMARY.

	Recent.	Pleistocene.	Wanganui Formation.	Pareora Formation.		Ahuriri Formation.	Oamaru Formation.		Remarks.
				Awatere Group.	Kanieri Group.		Trelissick Group.	Ototara Group.	
<i>Dentalium pacificum</i>*	..*	..*						
" <i>conicum</i>*			
" <i>nanum</i>				
" <i>tenuis</i>*	
" <i>mantelli</i>				
" <i>irregularis</i>*	..*		
" <i>lævis</i>		Chatham Islands.
" <i>giganteum</i>*	..*	Fossil in Chile.
" <i>solidum</i>*			
<i>Murex octogonus</i>*	..*	..*	..*				
" <i>zealandicus</i>*	..*	..*	..*				
" <i>lyratus</i>*	..*	..*	..*				
<i>Typhis zealandica</i>*	..*	..*	..*				
<i>Fusus pensum</i>*	..*	..*	..*				
" <i>australis</i>*	..*	..*	..*	..*			
" <i>zealandicus</i>*	..*	..*	..*	Chatham Islands.(?)
" " <i>var. B.</i>*	..*	..*	..*	
" <i>mandarinus</i>*	..*	..*	..*	
" <i>dilatatus</i>*	..*	..*	..*	
" <i>crawfordi</i>*	..*	..*	..*	
" <i>plicatilis</i>*	..*	..*	..*	
" <i>corticatus</i>*	..*	..*	..*	
" <i>plebeius</i>*	..*	..*	..*	
" <i>linea</i>*	..*	..*	..*	
" <i>littorinoides</i>*	..*	..*	..*	
" <i>triton</i>*	..*	..*	..*	
" <i>nodosus</i>*	..*	..*	..*	
" " <i>var. B.</i>*	..*	..*	..*	
" " " <i>C.</i>*	..*	..*	..*	
" " " <i>D.</i>*	..*	..*	..*	
<i>Pleurotoma novæ zealandiæ</i>*	..*	..*	..*	
" <i>lævis</i>*	..*	..*	..*	
" <i>buchanani</i>*	..*	..*	..*	
" <i>trailli</i>*	..*	..*	..*	
" <i>awamoensis</i>*	..*	..*	..*	

SUMMARY—continued.

	Recent.	Pleistocene.	Wanganui Formation.	Pareora Formation.		Ahuriri Formation.	Oamaru Formation.		Remarks.
				Awatere Group.	Kanieri Group.		Trelissick Group.	Ototara Group.	
<i>Pleurotoma wanganuiensis</i>	*						
" <i>sulcata</i>	
" <i>hebes</i>	*	
" <i>latescens</i>	*	
" <i>pagoda</i>	*		
<i>Bela striata</i>	*	*	*		
<i>Lachesis sulcata</i>	*	*	*	*		
<i>Triton spengleri</i>	*	*	*	*		
" <i>minimus</i>	*	...	*		
<i>Buccinum zealandicum</i>	*	*	*	*		
" <i>costatum</i>	*		
" <i>robinsoni</i>	*		
" <i>inflatum</i>	*		
" <i>carinatum</i>	*		
<i>Purpura succincta</i>	*	*	*	*	...	*		
" <i>textiliosa</i>	*	*	...	*		
" <i>conoidea</i>	*	...	*		
<i>Ancillaria australis</i>	*	*	*	*	...	*		
" <i>hebera</i>	*	...	*		
" <i>pomahaka</i>	*	...	*		
<i>Voluta pacifica</i>	*	*	*	*	...	*		
" " <i>var. B</i>	*	*	*	*	...	*		
" " <i>var. C</i>	*	*	*	*	...	*		
" <i>gralicostata</i>	*	...	*		
" <i>kirki</i>	*	*	...	*		
" <i>corrugata</i>	*	...	*		Chatham Islands.
" " <i>var. B</i>	*	...	*		
" <i>elongata</i>	*	...	*		
<i>Mitra enysi</i>	*	...	*		
" <i>apicalis</i>	*	...	*		
<i>Marginella albescens</i>	*	*	...	*		
" <i>dubia</i>	*	...	*		
" <i>ventricosa</i>	*	...	*		
<i>Volvaria ficoides</i>	*	...	*		
<i>Cassia pyrum</i>	*	*	...	*		
" <i>striatus</i>	*	*	...	*	...	*		
<i>Cassidaria sulcata</i>	*	...	*		
<i>Natica zealandica</i>	*	*	*	*	...	*		
" <i>vitrea</i>	*	*	*	*	...	*		
" <i>solida</i>	*	*	?	...	Chatham Islands. Fossil in Chile.
" <i>ovata</i>	*	*	*	*	*	*	
" <i>callosa</i>	?	...	?	...	
<i>Sigaretus subglobosus</i>	*	Fossil in Chile.
<i>Scalaria browni</i>	*	...	*	*	
" <i>lyrata</i>	*	...	*	*	
" <i>intermedia</i>	*	...	*	...	*	*	
" <i>rotunda</i>	*	...	*	*	
<i>Odostomia lactea</i>	*	*	...	*	...	*	*	

SUMMARY—continued.

	Recent.	Pleistocene.	Wanganui Formation.	Pareora Formation.		Ahuriri Formation.	Oamaru Formation.		Remarks.
				Awatere Group.	Kanieri Group.		Trelissick Group.	Okotara Group.	
<i>Rotella zealandica</i> ...	*	*	*	*	*				
<i>Trochus stoliczkai</i> ...					*				
" <i>circinatus</i> ...					*	*			
<i>Polydonta tiarata</i> ...	*	*	*	*	*				
<i>Labio hectori</i> ...	*	*	*	*	*				
<i>Monilea zealandica</i> ...	*	*	*	*	*				
<i>Gibbula sanguinea</i> ...	*	*	*	*	*				
" <i>nitida</i> ...	*	*	*	*	*		*		
<i>Haliotis iris</i> ...	*	*	*	*	*	*			
<i>Emarginula striatula</i> ...	*	*	*	*	*	*			
<i>Tugali elegans</i> ...	*	*	*	*	*				
<i>Buccinulus kirki</i> ...	*	*	*	*	*				
" <i>albus</i> ...	*	*	*	*	*				
<i>Siphonaria denticulata</i> ...	*	*	*	*	*				
<i>Amphibola avellana</i> ...	*	*	*	*	*				
<i>Cylichna striata</i> ...	*	*	*	*	*				
" <i>enysi</i> ...	*	*	*	*	*		*		
<i>Pholadidea tridens</i> ...	*	*	*	*	*		*		
<i>Panopæa zealandica</i> ...	*	*	*	*	*		*	*	
" <i>plicata</i> ...	*	*	*	*	*		*	*	
" <i>worthingtoni</i> ...	*	*	*	*	*		*	*	
<i>Saxicava arctica</i> ...	*	*	*	*	*				
<i>Corbula zealandica</i> ...	*	*	*	*	*				
" <i>macilenta</i> ...	*	*	*	*	*				
" <i>dubia</i> ...	*	*	*	*	*				
<i>Næra kirki</i> ...	*	*	*	*	*			*	
<i>Myodora striata</i> ...	*	*	*	*	*				
<i>Mactra discors</i> ...	*	*	*	*	*				
" <i>æquilatera</i> ...	*	*	*	*	*				
" <i>inflata</i> ...	*	*	*	*	*		*		
" <i>attenuata</i> ...	*	*	*	*	*		*		
" <i>rudis</i> ...	*	*	*	*	*		*		
" <i>elegans</i> ...	*	*	*	*	*		*		
<i>Thracia granulosa</i> ...	*	*	*	*	*				
<i>Mulinia notata</i> ...	*	*	*	*	*				
<i>Lutraria solida</i> ...	*	*	*	*	*				
" <i>sulcata</i> ...	*	*	*	*	*				
<i>Zenatia acinaces</i> ...	*	*	*	*	*				
<i>Darina pusilla</i> ...	*	*	*	*	*				
<i>Psammobia stangeri</i> ...	*	*	*	*	*				
" <i>lineolata</i> ...	*	*	*	*	*				
<i>Hiatula nitida</i> ...	*	*	*	*	*				
<i>Tellina albinella</i> ...	*	*	*	*	*				
" <i>deltoidalis</i> ...	*	*	*	*	*				
" <i>lintea</i> ...	*	*	*	*	*				
<i>Mesodesma chemnitzii</i> ...	*	*	*	*	*				
" <i>cuneata</i> ...	*	*	*	*	*				
" <i>grandis</i> ...	*	*	*	*	*	*			
<i>Venus zealandica</i> ...	*	*	*	*	*				

SUMMARY—continued.

	Recent.	Pleistocene.	Wanganui Formation.	Pareora Formation.		Aburiri Formation.	Oamaru Formation.		Remarks.
				Awatere Group.	Kanieri Group.		Trelissick Group.	Otara Group.	
<i>Venus oblonga</i> ...	*	?					
<i>Chione vellicata</i>	*	*	*	Chatham Islands.
" <i>acuminata</i>	
" <i>stuchburyi</i>	*	*	*	
" <i>mesodesma</i>	*	*	*	
" <i>gibbosa</i>	
" <i>assimilis</i>	*	*	*	
" <i>yatei</i>	*	*	*	
<i>Cytherea enysi</i>	*	*	
<i>Callista disrupta</i>	
" <i>elegans</i>	*	*	
<i>Dosinea subrosea</i>	*	*	
" <i>magna</i>	*	
" <i>grayi</i>	*	*	
<i>Cyclina kroyeri</i>	*	*	*	
" <i>dispar</i>	?	
<i>Tapes intermedia</i>	*	*	*	
" <i>curta</i>	*	
<i>Cardium striatulum</i>	*	*	*	Chatham Islands.
" <i>grayi</i>	
" <i>patulum</i>	*	
" <i>spatiosum</i>	*	
<i>Protocardium serum</i>	*	
<i>Venericardia australis</i>	*	*	*	Chatham Islands.
" <i>intermedia</i>	*	*	
" <i>var. B.</i>	*	*	
<i>Lucina divaricata</i>	*	*	*	
<i>Mysia zealandica</i>	*	*	*	
<i>Crassatella ampla</i>	*	
" <i>attenuata</i>	*	...	
" <i>trailli</i>	*	
<i>Mytilicardia excavata</i>	*	
<i>Astarte australis</i>	*	
<i>Unio aucklandica</i>	?	
" <i>inflata</i>	*	...	
<i>Mytilus magellanicus</i>	*	*	*	
<i>Crenella discors</i>	*	
" <i>elongata</i>	*	...	
<i>Modiola albicosta</i>	*	*	*	
" <i>sp. ind.</i>	*	
<i>Lithodomus striatus</i>	*	
<i>Perna zealandica</i>	*	
<i>Pinna lata</i>	*	...	
" <i>zealandica</i>	*	*	*	
" <i>plicata</i>	*	...	
" <i>distans</i>	*	
<i>Trigonia pectinata</i>	Living in Australia.
" <i>semiundulata</i>	*	
<i>Barbatia sinuata</i>	*	*	*	

SUMMARY—continued.

	Recent.	Pleistocene.	Wanganui Formation.	Pareora Formation.		Ahuriri Formation.	Oamaru Formation.		Remarks.
				Awatere Group.	Kanieri Group.		Trelissick Group.	Ototara Group.	
<i>Cucullæa ponderosa</i>	
" " var. B	
" <i>worthingtoni</i>	Fossil in Patagonia.
" <i>alta</i>	
" " B	
" <i>attenuata</i>	
<i>Pectunculus striatularis</i>	*	*	*	*	*	*	*	
" <i>laticostatus</i>	*	*	*	*	*	*	*	
" <i>globosus</i>	Chatham Islands.
" <i>traversi</i>	*	...	
" <i>cordatus</i>	
<i>Limopsis insolita</i>	Fossil in Patagonia.
" <i>zealandica</i>	*	
<i>Solenella cumingi</i>	*	*	
" <i>australis</i>	*	
<i>Pecten zealandiæ</i>	*	*	*	
" <i>radiatus</i>	*	*	*	*	...	
" <i>gemmulatus</i>	*	
" <i>williamsoni</i>	*	*	
" <i>chathamensis</i>	*	...	Chatham Islands.
" <i>scandula</i>	*	...	
" <i>fischeri</i>	*	
" <i>delicatula</i>	Chatham Islands.
" <i>semiplicata</i>	
" <i>secta</i>	
" <i>venosum</i>	
" <i>hochstetteri</i>	*	
" <i>hectori</i>	*	*	Chatham Islands.
" <i>laticostatus</i>	*	*	*	
" <i>triphooki</i>	*	
" <i>accrementa</i>	*	
" <i>diffluxa</i>	
" <i>hutchinsoni</i>	*	*	
" <i>beethami</i>	*	*	
" " var. B	*	
" <i>crawfordi</i>	*	*	
" <i>athleta</i>	*	*	
" <i>burnetti</i>	*	*	
" <i>polymorphoides</i>	*	*	
" <i>vellicatus</i>	*	*	*	*	*	
" <i>zittelli</i>	*	
<i>Hinnites trailli</i>	*	
<i>Lima lævigata</i>	*	
" <i>colorata</i>	*	
" <i>paucisulcata</i>	*	*	
" <i>paleata</i>	*	*	
" <i>multiradiata</i>	*	*	
" <i>crassa</i>	*	
" <i>linguatula</i> var. B	*	*	

TERTIARY FOSSILS OF NEW ZEALAND.

MOLLUSCA.

Class—Pteropoda.

FAMILY—DENTALIIDÆ.

DENTALIUM.

1. **D. pacificum**, *Hutton, Cat. Marine Moll.*, p. 5.

Localities.—Motanau (v).

2. **D. conicum**, *sp. nov.* Medium size, slightly curved, round, rapidly tapering; with forty to forty-five low longitudinal ribs, which rapidly diminish in number to about fifteen near the apex; interstices round, smooth, narrower than the ribs near the base, but broader near the apex.

Localities.—Shakespeare Cliff; Broken River (v).

3. **D. nanum**, *sp. nov.* Small, slightly curved, round, gradually tapering; with about thirteen narrow longitudinal ribs, which run from end to end, but get obsolete towards the base; interstices round, smooth, broader than the ribs.

Localities.—Shakespeare Cliff.

4. **D. tenuis**, *sp. nov.* Medium size, nearly straight, thin, with about thirty-five low broad longitudinal ribs; the interstices round, narrow.

Localities.—Whangape Lake, Waikato; Raglan.

5. **D. mantelli**, *Zittel, Voy. Novara, Palæ.*, p. 45. Medium size; slightly curved, terete, solid; with from fourteen to twenty narrow longitudinal ribs near the apex, increasing to thirty towards the base; interstices smooth; tapering slowly.

Localities.—Awatere (Hochstetter); Awamoa; Mount Caverhill.

6. **D. irregularis**, *sp. nov.* Medium size; slightly curved, solid, tapering rapidly; with about twenty-six narrow longitudinal ribs towards the base, decreasing in number towards the apex; interstices rounded, about as broad as the ribs, both they and the ribs crossed by close transverse striæ.

Localities.—Kanieri; Awamoa.

7. **D. lævis**, *sp. nov.* Small; slightly curved, tapering slowly; smooth, with fine distant longitudinal lines.

Localities.—Kanieri; Chatham Islands; Motanau (L).

8. **D. giganteum**, *Sowerby* (in *Darwin's Geo. Obs. on South America*, p. 263). Large, terete, nearly straight, thick, with about thirty-six low broad longitudinal ribs; the interstices round, narrow.

Localities.—Waitaki; Waikari; Weka Pass (M); Castle Rock, Southland; Awatere(?) (smaller, smooth apex).

9. **D. solidum**, *sp. nov.* Large, terete, nearly straight, very thick, with about sixty low longitudinal ribs; the interstices round, narrow.

Localities.—Kanieri; Sherry River; Waikari.

Class—Gasteropoda.

FAMILY—MURICINÆ.

MUREX.

1. **M. octogonus**, *Quoy*; *Cat. Marine Moll.*, p. 7.

Localities.—Wanganui (U); Shakespeare Cliff, Wanganui.

2. **M. zealandicus**, *Quoy*; *Cat. Marine Moll.*, p. 7.

Localities.—Shakespeare Cliff, Wanganui.

3. **M. lyratus**, *Lamarck*; *Cat. Marine Moll.*, p. 7.

Localities.—Shakespeare Cliff, Wanganui.

TYPHIS.

Shell-like *Murex*, with projecting hollow tubes, the last open, occupied by the excurrent canal.

4. **T. zealandica**, *sp. nov.* Shell fusiform; whorls irregular, with small distant spiral ribs; varices three in a whorl, connected into foliaceous expansions, which are marked on the inner side with undulating lines; a single long posterior tubular spine, curved upwards, and opening into the interior of the shell. Axis, 1.1; breadth, .4.

Localities.—Shakespeare Cliff, Wanganui.

FUSUS.

5. **F. pensum**, *Hutton*, *Cat. Marine Moll.*, p. 8.

Localities.—Shakespeare Cliff, Wanganui.

6. **F. australis**, *Quoy*; *Cat. Marine Moll.*, p. 8.

Localities.—Shakespeare Cliff; Awatere.

7. **F. zéalandicus**, *Quoy*; *Cat. Marine Moll.*, p. 8.

Localities.—Wanganui (U); Shakespeare Cliff; Batten River(?); Chatham Islands(?).

Var. B.—Body whorls sub-nodulous.

Localities.—Callighan's Hill, Westland.

8. **F. mandarinus**, *Duclos*; *Cat. Marine Moll.*, p. 8.

Localities.—Shakespeare Cliff; Awamoa; Waikari.

9. **F. dilatatus**, *Quoy*; *Cat. Marine Moll.*, p. 8.

Localities.—Shakespeare Cliff; Awatere; Upoko Ngaruru, East Coast, Wellington.

10. **F. crawfordi**, *sp. nov.* Ovato-fusiform, distantly spirally striated; whorls five, those of the spire flattened, and with a row of tubercles near the anterior suture, which is covered up by the vent whorl; body whorl inflated, keeled, with a row of nine large tubercles on the keel and a similar row of smaller ones in front of them; aperture oval; canal(?). Axis(?); breadth, 2.6; angle of spire, 75°.

Localities.—Teawaite, East Coast, Wellington.

11. **F. plicatilis**, *sp. nov.* Fusiform, whorls five, distantly spirally striated, spire rather short, spire whorls transversely plicated, aperture oval, canal produced straight. Axis, .52; breadth, .35; angle of spire, 50°.

Localities.—Pomahaka, Otago.

12. **F. corticatus**, *Hutton*, *Cat. Marine Moll.*, p. 9.

Localities.—Shakespeare Cliff; Motanau (v).

13. **F. plebeius**, *Hutton*, *Cat. Marine Moll.*, p. 9.

Localities.—Shakespeare Cliff.

14. **F. linea**, *Martyn*; *Cat. Marine Moll.*, p. 10.

Localities.—Wanganui (v.); Shakespeare Cliff.

15. **F. littorinoides**, *Reeve*; *Cat. Marine Moll.*, p. 10.

Localities.—Shakespeare Cliff.

16. **F. triton**, *Lesson*; *Cat. Marine Moll.*, p. 11.

Localities.—Wanganui (v); Shakespeare Cliff; Waitotara.

17. **F. nodosus**, *Quoy*; *Cat. Marine Moll.*, p. 11.

Localities.—Wanganui (v); Shakespeare Cliff; Cape Kidnappers.

Var. B.—*Cat. Marine Moll.*, p. 11.

Localities.—Wanganui (v); Shakespeare Cliff; Hampden; Callighan's Creek, Westland.

The specimens from Callighan's Creek are intermediate between this and the next variety.

Var. C.—Ovate, spire shortened, two rows of nodules on the body whorl; canal bent to the left and strongly recurved. Approaching *Cassis* in shape.

Localities.—Shakespeare Cliff; Hampden.

Var. D.—Body whorl deeply grooved, spire produced.

Localities.—Awatere; Kanieri; New River, Grey District; Waikari.

The Awatere specimen is intermediate between this variety and *C.*

FAMILY—PLEUROTOMIDÆ.

PLEUROTOMA.

18. *P. novæ zealandiæ*, *Reeve; Cat. Marine Moll., p. 11.*

Localities.—Shakespeare Cliff.

19. *P. lævis*, *Hutton, Cat. Marine Moll., p. 12.*

Localities.—Shakespeare Cliff.

20. *P. buchanani*, *sp. nov.* Shell fusiform, elongated; spire acute; whorls carinated, with fine spiral lines, and obliquely plicated anteriorly; posterior part smooth, concave, with a slight ridge at the suture; aperture oval; canal produced; body whorl longer than the spire. Axis, .85; breadth, .27; angle of spire, 30°.

Localities.—Shakespeare Cliff; Awamoa.

21. *P. trailli*, *sp. nov.* Shell fusiform, spire acute; whorls slightly carinated; with fine spiral lines, and transverse ribs anteriorly, posterior part smooth; aperture ovate, canal rather produced; body whorl shorter than the spire. Axis, .7; breadth, .43; angle of spire, 38°.

Localities.—Awamoa.

22. *P. awamoensis*, *sp. nov.* Shell elongato-fusiform; spire produced, larger than the body whorl; whorls rounded, spirally striated, and transversely ribbed, those on the body whorl becoming obsolete towards the anterior end; suture spirally striated; aperture narrow; posterior canal moderate, anterior rather produced. Axis, 1; breadth, .3; angle of spire, 22°.

Localities.—Awamoa.

23. *P. wanganuiensis*, *sp. nov.* Shell fusiform; spire produced, longer than the body whorl; whorls rounded, strongly spirally striated, and obliquely ribbed in the centre; suture very finely obliquely striated and with a spiral rib; aperture oval, canal short. Axis, .55; breadth, .2; angle of spire, 30°.

Localities.—Shakespeare Cliff.

24. *P. sulcata*, *sp. nov.* Large, fusiform; spire shorter than the body whorl; whorls flattened, distantly spirally grooved, and with a broad spiral groove just below the suture; aperture oval; canal short. Axis, 1.8; breadth, .8; angle of spire, 38°.

Localities.—Broken River (L); Cape Rodney.

25. *P. hebes*, *sp. nov.* Ovato-fusiform; spire blunt; whorls rather angled, distantly spirally striated; a spiral row of nodules along the keel, above the keel smooth; body whorl larger than the spire; canal moderate. Axis, .9; breadth, .45; angle of spire, 45°.

Localities.—Oamaru; Poverty Bay (L).

26. *P. latescens*, *sp. nov.* Ovato-fusiform; spire rather shorter than the body whorl; whorls rounded, closely spirally striated, those of the spire obliquely plicated; a deep broad groove at the suture; aperture oval; canal rather produced. Axis, .85; breadth .4; angle of spire, 55°.

Localities.—Mount Brown.

27. **P. pagoda**, *sp. nov.* Elongato-fusiform, spire produced; whorls smooth, strongly keeled near the anterior end; below the keel concave, with a low obtuse spiral rib on the body whorl; aperture ovate, contracted anteriorly; canal long, straight, narrow. Axis, '7; breadth, '25; angle of spire, 30°.

Localities.—Awamoa.

BELA.

Shell ovato-fusiform; spire shorter than the body whorl; columella flattened, canal short; outer lip with a small sinus at its junction with the body whorl.

28. **B. striata**, *sp. nov.* Fusiform, narrow, body whorl longer than the spire; whorls convex, six, finely spirally striated; aperture oblong, columella callous, smooth; canal short, slightly recurved, right lip thickened, with a broad shallow sinus near the suture. Axis, '8; breadth, '33; angle of spire, 36°.

Localities.—Wanganui (U); Shakespeare Cliff; Awamoa.

LACHESIS.

29. **L. sulcata**, *Hutton, Cat. Marine Moll., p. 12.*

Localities.—Shakespeare Cliff.

FAMILY—TRITONIDÆ.

TRITON.

30. **T. spengleri**, *Chemnitz; Cat. Marine Moll., p. 13.*

Localities.—Wanganui (U).

31. **T. minimus**, *sp. nov.* Ovato-fusiform; whorls slightly angled, with spiral striæ, and slightly transversely plaited; varices one in each whorl; aperture ovate; canal short. Axis, 1'5; breadth, '75.

Localities.—Awamoa; Broken River (L).

FAMILY—BUCCINIDÆ.

BUCCINUM.

32. **B. zealandicum**, *Reeve; Cat. Marine Moll., p. 14.*

Localities.—Shakespeare Cliff; Awamoa.

33. **B. costatum**, *Quoy; Cat. Marine Moll., p. 14.*

Localities.—Shakespeare Cliff; Awamoa.

34. **B. robinsoni**, *Zittel, Voy. Novara, Palæ., p. 36.* Ovate, rugosely lirate, apex acute, whorls six, the upper ones slightly rugose, suture not very deep; body whorl inflated, with transverse rugose liræ and obsolete longitudinal plicæ; columella short, base thick and curved to the left; aperture semi-lunate, canal deeply notched; lip thin. Axis, 1'6; breadth, 1'3.

Localities.—White Cliffs, Taranaki; Awamoa; Port Hills, Nelson (Hochstetter); Callaghan's Hill, West Side; Hatter's Creek, Kanieri.

35. **B. inflatum**, *sp. nov.* Ovato-fusiform, spire acute; whorls seven, convex; body whorl large, inflated; finely spirally grooved, the apex only transversely plicated; aperture oval; canal(?). Axis, 1·3; breadth, ·85; angle of spire, 65°.

Localities.—Kanieri River.

36. **B. carinatum**, *sp. nov.* Ovate; spire short; body whorl angled and more or less flattened behind; sub-perforate; spirally grooved; spire whorls transversely ribbed; suture with a thick fold; aperture narrow, right lip sinuated; posterior canal recurved. Axis, 1·5; breadth, ·95.

Localities.—Broken River (U).

FAMILY—PURPURIDÆ.

PURPURA.

37. **P. succincta**, *Lamarck; Cat. Marine Moll., p. 16.*

Localities.—Shakespeare Cliff.

38. **P. textiliosa**, *Lamarck; Cat. Marine Moll., p. 16.*

Localities.—Cape Rodney (Hochstetter).

39. **P. conoidea**, *Zittel, Voy. Novara, Palæ., p. 37.* Ovato-conical, spire elongate, apex acute, whorls six or six and a half, sub-nodulose, striated; body whorl two-thirds of the length, inflated, transversely lirate and ornamented with longitudinal tuberculated plicæ; suture of body whorl tuberculose; columella thick; aperture oval, contracted above and forming a broad sinus; lip thin, smooth inside, striated. Axis, 1·4; breadth, ·85.

Localities.—Awatere (Hochstetter).

This species is not represented in the Colonial Museum.

40. **P. excursa**, *sp. nov.* Ovate, inflated; whorls keeled, spirally striated; spire whorls with one, and body whorl with two, anterior nodulose ridges, below which, on the body whorl, are about six deep spiral grooves. Axis, 1·8; breadth, 1·4.

Localities.—Oamaru; Caversham.

FAMILY—OLIVIDÆ.

ANCILLARIA.

41. **A. australis**, *Quoy; Cat. Marine Moll., p. 17.*

Localities.—Wanganui (U); Shakespeare Cliff; White Cliffs, Taranaki(?).

42. **A. hebera**, *sp. nov.* Cylindrical; spire short, thick, entirely covered with enamel, broader than the body; a spiral depression below the spire, and three spiral striæ round the base. Axis, ·75; breadth, ·25.

Localities.—Awamoia; Paparoa, Upper Wanganui River; Waikari; Manawatu Gorge; Kanieri; Broken River (M).

43. **A. (Amalda?) pomahaka**. Shell fusiform, polished, rather thin, not umbilicated, spire elongated, acute, suture enamelled; whorls five or six, aperture oval, elongated, inner lip smooth, without

wrinkles, the posterior callus rather large, outer lip simple, thin, slightly notched anteriorly. Axis, '8; breadth, '42; angle of spire, 58°.

Localities.—Pomahaka, Otago.

FAMILY—VOLUTIDÆ.

VOLUTA.

44. **V. pacifica**, *Lamarck*; *Cat. Marine Moll.*, p. 18.

Localities.—Wanganui (v); Shakespeare Cliff; Awatere (Hochstetter); Broken River (v); Napier; Waipara Gorge.

Var. B.—*Cat. Marine Moll.*, p. 18.

Localities.—Wanganui (v); Shakespeare Cliff; Awatere; Kanieri.

Var. V.—*Cat. Marine Moll.*, p. 18.

Localities.—Wanganui (v); Shakespeare Cliff; Oamaru; Caversham.

45. **V. gracilicostata**, *Zittel*, *Voy. Novara, Palæ.*, p. 38. Ob-
longo-fusiform, turreted; whorls five to seven, angled, transversely
lirate; body whorl large, keeled above, regularly transversely ribbed,
the interstices finely lirate; columella rather callous, plaits obsolete;
canal deep; aperture broad, oblong. Height, 1·06; thickness, '4.

Localities.—Port Hills, Nelson (Hochstetter).

This species is not represented in the Colonial Museum.

46. **V. kirki**, *Hutton*, *Cat. Marine Moll.*, p. 18.

Localities.—Broken River (v).

I am doubtful about the identification of this species.

47. **V. (Lyria) corrugata**, *sp. nov.* Fusiform; spire acute;
spire and body whorls with transverse rather distant ribs; body whorl
rather inflated; columella with four or five plaits. Axis, 2; breadth, '9.

Localities.—Maunga-pakeha Taipo, East Coast of Wellington;
Chatham Islands.

Var. B.—Less inflated; ribs nearer together, becoming obsolete
towards the anterior end. Axis, 3; breadth, 1·1.

Localities.—Awatere; Kanieri; Waikari.

48. **V. elongata**, *sp. nov.* Elongato-fusiform, smooth, spire pro-
duced; aperture elongate, narrow; columella(?). Axis, 4; breadth,
1·15; angle of spire, 33°.

Localities.—Broken River (L); Weka Pass (L).

MITRA.

49. **M. enysi**, *sp. nov.* Elongato-fusiform; spire short, about
half the length of the body whorl, acute; whorls rather convex, finely
spirally striated, and transversely ribbed, the ribs of the body whorl
almost obsolete, and confined to the posterior end; aperture narrow,
canal short, slightly notched; columella with four plates, the two
anterior more oblique than the two posterior. Axis, '75; breadth, '35.

Localities.—Broken River (v).

50. **M. apicalis**, *sp. nov.* Elongato-fusiform; spire produced,
nearly as long as the body whorl; whorls keeled, with a row of small
nodules on the keel, finely spirally striated; aperture oval, contracted

and produced into a short canal in front; columella with three strong nearly transverse folds, and another obsolete one below them. Axis, '45; breadth, '18.

Localities.—Awamoa.

51. *M. albescens*, Hutton, *Cat. Marine Moll.*, p. 19.

Localities.—Awamoa.

52. *M. dubia*, *sp. nov.* Ovato-cylindrical; spire short; smooth; outer lip slightly thickened. Axis, '6; breadth, '3.

Localities.—Broken River (L); Chatham Islands.

53. *M. ventricosa*, *sp. nov.* Ovato-ventricose; spire very short; smooth; outer lip thickened, strongly dentate; columella plaited. Axis, '65; breadth, '5.

Localities.—Broken River (L).

VOLVARIA.

Sub-cylindrical, spire obsolete, aperture narrow, dilated anteriorly; columella with four oblique plaits; outer lip slightly thickened.

54. *V. ficoides*, *sp. nov.* Ovato-pyriform; smooth; whorls four; spire not exerted; aperture narrow, outer lip inflected. Axis, 1'1; breadth, '85.

Localities.—Oamaru.

FAMILY—CASSIDIDÆ.

CASSIS.

55. *C. pyrum*, Lamark; *Cat. Marine Moll.*, p. 20.

Localities.—Wanganui (U).

56. *C. striatus*, *sp. nov.* Ovato-ventricose; spire rather concave; body whorl obsoletely plicated in front, and distantly spirally striated; spire spirally striated, cancellated by fine transverse ribs; columella rugose, outer lip smooth. Axis, 1'1; breadth, '8.

Localities.—Wanganui (U); Shakespeare Cliff; Puku-tapu(?).

Very like *Cassis sabulon* from the miocene beds of Bordeaux, but differs in the transverse plications on the body whorl.

CASSIDARIA.

Oval, tuberculated, and spirally ribbed; canal prominent, recurved.

57. *C. sulcata*, *sp. nov.* Ovato-ventricose; whorls rather convex, deeply spirally grooved, the grooves smooth and about twice the breadth of the ribs; two of the posterior ribs sub-nodulose; columella ribbed; aperture ovate, truncate anteriorly. Axis, 1'8; breadth, 1'45; angle of spire, 90°.

Localities.—Kanieri.

FAMILY—NATICIDÆ.

NATICA.

58. *N. zealandica*, Quoy; *Cat. Marine Moll.*, p. 21.

Localities.—Wanganui (U); Shakespeare Cliff; Hampden; Mount Caverhill.

59. *N. vitrea*, Hutton, *Cat. Marine Moll.*, p. 21.

Localities.—Wanganui (v); Shakespeare Cliff.

60. *N. solida*, Sowerby (in *Darwin's Geo. Obs. on South America*, p. 255). Sub-globose, thick, smooth, spire short; whorls five or six, suture inconspicuous; aperture oval; inner lip much thickened posteriorly; umbilicus mediocre, at last covered up. Axis, 2·65; breadth, 2·6.

Localities.—Kanieri; Conway River; Broken River (v); Kawau; Weka Pass (m?); Chatham Islands; Waipara Gorge; Hurunui Mound.

61. *N. (Mamilla) ovata*, *sp. nov.* Pyriformly ovate, smooth, thick, with fine transverse striæ; whorls five or six, suture closed; aperture semi-lunar; inner lip much thickened posteriorly; umbilicus large, never covered up. Axis, 1·45; breadth, 1·25.

Localities.—Shakespeare Cliff; Callaghan's Creek; Motanau (L); Kanieri; Broken River (v and L); Weka Pass (m); Oamaru; Awamoa; Lyndon.

62. *N. (?) callosa*, *sp. nov.* Convolute; spire flat, hidden; body whorl very large, rather flattened in the middle, and produced outwards; smooth, finely transversely striated; aperture small, oblong; columella with an enormous posterior callosity. Axis, 1·45; breadth, 1·6.

Localities.—Castle Point, Wellington(?).

SIGARETUS.

Aperture rounded, spire oblique.

63. *S. subglobosus*, Sowerby (in *Darwin's Geo. Obs. on South America*, p. 254). Sub-globose; whorls four; finely spirally striated. Axis, ·45; breadth, ·45.

Localities.—Awamoa.

FAMILY—SCALARIDÆ.

SCALARIA.

64. *S. browni*, Zittel, *Voy. Novara, Palæ.*, p. 42. Shell elongated, turreted, imperforate; apex acute; spire composed of eight whorls; whorls rather convex, densely ribbed longitudinally; varices numerous; ribs thick and conspicuous, about sixteen to eighteen in a whorl, sub-equal, elevated; body whorl keeled near the base. Axis, 1·1; breadth, ·35; angle of spire, 10° to 11°.

Localities.—Brighton; Aotea (Hochstetter).

65. *S. lyrata*, Zittel, *Voy. Novara, Palæ.*, p. 41. Shell large, solid, turreted, imperforate; whorls convex, longitudinally ribbed and transversely lyrate; sutures deep; ribs elevated, sub-equal, thirteen to fourteen in a whorl, sub-spinose; varices hardly conspicuous and few in number, liræ transversely acute, distant, about eight in a whorl; base carinated; aperture rounded. Axis, 2·0; breadth, ·95; angle of spire, 18°.

Localities.—Kaipuki; Oamaru; Weka Pass (M); Waikato South Head; Curiosity Shop; Kawau; Aotea (Hochstetter).

66. **S. intermedia**, *sp. nov.* Varices about twelve in a whorl, thin; whorls spirally ribbed, with intermediate striæ between the ribs; last whorl keeled. Axis, 1.25; breadth, .45; angle of spire, 18°.

Localities.—Shakespeare Cliff.

This species has the thin varices of *S. zelebori* with the intermediate striæ of *S. lyrata*.

67. **S. rotunda**, *sp. nov.* Varices about twelve in a whorl, rather thin; whorls finely spirally striated throughout; last whorl rounded; mouth round; imperforate. Axis(?); breadth, 1.25; angle of spire, 20°.

Localities.—Weka Pass (L); Brighton.

FAMILY—PYRAMIDELLIDÆ.

ODOSTOMIA.

68. **O. lactea**, *Angas; Cat. Marine Moll., p. 22.*

Localities.—Shakespeare Cliff.

FAMILY—CONIDÆ.

CONUS.

69. **C. ornatus**, *sp. nov.* Whorls smooth, with a row of small nodules on the keel, crossed by two or three spiral lines; a few spiral striæ at the anterior end of the body whorl. Axis, .8; breadth, .3.

Localities.—Awamoa.

70. **C. trailli**, *sp. nov.* Spire whorls smooth, angled; body whorl faintly distantly irregularly spirally striated. Axis, .9; breadth, .43.

Localities.—Awamoa.

FAMILY—STROMBIDÆ.

STRUTHIOLARIA.

71. **S. nodulosa**, *Lamarck; Cat. Marine Moll., p. 24.*

Localities.—Wanganui (V); Shakespeare Cliff.

Var. C.—Large; whorls slightly angled, sub-nodular.

Localities.—Wanganui (V); Shakespeare Cliff.

This variety is intermediate between *S. nodulosa* and *S. gigas*.

72. **S. vermis**, *Martyn; Cat. Marine Moll., p. 24.*

Localities.—Wanganui (V).

73. **S. scutulata**, *Deshayes; Cat. Marine Moll., p. 24.*

Localities.—Awatere; Motanau (L); Awamoa.

74. **S. sulcata**. *S. canaliculata*, *Zittel, Voy. Novara, Palæ., p. 34* (not of Spengl). Ovato-oblong, ventricose, thick, turreted; whorls six, suture broad and deeply excavated; with thick quadrangular spiral ribs, which are equal in breadth to the grooves; nine ribs in the

last whorl, four in the last but one; columella thick, slightly twisted, sub-callous, base wide. Axis, 1·8; breadth, 1·4.

Localities.—Awatere (Hochstetter); East Coast, Wellington.

75. **S. cingulata**, *Zittel, Voy. Novara, Palæ., p. 35.* Ovate; turreted; spire acute; whorls seven, convex; suture deep; spirally ribbed; ribs rather thick, obtuse, with fine spiral striæ; body whorl obsoletely bicarinated; columella somewhat callous, bent, base wide; outer lip thick, reflexed. Axis, 1·8; breadth, 1·1.

Localities.—Awatere (Hochstetter); Patea.

Var. B.—Ribs sub-moniliform.

Localities.—Awatere.

76. **S. cincta**, *sp. nov.* Ovate, turreted; spire acute; whorls six, keeled; body whorl hollowed in the middle; spirally ribbed, ribs thin, narrower than the intermediate grooves, smooth; keel sub-nodular; columella somewhat callous, slightly bent; outer lip not much thickened. Axis, 2·1; breadth, 1·4.

Localities.—Awatere; Motanau (L); Callighan's Creek, Westland; Waipara Gorge; Waikari.

Var. B.—Whorls rounded.

Localities.—Kanieri.

Var. C.—Posterior keel of body whorl produced into a recurved claw on the outer lip.

Localities.—Oamaru (U).

77. **S. tuberculata**, *sp. nov.* Ovate, turreted; spire acute; whorls five or six, keeled, with a row of tubercles on the keel; body whorl bicarinated, with a row of long tubercles or spines on each keel, the anterior row smaller, smooth; suture not excavated; columella with a large callosity, much bent; outer lip thickened, recurved. Axis, 2; breadth, 1·4.

Localities.—East Coast, Wellington; Upokororo Stream, Te Anau Lake; Kawau; Broken River (U).

Var. B.—Tubercles thicker and more nodular.

Localities.—Palliser Bay; Waikari; Lower Gorge of Waipara.

Intermediate between *S. tuberculata* and *S. nodulosa*.

78. **S. senex**, *sp. nov.* Ovate, turreted, finely spirally striated; spire whorls keeled, with a row of nodules on the keel, body whorl with two rows of small nodules near the posterior margin, below which are several deep spiral grooves. Axis, 3·2; breadth, 2·4.

Localities.—Oamaru; Caversham; Hurunui Bridge; Weka Pass (L).

FAMILY—CANCELLARIDÆ.

TRICHOTROPIS.

79. **T. inornata**, *Hutton, Cat. Marine Moll., p. 26.*

Localities.—Shakespeare Cliff.

FAMILY—CERITHIDÆ.

CERITHIUM.

80. **C. rugatum**, *sp. nov.* Turreted, whorls convex or slightly

keeled, spirally striated and transversely plicated, about twelve or fourteen in a whorl; body whorl and lower whorls of the spire occasionally with a single row of nodules, below which on the body whorl are two rather prominent spiral keels; aperture sub-orbicular, angled posteriorly on the outer lip; canal short, slightly recurved. Axis, 2·0; breadth, '8; angle of spire, 32°.

Localities.—Pomahaka, Otago; Waikari.

81. **C. cancellatum**, *sp. nov.* Turreted; whorls flat, cancellated, the interstices rather higher than broad; sulcus well marked; base spirally ridged; aperture sub-orbicular; canal short, recurved. Axis, '55; breadth, '25; angle of spire, 35°.

Localities.—Shakespeare Cliff; Hampden.

82. **C. nodulosum**, *sp. nov.* Turreted; whorls ten, slightly keeled, and with a spiral row of large tubercles in the centre, eight in a whorl; body whorl short, keeled, with two spiral ribs below the row of nodules; canal(?). Axis, 2·2; breadth, '7; angle of spire, 20°.

Localities.—Broken River (v).

FAMILY—RISSOIDÆ.

RISSOA.

83. **R. vana**, *sp. nov.* Turbinate; whorls convex, smooth; aperture ovate, peristome continuous. Axis, '17; breadth, '1.

Localities.—Awamoa.

FAMILY—TURRITELLIDÆ.

TURRITELLA.

84. **T. rosea**, *Quoy; Cat. Marine Moll., p. 29.*

Localities.—Wanganui (v); Shakespeare Cliff; Hampden; Cape Rodney; Mount Caverhill; Mount Cookson; Lyndon; Broken River (v); Awatere; Kawau.

85. **T. gigantea**, *sp. nov.* Large, whorls concave, spirally striated, ribs unequal; suture closed over, mouth sub-quadrated. Axis, 5; breadth, '8; angle of spire, 15°.

Localities.—Oamaru; Caversham; Waipara Gorge; Broken River (v).

86. **T. vittata**, *Hutton, Cat. Marine Moll., p. 29.*

Localities.—Wanganui (v); Shakespeare Cliff; Awamoa; East Coast, Wellington.

87. **T. pagoda**, *Reeve; Cat. Marine Moll., p. 29.*

Localities.—Wanganui (v); Shakespeare Cliff; Sherry River; Lyndon.

88. **T. ambulacrum**, *Sowerby (in Darwin's Geo. Obs. on South America, p. 257).* Turreted; whorls ten, with three spiral ribs, which are sub-equal towards the base of the shell, but in the middle and upper portions the intermediate rib is much smaller; interstices finely

striated; suture deep and narrow. Axis, 1·6; breadth, ·55; angle of spire, 20°.

Localities.—Awatere; Chatham Islands; Kokohu.

89. **T. (Zaria) tricincta**, *sp. nov.* Turreted; whorls fourteen, with three strong, equal, and equidistant spiral ribs; interstices and base finely spirally striated; mouth sub-quadrangular, outer lip simple; suture not well marked. Axis, 1·2; breadth, ·25; angle of spire, 15°.

Localities.—Shakespeare Cliff; Awatere; Waikari (small variety); Weka Creek; Mount Cookson.

Var. B.—The two anterior ribs nearer together.

Localities.—Kanieri; Hatter's Creek; Mount Cookson.

90. **T. fulminata**, *Hutton, Cat. Marine Moll., p. 29.*

Var. B.—Spiral striæ stronger.

Localities.—Wanganui (v); Shakespeare Cliff.

91. **T. bicincta**, *sp. nov.* Small, turreted; whorls eight, with two strong spiral ribs, the anterior rather larger and sub-moniliform; interstices finely striated; mouth rounded; suture well marked. Axis, ·5; breadth, ·17; angle of spire, 15°.

Localities.—Kanieri.

92. **T. ornata**, *sp. nov.* Small, sutures deeply excavated, whorls smooth, with two rows of small nodules. Breadth, ·1. Fragments only.

Localities.—Pomahaka, Otago.

FAMILY—VERMETIDÆ.

CLADOPODA.

93. **C. zealandica**, *Quoy; Cat. Marine Moll., p. 30.*

Localities.—Shakespeare Cliff.

94. **C. monilifera**, *sp. nov.* Irregularly twisted; rugose, with rather distant, unequal, longitudinal, moniliform striæ; transverse section sub-circular.

Localities.—Shakespeare Cliff; Broken River (v).

PHORUS.

95. **P. onustus**, *Reeve; Cat. Marine Moll., p. 31.*

Localities.—Awamoa.

FAMILY—CALYPTRIDÆ.

CALYPTRÆA.

96. **C. maculata**, *Quoy; Cat. Marine Moll., p. 31.*

Localities.—Wanganui (v); Shakespeare Cliff; Awamoa; Waitotara; Napier; Broken River (v and l).

TROCHITA.

97. **T. tenuis**, *Gray; Cat. Marine Moll., p. 32.*

Localities.—Wanganui (v); Shakespeare Cliff.

98. **T. dilatata**, Zittel, *Voy. Novara, Palæ.*, p. 43, non *Calyptrea maculata*, Quoy. Sub-orbicular, conical, depressed; apex sub-central; obliquely finely striated; rugose near the end of the last whorl. Diameter, 1.

Localities.—Waipara Gorge; Lyndon; Mount Cookson; Awatere (Hochstetter).

CRYPTA.

99. **C. costata**, Deshayes; *Cat. Marine Moll.*, p. 32.

Localities.—Shakespeare Cliff; Waipara Gorge.

100. **C. contorta**, Quoy; *Cat. Marine Moll.*, p. 32.

Localities.—Wanganui (U); Hampden; Broken River (U); Motanau (U and L); Awatere(?).

101. **C. incurva**, Zittel; *Crepidula incurva*, Zittel, *Voy. Novara, Palæ.*, p. 44. Oblong, thick, smooth, very convex, contorted; apex incurved, often distant from the margin, much thickened; internal septum concave, or almost flat, extending to the middle of the shell. Height, 1·8; length, 1·1.

Localities.—Awatere (Hochstetter); Waipara Gorge; Lyndon.

102. **C. striata**, *sp. nov.*; *Crepidula, sp. ind.*, *Voy. Novara, pl. 15, f. 10*. Oval; flattened; apex sub-central; longitudinally striated.

Localities.—Awatere (Hochstetter); Broken River (L); Oamaru.

103. **C. profunda**, *sp. nov.* Oblong, compressed, very convex, left side generally flattened; apex incurved, sub-central; smooth, with concentric lines of growth; internal septum concave, deeply placed in the shell, not extending to the middle. Height, 1·3; length, ·6; thickness, ·7.

Localities.—Shakespeare Cliff; Awatere; Motanau (L); Patea; Waitotara; Paparoa, Upper Wanganui; Broken River (U).

FAMILY—PILÆOPSISÆ.

PILÆOPSIS.

104. **P. uncinatus**, *sp. nov.* Irregularly conical; apex anterior, recurved, uncinata, sub-spiral; whorls one; smooth, with fine radiating lines in places; aperture large, irregularly orbicular. Height, ·8; diameter, 1·1.

Localities.—Wanganui (U).

105. **P. radiatus**, *sp. nov.* High; curved, with about twenty-four radiating ribs, which are much narrower than the intermediate spaces. Height, ·65; diameter, ·65.

Localities.—Awatere.

FAMILY—NERITIDÆ.

NERITELLA.

Globose, oval, thin; aperture semi-lunar; inner lip flattened; outer lip simple internally.

106. **N. nitida**, *sp. nov.* Globose, transverse, spire flattened, smooth; aperture sub-ovate, inner lip smooth, arcuate, outer lip simple internally. Colour white, with numerous narrow zigzag transverse black bands. Axis, '25; breadth, '33.

Localities.—Pomahaka, Otago.

FAMILY—TROCHIDÆ.

TURBO.

107. **T. rubicundus**, *Reeve*; *Cat. Marine Moll.*, p. 33.

Localities.—Wanganui (v).

108. **T. granosus**, *Lamarck*; *Cat. Marine Moll.*, p. 33.

Localities.—Mount Caverhill; Weka Creek.

109. **T. superbis**, *Zittel, Voy. Novara, Palæ.*, p. 39. Large, sub-globose; whorls three and a half, angled, with a row of nodules on the keel; body whorl large, with three rows of tubercles; columella bent, concave, very broad; aperture sub-rhomboidal, angled. Axis, 4; breadth, 4.

Localities.—Cape Rodney (Hochstetter); Kawau; Hurunui Mound; Broken River (v).

IMPERATOR.

110. **I. imperialis**, *Lamarck*; *Cat. Marine Moll.*, p. 34.

Localities.—Wanganui (v); Shakespeare Cliff; Motanau (v).

ROTELLA.

111. **R. zealandica**, *Chenu*; *Cat. Marine Moll.*, p. 35.

Localities.—Wanganui (v); Shakespeare Cliff; Motanau (v); Waikari.

TROCHUS.

112. **T. stoliczkai**, *Zittel, Voy. Novara, Palæ.*, p. 40. Small, conical, broadly umbilicated; whorls six, rather convex; the upper with two and the last with four low spiral ribs; those on the body whorl moniliform; aperture sub-orbicular. Axis, '2; breadth, '2.

Localities.—Awatere (Hochstetter); Awamoa.

113. **T. circinatus**, *sp. nov.* Small, spirally ribbed, the posterior ribs distant; body whorl with three ribs above the keel, and eight or ten on the base, rather rounded. Axis, '15; breadth, '25.

Localities.—New River, Grey District; Awatere.

POLYDONTA.

114. **P. tiarata**, *Cat. Marine Moll.*, p. 36.

Localities.—Wanganui (v); Shakespeare Cliff; Motanau (v).

LABIO.

115. **L. hectori**, *Hutton, Cat. Marine Moll., p. 37.*
Localities.—Wanganui (U).

MONILEA.

116. **M. zealandica**, *Hutton, Cat. Marine Moll., p. 40.*
Localities.—Wanganui (U).

GIBBULA.

117. **G. sanguinea**, *Gray; Cat. Marine Moll., p. 40.*
Localities.—Wanganui (U).
118. **G. nitida**, *Adams; Cat. Marine Moll., p. 40.*
Localities.—Broken River (L); Pakau; Motanau (U); Awatere;
 Black Birch Creek, near Culverden.

FAMILY—HALIOTIDÆ.

HALIOTIS.

119. **H. iris**, *Lamarck (?) ; Cat. Marine Moll., p. 40.*
Localities.—Cape Rodney (cast only).

FAMILY—FISSURELLIDÆ.

EMARGINULA.

120. **E. striatula**, *Quoy; Cat. Marine Moll., p. 42.*
Localities.—Shakespeare Cliff; Awamoa.

TUGALI.

121. **T. elegans**, *Gray; Cat. Marine Moll., p. 42.*
Localities.—Shakespeare Cliff.

FAMILY—TORNATELLIDÆ.

BUCCINULUS.

122. **B. kirki**, *Hutton, Cat. Marine Moll., p. 51.*
Localities.—Shakespeare Cliff.
123. **B. albus**, *Hutton, Cat. Marine Moll., p. 51.*
Localities.—Shakespeare Cliff.

FAMILY—CYLICHNIDÆ.

CYLICHNA.

124. **C. striata**, *Hutton, Cat. Marine Moll., p. 52.*
Localities.—Awamoa.
125. **C. enysi**, *sp. nov.* Cylindrical, narrower above; apex concave; finely striated throughout; aperture as long as the shell. Axis, '65; breadth, '3.
Localities.—Broken River (L).

FAMILY—SIPHONARIIDÆ.

SIPHONARIA.

126. *S. denticulata*, Quoy ; *Cat. Marine Moll.*, p. 55.
Localities.—Motanau (v).

FAMILY—AMPULLACERIDÆ.

AMPHIBOLA.

127. *A. avellana*, Gmelin ; *Cat. Marine Moll.*, p. 58.
Localities.—Motanau (v).

Class—Lamellibranchiata.

FAMILY—PHOLADIDÆ.

PHOLADIDEA.

1. *P. tridens*, Gray ; *Cat. Marine Moll.*, p. 59.
Localities.—Wanganui (v) ; Shakespeare Cliff.

FAMILY—GLYCIMERIDÆ.

PANOPEÆA.

2. *P. zealandica*, Quoy ; *Cat. Marine Moll.*, p. 60.
Localities.—Wanganui (v) ; Kanieri.

3. *P. plicata*, *sp. nov.* Oblong, height more than half the length ; inequilateral, with many concentric deeply sulcated plications ; umbones pointed ; anterior end short, rounded, its dorsal margin rather convex ; posterior end produced, rounded, its dorsal margin nearly straight. Height, 1·7 ; length, 2·8 ; thickness, ·9.

Localities.—Raglan ; Lake Wakatipu ; Broken River (L) ; Cape Farewell.

Closely allied to *P. sulcata* (Etheridge), from Maryborough, Queensland.

4. *P. worthingtoni*, *sp. nov.* Oblong, height less than half the length ; inequilateral, with many concentric deeply sulcated plications ; umbones pointed ; anterior end short, rounded, its dorsal margin convex ; posterior end produced, rather acute, its dorsal margin rather concave. Height, ·8 ; length, 1·8 ; thickness, ·5.

Localities.—Lake Wakatipu ; Broken River (L).

Distinguished from the last by its greater length and more numerous plications.

SAXICAVA.

5. *S. arctica*, *Linnaeus*; *Cat. Marine Moll.*, p. 60.
Localities.—Wanganui (U); Awamoa.

FAMILY—CORBULIDÆ.

CORBULA.

6. *C. zealandica*, *Quoy*; *Cat. Marine Moll.*, p. 61.
Localities.—Chatham Islands.

7. *C. macilenta*, *sp. nov.* Oblong, compressed, thin; anterior end rounded, posterior produced, keeled, rather hollowed above, and sharply truncated; strongly concentrically but rather irregularly striated. Height, .3; length, .5; thickness, .2.
Localities.—Wanganui (U); Shakespeare Cliff.

8. *C. dubia*, *sp. nov.* Ovato-trigonal, sub-equilateral, gibbous; rounded in front and rather flattened behind; distantly concentrically striated. Height, .8; length 1.

Localities.—Motanau (L); New River, Grey District; Awamoa; Awatere; Mount Cookson.

FAMILY—ANATINIDÆ.

NEÆRA.

9. *N. kirki*, *sp. nov.* Sub-orbicular, inflated, smooth; anterior dorsal margin straight, running out into a long narrow beak. Height, .4; length, .6.

Localities.—Whangape Lake, Waikato.

MYODORA.

10. *M. striata*, *Quoy*; *Cat. Marine Moll.*, p. 62.
Localities.—Wanganui (U).

FAMILY—MACTRIDÆ.

MACTRA.

11. *M. discors*, *Gray*; *Cat. Marine Moll.*, p. 63.
Localities.—Wanganui (U); Paparoa, Wanganui River; Cape Kidnappers.

12. *M. æquilatera*, *Reeve*; *Cat. Marine Moll.*, p. 63.
Localities.—Wanganui (U).

13. *M. inflata*, *sp. nov.* Oval, anterior side shorter, rounded, its dorsal margin rather concave; posterior side rounded, its dorsal margin convex; umbones rather inflated, incurved; smooth or lightly concentrically striated. Height, 2.3; length, 3.

Localities.—Waipara Gorge; Awatere; Motanau (L).

14. *M. attenuata*, *sp. nov.* Oblong, attenuated in front, front dorsal margin slightly concave; umbones incurved; concentrically

striated; cardinal teeth small, the anterior lateral tooth of the left valve transversely striated on the outside. Height, 2·2; length, 3·7(?).

Localities.—Broken River (L).

15. *M. rudis*, *sp. nov.* Sub-orbicular, thin, compressed and rather sinuated, rudely concentrically striated; anterior side rather shorter, its dorsal margin straight; posterior dorsal line arched; anterior lateral tooth of the left valve high; pallial sinus deep, rather descending, rounded at the apex; lower margin irregular in outline. Height, 2·5; length, 2·5.

Localities.—Wanganui (v); alluvium at the mouth of River Thames; Opotiki, on a raised beach; Cape Kidnappers; Motanau (v).

16. *M. elegans*, *sp. nov.*; *M. triangulare*, *Hector, Cat. Col. Mus.*, not of Lamarck nor *H. triangula, Brocchi*. Ovato-triangular, small, rather thin, rounded in front, produced and carinated behind, anterior and posterior dorsal margins slightly arched; cartilage plate small; pallial sinus rounded; concentrically striated, umbones smooth. Height, ·6; length, ·75.

Localities.—Wanganui (v).

THRACIA.

17. *T. granulosa*, *sp. nov.* Elongate-oval, sub-equilateral, rounded at both ends, rather thin; pallial sinus shallow, rounded; concentrically striated, and covered with minute granules, irregularly arranged. Height, 1·1; length, 1·75.

Localities.—Wanganui (v).

MULINIA.

18. *M. notata*, *Hutton, Cat. Marine Moll.*, p. 64.

Localities.—Wanganui (v); Motanau (v).

FAMILY—LUTRARIINÆ.

LUTRARIA.

19. *L. solida*, *sp. nov.*; *Hector, Cat. Col. Mus.*, 1870, p. 179. Elongate-oval, height more than half the length, thick, rounded at both ends, posterior dorsal margin straight; ventral margin convex; irregularly concentrically grooved; cartilage pit broad, shallow. Height, 2·5; length, 4·5.

Localities.—Lower Gorge of the Waipara.

20. *L. sulcata*, *sp. nov.* Elongate-oval, height less than half the length, posterior dorsal margin straight; ventral margin slightly convex; distantly sub-concentrically grooved, the grooves shallower and further apart towards the posterior end. Height, ·9; length, 2·6.

Localities.—Motanau (L); Awatere.

ZENATIA.

21. *Z. acinaces*, *Quoy; Cat. Marine Moll.*, p. 64.

Localities.—Wanganui (v); Shakespeare Cliff; Awamoā.

DARINA.

22. **D. pusilla**, *Hutton, Cat. Marine Moll., p. 64.*
Localities.—Wanganui (v); Patea.

FAMILY—TELLINIDÆ.

PSAMMOBIA.

23. **P. stangeri**, *Gray; Cat. Marine Moll., p. 65.*
Localities.—Wanganui (v); Motanau (L); Awamoa.
24. **P. lineolata**, *Gray; Cat. Marine Moll., p. 66.*
Localities.—Wanganui (v); Motanau (L); Patea.

HIATULA.

25. **H. nitida**, *Gray; Cat. Marine Moll., p. 66.*
Localities.—Awatere.

TELLINA.

26. **T. albinella**, *Lamarck; Cat. Marine Moll., p. 66.*
Localities.—Wanganui (v); Awamoa; Awatere(?); Tokomairiro(?).
27. **T. deltoidalis**, *Lamarck; Cat. Marine Moll., p. 67.*
Localities.—Wanganui (v).
28. **T. lintea**, *Hutton, Cat. Marine Moll., p. 67.*
Localities.—Wanganui (v).

MESODESMA.

29. **M. chemnitzii**, *Deshayes; Cat. Marine Moll., p. 68.*
Localities.—Wanganui (v).
30. **M. cuneata**, *Lamarck; Cat. Marine Moll., p. 68.*
Localities.—Motanau (v); Wanganui (v).
31. **M. grandis**, *sp. nov.* Oval, inequilateral; anterior end shorter, sub-angled; posterior end broad, rounded, its dorsal margin slightly convex; marked with concentric lines of growth. Height, 3·4; length, 6.
Localities.—East Coast, Wellington.

FAMILY—VENERIDÆ.

VENUS.

32. **V. zealandica**, *Gray; Cat. Marine Moll., p. 69.*
Localities.—Wanganui (v); Shakespeare Cliff; Teawaite; Motanau (L); Awatere; Kanieri; Manawatu Gorge.
33. **V. oblonga**, *Gray; Cat. Marine Moll., p. 69.*
Localities.—Awatere.

CHIONE.

34. *C. vellicata*, *sp. nov.* Ovate, rounded at both ends, posterior dorsal margin slightly arched; anterior dorsal margin concave; distantly, generally irregularly, concentrically ribbed and finely radiately striated; lunule lanceolate, impressed, radiately striated and slightly margined. Height, 1.25; length, 1.4.

Localities.—Awamoa; Castle Point; Awatere; Mount Caverhill; Lyndon; Mount Cookson; Motanau (L); Waikari; White Cliffs, Taranaki; Chatham Islands; Pomahaka, Otago; Kaiwara Stream, Hurunui.

35. *C. accuminata*, *sp. nov.* Ovate, rounded in front, attenuated and slightly truncated behind, posterior dorsal margin nearly straight, anterior dorsal margin concave; finely and closely concentrically striated, lunule cordate, impressed under the umbone, slightly margined. Height, .75; length, .93.

Localities.—Pomahaka, Otago.

36. *C. stuchburyi*, *Gray; Cat. Marine Moll., p. 70.*

Localities.—Wanganui (v); Cape Kidnappers; Hautapu Falls; Hampden; Waitotara; Parakino; Paparoa(?).

37. *C. mesodesma*, *Quoy; Cat. Marine Moll., p. 70.*

Localities.—Wanganui (v); Shakespeare Cliff; Patea; Hautapu Falls(?).

38. *C. gibbosa*, *Hutton, Cat. Marine Moll., p. 71.*

Localities.—Wanganui (v).

39. *C. assimilis*, *sp. nov.* Ovate, posterior end slightly tapering, its dorsal margin arched; anterior end rounded, its dorsal margin concave; concentrically striated, the striae higher and broader at the anterior end. Height, .9; length, 1.2.

Localities.—Shakespeare Cliff.

40. *C. yatei*, *Gray; Cat. Marine Moll., p. 69.*

Localities.—Wanganui (v).

CYTHEREA.

41. *C. enysi*, *sp. nov.* Large, solid, orbicular-trigonal; posterior end truncated, its dorsal margin slightly arched; anterior end rounded, its dorsal margin concave; irregularly concentrically striated; umbones smooth, inflated; margin smooth. Height, 4.2; length, 4.5.

Localities.—Lower Waipara Gorge; Broken River (v).

CALLISTA.

42. *C. disrupta*, *Deshayes; Cat. Marine Moll., p. 71.*

Localities.—Wanganui (v); Hampden.

43. *C. elegans*, *sp. nov.* Oblong, rather compressed; anterior end short, rounded; posterior end broad, rounded, its dorsal margin arched; with distant concentric narrow ribs, crossed by fine radiating

striæ near the umbo; lunule broadly lanceolate, with longitudinal imbricating laminae. Height, .9; length, 1.2; thickness, .55.

Localities.—Kaniéri.

DOSINIA.

44. **D. subrosea**, *Gray; Cat. Marine Moll., p. 72.*

Localities.—Wanganui (v); Shakespeare Cliff; Awatere; Motanau (L); Awamoa; Waitotara; Patea; Lower Waipara Gorge; Kawau; Castle Point; Broken River (v); Cape Rodney.

45. **D. magna**, *sp. nov.* Sub-orbicular, rather higher than long, with irregular concentric ridges, but getting smooth towards the umbos, which are rather inflated; lunule cordate, deeply impressed, longitudinally striated; ligament plate very broad; anterior tooth of left valve, under the lunule, large, bifid. Height, 3.4; length, 3.15.

Localities.—Broken River (v).

46. **D. grayi**, *Zittel, Voy. Novara, Palæ., p. 45.* Orbicular, solid, swollen, with distant thin concentric laminae, rather more elevated on the sides; umbones swollen, incurved, acute; anterior side arched, posterior rounded; lunule large oblongo-cordiform, somewhat impressed, striated, margined; pallial sinus triangular, ascending, the angle acute, pointing above the anterior adductor impression. Height, 1.4; length, 1.4; breadth, .9.

Localities.—Wanganui (v); Shakespeare Cliff; Awatere (Hochstetter); Motanau (L); Lower Waipara Gorge; Paparoa.

CYCLINA.

47. **C. kroyeri**, *Philippi; Cat. Marine Moll., p. 72.*

Localities.—Shakespeare Cliff.

48. **C. dispar**, *sp. nov.* Sub-orbicular, rather compressed, concentrically striated, the striæ nearer and smaller towards the posterior end, umbones small; lunule large, lanceolate, not impressed nor margined. Height, .75; length, .8.

Localities.—Hautapu Falls, Upper Rangitikei.

TAPES.

49. **T. intermedia**, *Quoy; Cat. Marine Moll., p. 72.*

Localities.—Wanganui (v); Motanau (L); Awatere; Awamoa.

50. **T. curta**, *sp. nov.* Ovato-trigonal, rounded in front, and slightly attenuated behind; posterior dorsal margin slightly arched, anterior concave; lunule elongato-lanceolate, somewhat impressed, not margined; umbones bent forward; shell with stray concentric striæ, which are much farther apart at the posterior end; central cardinal tooth of the left valve deeply bifid, that of the right valve slightly so. Height, 2.5; length, 3; thickness, 1.6.

Localities.—Broken River (v).

FAMILY—CARDIIDÆ.

CARDIUM.

51. **C. striatum**, Sowerby; *Cat. Marine Moll.*, p. 73.

Localities.—Wanganui (v); Shakespeare Cliff; Chatham Islands; White Cliffs, Taranaki; Motanau (L)?

52. **C. spatiosum**, *sp. nov.* Large, sub-trigonal, flattened behind; posterior end sub-angled; anterior rounded; with about thirty-eight radiating rounded ribs, which are ornamented with strong recurved scales at the anterior and marginal portion of the median areas; and crossed near the margin with concentric, undulating, recurved, imbricating laminae, which get scaly at the posterior end; umbones inflated, sub-spiral, curved to the front; lunule cordate, longitudinally striated; anterior lateral tooth of right valve short, high, and pointed; posterior longer, but not so high; the two anterior cardinal teeth in the right valve moderate, the posterior small, both directed backwards; ligament plate, short, thick, strong; margin with short deep grooves on the inside. Height, 4; length, 4·5.

Localities.—Waitotara; Broken River (v); Cape Rodney; East Coast, Wellington.

53. **C. greyi**, *sp. nov.* Sub-orbicular, ventricose, with numerous rounded radiating ribs, of equal breadth to the grooves; ribs on the posterior end much larger. Height, 2·25; length, 2·45.

Localities.—Kawau.

54. **C. patulum**, *sp. nov.* Large, sub-orbicular, with numerous flat radiating ribs, the interspaces being very narrow on the anterior and median areas, but as broad as the ribs on the posterior end. Median and anterior areas with broad concentric grooves, which gradually become obsolete towards the umbo; margin crenated. Height, 3·4; length, 3·4.

Localities.—The Deans, Waipara; Broken River (L)?

PROTOCARDIUM.

Posterior slope radiately striated; remainder of the shell concentrically furrowed.

55. **P. serum**, *sp. nov.* Ovato-trigonal, higher than long, sub-equilateral; umbones rather inflated; posterior end with fine, but strongly marked, radiating striæ; anterior and median areas with concentric shallow grooves; margin finely crenated; cardinal tooth of right valve large, curved upwards, anterior lateral tooth of both valves high, triangular. Height, 2·7; length, 2·4.

Localities.—Broken River (L).

VENERICARDIA.

56. **V. australis**, Quoy; *Cat. Marine Moll.*, p. 74.

Localities.—Wanganui (v); Shakespeare Cliff; Castle Point; Chatham Islands; Mount Caverhill.

57. **V. intermedia**, *sp. nov.* Oval, very inequilateral; posterior end truncated, with about twenty-two equal ribs, which are nodular on the upper half and transversely striated towards the margin, lunule very small, cordate. Height, 1.45; length, 1.7.

Localities.—Motanau (L); Hurunui Mound; Lower Gorge of the Waipara; Weka Pass (M).

Var. B.—Ovato-trigonal, rounded at both ends; with about twenty-two smooth low ribs. Height, 1.05; length, 1.05.

Localities.—Awamoa.

Perhaps only a variety of *V. australis*.

FAMILY—LUCINIDÆ.

LUCINA.

58. **L. divaricata**, *Lamarck; Cat. Marine Moll., p. 74.*

Localities.—Wanganui (U); Awamoa.

MYSIA.

59. **M. zealandica**, *Gray; Cat. Marine Moll., p. 75.*

Localities.—Wanganui (U); Shakespeare Cliff; Puketapu; Awamoa.

FAMILY—CRASSATELLIDÆ.

CRASSATELLA.

Hinge with two diverging cardinal teeth, and generally one lateral tooth in each valve.

60. **C. ampla**, *Zittel, Voy. Novara, Palæ., p. 46.* Trigonal, convex, sub-equilateral, thick, irregularly concentrically striated; anterior end broad and obtuse, posterior slightly attenuated; hinge very broad and thick, cardinal tooth of the right valve attenuated, and bifid at the base; cartilage pit large and deep; left valve with two teeth. Height, 3.2; length, 3.8.

Localities.—Cape Rodney (Hochstetter); Kawau; Broken River (U).

61. **C. attenuata**, *sp. nov.* Ovate; inequilateral; broad and rounded in front, produced and tapering behind; posterior dorsal margin straight; hinge moderate; irregularly concentrically striated. Height, 4.2; length, 6.

Localities.—Broken River (L).

62. **C. trailli**, *sp. nov.* Ovato-trigonal, inequilateral; rounded in front; attenuated, flattened, and obliquely truncated behind; closely concentrically ribbed, the ribs passing into fine striæ on the posterior flattened portion; hinge rather small; lunule impressed lanceolate; right valve with one, and the left with two teeth. Height, 1.3; length, 1.65.

Localities.—Awamoa.

MYTILICARDIA.

63. *M. excavata*, *Deshayes*; *Cat. Marine Moll.*, p. 76.
Localities.—Shakespeare Cliff.

ASTARTE.

Hinge with two diverging cardinal teeth in one valve, and one in the other.

64. *A. australis*, *sp. nov.* Solid, inequilateral, rather produced and flattened behind, umbones triangular; distantly concentrically ribbed; lunule impressed, elongato-lanceolate; hinge very large, right valve with two cardinal teeth, the anterior large and strong, the posterior small.

Localities.—Kokohu.

FAMILY—UNIONIDÆ.

UNIO.

Shell equivalve, inequilateral; hinge with cardinal teeth, and elongated laterals; ligament external. Fresh water.

65. *U. aucklandica*, *Gray, Dieff. N.Z.*, ii., p. 257. Oblong, compressed, rounded in front and rather obliquely truncated behind; finely concentrically striated; umbones small; superior margin arched behind; inferior margin straight. Height, '9; length, 1'6.

Localities.—Coal formation, Dunstan, Otago.

As the teeth cannot be seen, the identification of this species is doubtful.

66. *U. inflata*, *sp. nov.* Oval, ventricose, rounded in front and behind; finely concentrically striated and somewhat corrugated; umbones inflated; superior and inferior margins arched. Height, 1 25; length, 2.

Localities.—Morely Creek, Southland.

FAMILY—MYTELIIDÆ.

MYTILUS.

67. *M. magellanicus*, *Lamarck*; *Cat. Marine Moll.*, p. 77.
Localities.—Motanau (U); Wanganui (U); Shakespeare Cliff.

CRENELLA.

68. *C. discors*, *Lamarck*; *Cat. Marine Moll.*, p. 78.

Localities.—Shakespeare Cliff.

69. *C. elongata*, *sp. nov.* Elongato-oblong; umbones quite anterior, rather inflated; median smooth area about one-third of the length; anterior and posterior ends finely radiately striated; anterior end rounded, not projecting as far as the umbo; posterior end compressed, truncated, its dorsal margin slightly arched. Height, '35; length, '6; thickness, '25.

Localities.—Broken River (L).

MODIOLA.

70. *M. albicosta*, *Lamarck; Cat. Marine Moll., p. 78.*

Localities.—Motanau (v); Wanganui (v); Shakespeare Cliff; Lower Gorge of the Waipara; Broken River (v); Mount Caverhill; Waikari.

71. *M., sp. ind.* Elongato-oblong, rounded in front, angled and truncated behind; with irregular concentric lines. Height, 1.1; length, 2.25.

Localities.—Lower Gorge of the Waipara. A very imperfect specimen.

LITHODOMUS.

72. *L. striatus, sp. nov.* Elongato-oblong, umbones anterior, inflated in front and compressed behind, posterior end very finely radiately striated. Height, .8; length, 2.6.

Localities.—Shakespeare Cliff.

FAMILY—AVICULIDÆ.

PERNA.

Compressed, sub-quadrate; cartilage pits numerous, elongated, close set.

73. *P., sp. ind.*

Localities.—Castle Point. Fragment of a hinge of a large species; hinge 1.2 in breadth.

PINNA.

74. *P. lata, sp. nov.* Broadly triangular, with concentric striæ; anterior end rather excavated. Height, 8; length, 7.25; angle of apex, 60°.

Localities.—Cobden.

75. *P. zealandica, Gray; Cat. Marine Moll., p. 79.*

Localities.—Wanganui (v); Shakespeare Cliff; Awatere.

76. *P. plicata, sp. nov.* Large, with rather distant radiating plications, the ridges and furrows being of about equal breadth.

Localities.—Culverden(?), in blue clay. A fragment only.

77. *P. distans, sp. nov.* Large, with distant plications, the ridges being much narrower than the furrows. Height, 9; length, 4.5; angle of apex, 40°.

Localities.—Caversham.

FAMILY—TRIGONIADE.

Shell equivalve, close, trigonal, umbones directed posteriorly; ligament external; interior nacreous; hinge teeth few, diverging; pallial line simple.

TRIGONIA.

Shell equivalve, inequilateral, sub-trigonal; hinge composed of two oblong, divaricate, lamelliform teeth in the right valve, transversely

grooved on both sides, and four in the left valve grooved on one side only.

78. **T. pectinata**, *Lamarck, Anim. sans vert., l.c., vi., p. 514.*

Localities.—Hampden. Living in Australia and Tasmania.

The specimen is too imperfect to describe, but I see no reason for supposing it to be another species.

79. **T. semiundulata**, *McCoy; Jenkins, Quar. Jour. Science, ii., p. 630, pl. 8, f. 7.* Posterior side with about twelve transverse rounded ribs, which are not quite so broad as the interspaces, and smooth except near the umbo, where they are moniliform; remainder of the shell with low, slightly undulating, concentric thin ribs, crossed by radiating lines near the umbo.

Localities.—Awamoa. A fragment only.

FAMILY—ARCIDÆ.

BARBATIA.

80. **B. sinuata**, *Lamarck; Cat. Marine Moll., p. 79.*

Localities.—Wanganui (v); Shakespeare Cliff.

CUCULLÆA.

Equivalve, inequilateral, ventricose, radiately striated; hinge with the teeth dilated and bent down at the outer ends, divided into a few large longitudinal plaits; ligamental area moderate, smooth.

The New Zealand tertiary *Cucullæas* are very difficult to distinguish from one another, as their external markings are alike, and they may perhaps be all forms of one species.

81. **C. ponderosa**, *sp. nov.* Ventricose, nearly as high as long; posterior side rather flattened; umbones distant, hinge at right angles to the axis of the shell. Height, 4; length, 4·3.

Localities.—Korakonui, East Coast, Wellington; Lake Wakatipu; Awatere(?).

Var. B.—Longer. Height, 3·7; length, 4·5.

Localities.—Waikari, Canterbury; Whangarei.

82. **C. worthingtoni**, *sp. nov.* Ventricose, much larger than high; posterior side produced, rather dilated; umbones distant; hinge at right angles to the axis of the shell. Height, 2·9; length, 4.

Localities.—Waitaki; Lake Wakatipu.

83. **C. alta**, *Sowerby* (in *Darwin's Geo. Obs. on South America, p. 252*). Ventricose; nearly as high as long; posterior side rather produced and rather flattened; umbones distant; hinge sub-oblique. Height, 2·4; length, 2·8.

Localities.—Raglan; Curiosity Shop; Tokomairiro; East Coast, Wellington; Kokohu; Lake Wakatipu; Lyndon; Callighan's Creek.

Var. B.—Longer. Height, 3·4; length, 4.

Localities.—Callighan's Hill, east side.

84. **C. attenuata**, *sp. nov.* Rather ventricose, much longer than high; posterior side produced and attenuated; umbones distant; hinge sub-oblique. Height, 3; length, 4.5.

Localities.—Lake Wakatipu; Paparoa, Upper Wanganui; Caversham.

PECTUNCULUS.

85. **P. striatularis**, *Lamarck; Cat. Marine Moll., p. 80.*

Localities.—Wanganui (v).

86. **P. laticostatus**, *Quoy; Cat. Marine Moll., p. 80.*

Localities.—Wanganui (v); Shakespeare Cliff; Awatere; Motanau (L); Lower Gorge of the Waipara; Castle Point; Puketapu; Paparoa; Tainuitaipō; Cape Kidnappers; Broken River (v); Kawau; Mount Caverhill; Lyndon; Oamaru; Callighan's Creek; Cliffs at Nelson (Hochstetter); Caversham.

87. **P. globosus**, *sp. nov.* Ventricose, sub-equilateral, as high as long; posterior end rounded, rather broader than the anterior; umbones rather distant, hinge at right angles to the axis of the shell, slightly curved, teeth oblique. Height, 4; length, 4.

Localities.—Hick's Bay; Kokohu; Wairoa, Nelson; Kanieri; Motanau (L); Broken River (v); Callighan's Creek; Kawau; Oamaru.

88. **P. traversi**, *sp. nov.* Sub-orbicular, rather compressed, with about thirty-five radiating rounded ribs of equal breadth to the intervening grooves, which are also rounded; both crossed with concentric striæ. Height, 2.65; length, 2.65.

Localities.—Chatham Islands; Weka Pass (M).

89. **P. (?) cordatus**, *sp. nov.* Ovato-cordiform, ventricose, umbones rather distant, inequilateral; anterior end short, rounded; posterior end produced and obliquely truncated; shell with broad smooth flat radiating ribs, interspaces narrow; hinge slightly curved with a row of from fourteen to eighteen transverse teeth, ligament external; variable in shape. Height, 1.3; length, 1.25; thickness, 1.1.

Localities.—Wairoa River, Nelson.

LIMOPSIS.

Orbicular, convex, slightly oblique; hinge with the teeth divided into two equal, curved series of transverse plates.

90. **L. insolita**, *Sowerby; Trigonocelia insolita, Sowerby (in Darwin's Geo. Obs. on South America, p. 252); Limopsis insolita, Zittel, Voy. Novara, Palæ., p. 48.* Elongato-ovate, thick, convex, sub-smooth, very finely concentrically striated; umbones small; ligamental area triangular, high, smooth; ligament pit broad, rather deep; cardinal teeth semi-lunar, oblique, the median ones smaller. Height, 1.2; length, 1.2.

Localities.—Cliffs at Nelson (Hochstetter); Kanieri; Waikari.

91. **L. zealandica**, *sp. nov.* Ovato-orbicular, obliquely truncated behind, thick, convex, concentrically irregularly ribbed, and finely radiately striated; umbones prominent; hinge curved, the teeth

in the middle smaller; area triangular, transversely striated; margin flattened, entire; an elevated ridge from the interior of the umbo to the inside of the anterior adductor impression. Height, .8; length, .85.

Localities.—Awamoa.

FAMILY—NUCULIDÆ.

SOLENELLA.

92. *S. cumingi*, Adams; *Cat. Marine Moll.*, p. 81.

Localities.—Cape Kidnappers; Conway River.

93. *S. australis*, Zittel, *Voy. Novara, Palæ.*, p. 47., pl. xiv., f. 2; not *Leda australis*, Quoy. Transversely oblong, rounded in front; produced and waved behind; posterior dorsal margin straight; posterior end truncated, slightly emarginate; ventral margin convex; valves with close rounded concentric striæ. Height, .8; length, 1.4.

Localities.—Conway River; Hampden; White Cliffs, Taranaki; Cliffs at Nelson (Hochstetter).

FAMILY—PECTENIDÆ.

PECTEN.

94. *P. zealandiæ*, Gray; *Cat. Marine Moll.*, p. 81.

Localities.—Motanau (U); Wanganui (U); Shakespeare Cliff; Kaipara.

95. *P. radiatus*, Hutton, *Cat. Marine Moll.*, p. 82.

Localities.—Wanganui (U); Shakespeare Cliff; Napier.

96. *P. gemmulatus*, Reeve; *Cat. Marine Moll.*, p. 81.

Localities.—Shakespeare Cliff.

97. *P. williamsoni*, Zittel, *Voy. Novara, Palæ.*, p. 50, pl. ix., f. 11. Ovate, higher than long, equivalve, slightly convex, regularly radiately ribbed; ribs twenty-five to thirty, slightly scaly, the median ones often smooth; ears unequal, with scaly ribs. Height, 1.6; length, 1.4.

Localities.—Aotea, Auckland (Hochstetter); Raglan; Kaipuki Cliffs; Tata Island; Black-birch Creek; coast between Raglan and Port Waikato.

98. *P. chathamensis*, *sp. nov.* Ovato-trigonal, higher than long, equivalve, somewhat convex, regularly radiately ribbed; ribs about twenty, scaly, rounded, of equal breadth with the grooves, which are smooth; ears large, unequal, ribbed. Height, 1.3; length, 1.1.

Localities.—Chatham Islands; Castle Point, East Coast, Wellington; Broken River (L).

99. *P. scandula*, *sp. nov.* Ovate, higher than long, compressed; with about thirty fine narrow radiating ribs; interspaces much broader, concentrically striated; ears very unequal, with scaly striæ. Height, .85; length, .75.

Localities.—Kanieri.

100. **P. fischeri**, Zittel, *Voy. Novara, Palæ.*, p. 53, pl. ix., f. 1, 2. Small, sub-orbicular, equivalve, radiately ribbed; ribs numerous, keeled, smooth, sub-equal; interstices smooth; ears unequal, striated. Height, .53; length, .53.

Localities.—Papakura; Port Waikato; Oamaru.

101. **P. delicatula**, *sp. nov.* Sub-orbicular, rather compressed; with about twenty-seven narrow distant smooth rays, the interstices with three to five thin raised scaly lines; ears unequal, with radiating scaly ribs. Height, 2; length, 2.

Localities.—Castle Point, Wellington; Chatham Islands.

102. **P. semiplicata**, *sp. nov.* Sub-orbicular, compressed, with five or six plications near the umbo, which disappear before reaching the margin, and numerous radiating ribs, the whole finely, but rather strongly, concentrically striated. Height, 2.5(?). Fragments only.

Localities.—Napier; Castle Point, Wellington.

103. **P. secta**, *sp. nov.* Sub-orbicular, longer than high; equivalve; left valve with seven to ten sharp flat plications, which are simple at the umbo but each divided into four or five ribs towards the margin; depressions between the plicæ with a single raised rib; interstices finely concentrically striated; right valve with eight plicæ, narrower than on the other valve, and splitting into two or four ribs; interstices with two raised ribs, finely concentrically striated; ears sub-equal, radiately ribbed, and transversely striated; a deep sulcus divides them from the shell. Height, 4.1; length, 4.5; thickness, 1.4.

Localities.—Callighan's Creek, Stafford Town; Napier; Motanau (L); Hatter's Creek, Kanieri.

104. **P. venosum**, *sp. nov.*; *Hector, Cat. Col. Mus.*, 1870, p. 189. Sub-orbicular, inequivalve; right valve with eleven broad rounded scaly ribs, with about two scaly lines in the depressions; left valve with nine narrow scaly ribs, with from four to six scaly lines between them; ears sub-equal, with radiating scaly ribs. Height, 1.5; length, 1.5.

Localities.—Oamaru.

105. **P. hochstetteri**, Zittel, *Voy. Novara, Palæ.*, p. 50, pl. xi., f. 5a, not 5b. Sub-orbicular, rather longer than high, equivalve, equilateral, thin, compressed; both valves smooth; ears sub-equal, obtuse, smooth. Height, 2; length, 2.1.

Localities.—Winton; Caversham; Oamaru; Weka Pass; Curiosity Shop; Mount Cookson; Black-birch Creek; Point Elizabeth; Kaipuki; Cape Farewell; Raglan; Aotea (Hochstetter); Wangarei; Broken River (L).

106. **P. hectori**, *sp. nov.* Sub-orbicular, thin, inequivalve, both valves finely radiately striated; the margin with rather broader ribs on the inside; ears sub-equal, finely transversely striated. Height, 4.1; length, 4.6.

Localities.—Chatham Islands; Brighton; Broken River (L).

107. **P. laticostatus**, Gray; *Cat. Marine Moll.*, p. 82.

Localities.—Wanganui (V); Shakespeare Cliff.

108. *P. triphooki*, Zittel, *Voy. Novara, Palæ.*, p. 52, pl. xi., f. 4. Sub-orbicular, sub-equivalve, radiately ribbed; right valve with twenty to twenty-two rounded elevated ribs, of about equal width to the intermediate grooves; the ribs simple near the umbo, but slightly grooved towards the margin; grooves with a central raised line, which gets obsolete towards the umbo, the whole crossed with concentric striæ; left valve flatter, with twenty-three to twenty-five rounded ribs not so elevated as on the right valve, broader than the intermediate grooves; ribs simple near the umbo but grooved towards the margin; grooves generally with a central raised line near the margin; ears sub-equal, radiately ribbed and transversely striated. Height, 4·8; length, 4·8. Young shells have no rib in the grooves.

Localities.—Napier; Maunga-pakeha Taipo, East Coast, Wellington; Waitotara; Castle Point, East Coast, Wellington; Lyndon.

109. *P. accrementa*, *sp. nov.* Sub-orbicular; inequivalve; with from thirty to thirty-three radiating ribs; ribs rounded, and on the right valve elevated; simple close to the umbo, but soon dividing into several smaller ones; interstices with a small central rib extending nearly to the umbo; the whole finely concentrically striated; ears(?). Height, 3·8; length, 3·8.

Localities.—Napier; Awatere; Motanau (L); Mount Caverhill.

110. *P. diffluxa*, *sp. nov.* Sub-orbicular; with twenty-five radiating ribs; ribs broad, flat, simple near the umbo, but grooved near the margin, and occasionally divided into two; covered with sharp scales; grooves round, narrower than the ribs, finely transversely striated, without any central raised line; ears sub-equal, radiately ribbed and transversely striated. Height, 3; length, 3.

Localities.—Weka Pass (M).

111. *P. hutchinsoni*, *sp. nov.*; *Hector, Cat. Col. Mus.*, p. 183, &c. Sub-orbicular, inequivalve; right valve convex, with from thirty-five to forty radiating ribs ornamented with pointed scales, about equal to the interstices; interstices with an elevated scaly line down the centre; left valve flattened near the umbo, with from seventy to eighty fine scaly radiating lines; ears sub-equal, large, radiately ribbed, those of the left valve and the inner upper margin of the right anterior ear transversely striated. Height, 4·5; length, 4·5.

Localities.—Kaipuki; Oamaru; Weka Pass (M); Tata Island; Takaka.

112. *P. beethami*, *sp. nov.* Sub-orbicular; sub-equivalve; longer than high; right valve convex, with about fifty low radiating ribs, which in the middle are small and much narrower than the grooves, but get broader towards each end, and have a steep slope on the outer side, but on the inner gradually sloping; towards the margin they are crossed by undulating, imbricating, concentric striæ; left valve flatter, with numerous small radiating striæ, crossed by concentric, imbricating, scaly laminæ; ears sub-equal. Height, 4·6; length, 5·5.

Localities.—Upoko Ngaruru, East Coast, Wellington.

Var. B.—The imbricating striæ taking the form of pointed scales on the ribs only; middle ribs larger.

Localities.—Oamaru; Caversham.

113. **P. crawfordi**, *sp. nov.* Sub-orbicular, inequivalve, longer than high; right valve convex, with five or six broad plications, the central ones deep near the umbo, but all getting shallow towards the margin, with numerous radiating sub-scaly ribs, crossed by fine concentric striæ; left valve compressed, flattened at the umbo, with four plications; exterior markings like the right valve; ears sub-equal, with radiating rugose ribs. Height, 2; length, 2·35.

Localities.—Maunga-pakeha Taipo, East Coast, Wellington.

114. **P. athleta**, *Zittel, Voy. Novara, Palæ., p. 49, pl. x., f. 1.* Sub-orbicular; sub-equivalve, both valves with ten principal and other intermediate ribs; ears large, equal. Height, 7; length, 7·4.

Localities.—Motupipi (Hochstetter); Tata Island; Wangape Lake, Lower Waikato; Broken River (L).

115. **P. burnetti**, *Zittel, Voy. Novara, Palæ., p. 51, pl. x., f. 2.* Sub-orbicular, equilateral, convex, with from four to seven plicæ, and numerous radiating ribs; ribs unequal, rounded; interstices sub-equal; the whole with fine concentric striæ. Height, 1·2; length, 1·2.

Localities.—Motupipi (Hochstetter); Oamaru; Tata Island; Takaka; Kawau; Winton; Raglan; Castle Point, East Coast, Wellington.

116. **P. polymorphoides**, *Zittel, Voy. Novara, Palæ., p. 51, pl. xi., f. 3.* Ovate, equilateral, compressed, margin inflexed, quadriplicate; plicæ obsoletely striated or sub-smooth; inflexed margin striated; ears small, sub-equal. Height, '65; length, '6.

Localities.—Waikato, South Head; Weka Pass; Cape Rodney; Winton.

117. **P. (Dentipecten) vellicatus**, *Hutton, Cat. Marine Moll., p. 82.*

Localities.—Wanganui (v); Shakespeare Cliff; Castle Point.

118. **P. zittelli**, *Pecten (belonging to the group P. pleuronectes), Zittel, Voy. Novara, Palæ., p. 53.* Sub-orbicular, compressed, smooth, with eleven internal ribs, which do not reach to the margin of the valves, the two upper ones very short; ears equal, obtuse, smooth. Height, '85; length, '8.

Localities.—Poverty Bay (L); Whangape Lake, Waikato; coast between Raglan and Port Waikato; Papakura (Hochstetter); Cape Kidnappers; Cobden.

HINNITES.

Irregular, adherent by right valve; ears unequal, hinge margin straight.

119. **H. trailli**, *sp. nov.* Solid; irregularly ovate (sub-orbicular when young); obscurely radiately ribbed, and irregularly concentrically folded and striated; hinge straight, edentulous; cartilage pit deep, elongated, curving backwards; ears sub-equal, transversely stri-

ated; adductor impression large, orbicular, strongly marked. Height, 3·4; length, 3·1.

Localities.—Awamoa:

LIMA.

120. **L. lævigata**, *sp. nov.* Large, broadly ovate, rather compressed, thin, equivalve, close; smooth; anterior dorsal margin straight; anterior ears very short. Height, 6·8; length, 6·5; thickness, 2·25.

Localities.—Waiholo Gorge, Otago; Cobden.

121. **L. colorata**, *sp. nov.* Ovate, with eighteen to twenty-two radiating rounded ribs, crossed by imbricating concentric striae, and occasionally a few scales at the anterior or posterior end; anterior ears none, posterior moderate; area large, deep, triangular. Yellowish brown, with concentric rosy-brown markings; interior white. Height, 2·7; length, 2·7.

Localities.—Awamoa.

122. **L. paucisulcata**, *sp. nov.* Ovate, with eighteen radiating rounded ribs, which are smooth but crossed at distant intervals by scaly concentric lines; anterior and posterior ears small. Height, 2·2; length, 1·85.

Localities.—Kaipuki Cliffs; Cape Farewell; Caversham (?).

123. **L. paleata**, *sp. nov.* Ovate, with about twenty-five radiating rounded ribs, crossed by rather distant scaly concentric lines. Height, 2·1; length, 1·9.

Localities.—Curiosity Shop; Culverden; Oamaru; Cave Creek, Mount Somers.

124. **L. multiradiata**, *sp. nov.* Ovate, with about thirty radiating rounded ribs, crossed by rather distant scaly concentric lines. Height, 1·7; length, 1·6.

Localities.—Curiosity Shop.

125. **L. crassa**, *sp. nov.* Solid, broadly ovate, with eighteen radiating rounded ribs, crossed by rather distant scaly concentric lines; area very broad, triangular, transversely striated. Height, 2·3; length, 2·2.

Localities.—Lower Gorge of the Waipara.

126. **L. linguatula**, *Var. B.*, *Lamarck, l.c. vii., p. 118.* Ovate, thin, oblique; finely concentrically striated, and with numerous thin radiating slightly undulated ribs, which become obsolete towards the umbo; ears small, sub-equal. Height, 1; length, ·7.

Localities.—Wanganui (v); Shakespeare Cliff.

Found living in Tasmania.

127. **L. bullata**, *Born; Cat. Marine Moll., p. 83.*

Localities.—Waitotara; Broken River (L); Poverty Bay (L).

FAMILY—ANOMIIDÆ.

PLACUNANOMIA.

128. *P.*, *sp. ind.* Oval, transverse; upper valve thin, inflated, waved, smooth, and concentrically striated muscular impressions(?).

Localities.—Napier; Hurunui Mound; Broken River (v); Cave Creek, Mount Somers.

129. *P. incisura*, *sp. nov.* Sub-orbicular, compressed, waved, with concentric imbricating scaly laminae; byssal notch very small, anterior; muscular impressions(?).

Localities.—Pareora Beds, Rangitata.

FAMILY—OSTREIDÆ.

OSTREA.

130. *O. purpurea*, *Hanley*; *Cat. Marine Moll.*, p. 84.

Localities.—Wanganui (v); Shakespeare Cliff; Manawatu Gorge, upper end.

131. *O. virginica*, *Lamarck*; *Cat. Marine Moll.*, p. 84.

Localities.—Wanganui (v); Shakespeare Cliff.

132. *O. lutaria*, *Hutton*, *Cat. Marine Moll.*, p. 84.

Localities.—Wanganui (v).

133. *O. nelsoniana*, *Zittel*, *Voy. Novara, Palæ.*, p. 55, pl. xi., f. 7 (left valve). Shell irregular, elongato-ovate, thick, solid; valves sub-equal, the right more convex, gibbous, strongly concentrically laminated; anterior apex contorted; left valve flat, sometimes greatly thickened, concentrically rugosely foliated; umbones oblique, hinge broad; cartilage pit triangular; muscular impression large, lunate, posterior, hollowed. Height, 4.5; length, 3.0.

Localities.—Napier; Awatere; Motanau (L); Manawatu Gorge, upper end; Tata Island.

134. *O. wullerstorffii*, *Zittel*, *Voy. Novara, Palæ.*, p. 54, pl. xi., f. 6. Orbicular, flat, large, very thick; exterior rugosely plicated; plicæ distant; gibbous; area small, acute, triangular, scarcely exceeding the margin, transversely striated; ligament pit short, hollowed, equally striated; muscular impression large, impressed, placed high up. Height, 5.6; length, 5.6.

Localities.—Coast north of Raglan; Cape Rodney; Kawau; Kaipuki Cliffs; Napier; Oamaru.

135. *O. ingens*, *Zittel*, *Voy. Novara, Palæ.*, p. 54, pl. xiii., f. 3. Elongated, very large and thick, convex, beak produced; exterior gibbous, irregularly foliated; area bounded on both sides by a sulcus, transversely striated, greatly produced; pit triangular, hollowed; muscular impression large, posterior. Height, 8.8; length, 4.4.

Localities.—Waitotara; Napier; Castle Point; Parakino.

136. *O. subdentata*, *sp. nov.* Small, ovate, compressed; left valve larger and more convex, right flat; both concentrically striated;

ligamental area small but broad, transversely striated, not hollowed; on each side a row of numerous small transverse teeth like striæ; muscular impression oval, placed high up. Height, 1; length, '8.

Localities.—Broken River (L).

137. *O. incurva*, *sp. nov.* Ovate, thick, convex, beak incurved; exterior gibbous, with concentric imbricating rather distant laminæ; area bounded on each side by a shallow sulcus, transversely striated, short and broad; pit triangular, curved, hollowed; muscular impression moderate, posterior, very deeply impressed, lunate. Height, 5·5; length, 4.

Localities.—Oamaru; Brighton.

138. *O. corrugata*, *sp. nov.* Ovate, irregular, attached by the left valve; left valve convex, radiately ribbed, the ribs crossed by concentric, undulating, imbricating laminæ; right valve flat, irregular, smooth, with concentric imbricating laminar plates round the margin. Height, 3; length, 2·6.

Localities.—Shakespeare Cliff.

GRYPHÆA.

Free, inequivalve; inferior valve large, concave; beak prominent, incurved, ending in an involute spire; superior valve small, flat; hinge toothless; cardinal fossa oblong, arcuated.

139. *G. tarda*, *sp. nov.* Irregularly ovate, umbo of left valve incurved and bent slightly forwards; exterior smooth, with concentric striæ; right valve rather concave, often thickened near the margin, much smaller than the left valve; area broad, triangular, distinctly transversely striated; muscular impression sub-orbicular, rather flattened above, where it is deeply sunken, posterior, placed high up. Height, 2·4; length, 1·7.

Localities.—Chatham Islands.

Class—Brachiopoda.

FAMILY—TEREBRATULIDÆ.

WALDHEMIA.

1. *W. lenticularis*, *Deshayes*; *Cat. Marine Moll.*, p. 85.

Localities.—Wanganui (U); The Deans, Waipara; Waitotara; Napier; Parakino; Chatham Islands; Broken River (L); Kaipuki; Oamaru; Winton; Weka Pass (U); Curiosity Shop; Takaka; Tata Island; Black-birch Creek.

2. *W. concentrica*, *sp. nov.* Shell oval, concentrically striated; valves nearly equally convex; beak of ventral valve produced, slightly

curved, thick, laterally keeled, truncated by a large foramen; deltidium large and solid; loop rather short, reflexed. Length, 1.65; breadth, 1.3; height, .8.

Localities.—Chatham Islands; Broken River (L); Culverden; Pakau; Castle Point.

3. **W. triangulare**, *sp. nov.*; *Hector, Cat. Col. Mus.*, 1870, p. 189. Shell orbicular, smooth; inequivalve, ventral valve broadly keeled, with the sides flattened; beak much incurved, foramen complete, small; anterior margin with a downward sinuosity. Length, 2.1; breadth, 1.95; height, 1.4.

Localities.—Oamaru; Weka Pass (v); Castle Point; Upper Wanganui River.

4. **W.(?) sinuata**, *sp. nov.* Shell orbicular-trigonal; valves sub-equal, smooth; beak very short, deltidium hidden; ventral valve with a broad marginal sinus; dorsal valve convex; margin much sinuated. Length, 1; breadth, .8; height, .5.

Localities.—Oamaru; Curiosity Shop; Broken River (L); Lyndon.

5. **W. patagonica**, *Sowerby; Terebratula patagonica, Sowerby, in Darwin's South America, p. 252.* Shell oval, smooth; valves nearly equally convex; beak of ventral valve produced, slightly curved, thick, laterally keeled, truncated by a large foramen; deltidium large and solid; loop elongated and reflexed. Length, 1.3; breadth, 1.1; height, .75.

Localities.—Cobden; Culverden; Manawatu Gorge; Broken River (L).

6. **W. tapirina**, *sp. nov.* Shell sub-orbicular, smooth; valves nearly equally convex; beak of ventral valve produced, slightly curved, laterally keeled, foramen minute; deltidium large and solid. Length, .85; breadth, .8; height, .45.

Localities.—Cobden.

7. **W. graviora**, *Suess, Voy. Novara, Palæ., p. 56, pl. ix., f. 5.* Shell large, oval, smooth, valves nearly equally convex; beak short, thick, not keeled laterally; foramen very large; deltidium small. Length, 3.1; breadth, 2.15; height, 1.75.

Localities.—Culverden; Broken River (L).

TEREBRATELLA.

8. **T. cruenta**, *Dellwyn; Cat. Marine Moll., p. 85.*

Localities.—Wanganui (v); Shakespeare Cliff.

9. **T. rubicunda**, *Solander; Cat. Marine Moll., p. 85.*

Localities.—Wanganui (v).

10. **T. dorsata**, *Gmelin.* Shell broadly ovate, somewhat trilobed, radiately ridged, the lateral ridges more oblique than the mesial; margins denticulate; dorsal valve with a broad and shallow central depression; beak short; foramen very large, incomplete; deltidia small, triangular, separate; hinge area large, rather flattened; loop

elongated, reflected, attached to a central septum. Length, 1·2; breadth, 1·2; height, ·5.

Localities.—Cape Rodney.

11. **T. gaulteri**, *Morris, Quar. Jour. Geo. Soc.*, vi., 1850, p. 329. Shell sub-trigonal, smooth, both valves nearly equal and rather depressed; lateral margins sinuous; ventral valve with an acute and slightly recurved beak, the foramen below it; the anterior margin with a broad sinus, producing a corresponding arched elevation in the smaller valve.—(*Morris*.)

Localities.—Raglan; Curiosity Shop.

12. **T. suessi**, *sp. nov.* Shell ovate, finely radiately striated; valves sub-equal; foramen large, incomplete; ventral valve with a slight but broad depression, sometimes almost obsolete. Length, ·75; breadth, ·55; height, ·4.

Localities.—Curiosity Shop; Broken River (L); Chatham Islands.

MAGAS.

13. **M. cummingii**, *Davidson; Cat. Marine Moll.*, p. 86.

Localities.—Motanau (U); Wanganui (U); Shakespeare Cliff; Parakino, Upper Wanganui.

14. **M. evansi**, *Davidson; Cat. Marine Moll.*, p. 86.

Localities.—Shakespeare Cliff.

FAMILY—RHYNCHONELLIDÆ.

RHYNCHONELLA.

15. **R. nigricans**, *Sowerby; Cat. Marine Moll.*, p. 87.

Localities.—Shakespeare Cliff; Awamoa; Waitotara; Parakino; Cape Rodney; Curiosity Shop; Culverden; Broken River (L).

16. **R. squamosa**, *sp. nov.* Shell irregular, more or less orbicular; valves unequal, the ventral flatter, and with a deep groove; dorsal valve very convex; both with fine radiating scaly striae. Length, ·7; breadth, ·75; height, ·5.

Localities.—Broken River (M).

Easily distinguished from *R. nigricans* by its more numerous striae.

ANNULOIDA.

Class—Echinodermata.

ORDER—CRINOIDEA.

Body fixed during the whole or a portion of the life of the animal by means of a jointed stalk.

FAMILY—PENTACRINIDÆ.

Chalice small, stem pentagonal, surmounted by long arms.

PENTACRINUS.

Chalice composed of two series of plates, the lower ones small, the upper large.

1. **P. stellatus**, *sp. nov.* Stem formed of pentagonal plates, the sides of which are deeply indented, leaving five acute points; from each point radiates inward a double row of transverse teeth forming a five-petaloid star, the median lines from the centre to the points being smooth. Diameter, 4.

Localities.—Curiosity Shop; Chatham Islands.

2. **P. rotatus**, *sp. nov.* Stem sub-pentagonal, or nearly cylindrical; joints with a five-rayed raised star, and a raised ring round the margin, the rays of the star radiating to the sides of the pentagon, making the interspaces sub-quadrated; middle of each ray grooved, centre depressed; a series of teeth round the inner side of the raised margin. Diameter, 3.

Localities.—Pakau.

ASTROPECTEN.

3. **A. sandersoni**, *sp. nov.* Rays not much longer than the diameter of the disc, tapering rapidly with straight sides, and bordered with tubercles; lower surface with thick transverse plates, which are shorter than in *A. armatus*. Diameter, $2\frac{1}{2}$ inches.

Localities.—Waikari River. Presented by W. Sanderson, Esq.

CIDARIS.

4. **C. striata**, *sp. nov.* Tubercles large, perforated, about five or six in a row; one tubercle on each interambulacral plate, none on the ambulacral; depressions surrounded by small tubercles, and separated

from one another by transversely striated spaces; interambulacral spaces very narrow, with four rows of minute tubercles.

Localities.—Brighton.

ECHINUS.

5. **E. chloroticus**, *Agassiz*; *Cat. N.Z. Echinodermata*, p. 11.
Localities.—Shakespeare Cliff.

6. **E. albocinctus**, *Hutton*, *Cat. N.Z. Echinodermata*, p. 12.
Localities.—Shakespeare Cliff.

7. **E. enysi**, *sp. nov.* Height about three-fourths of diameter; rows of pores obliquely parallel, three pairs in a row, ambulacral plate with one primary tubercle; interambulacral with four, of which the third from the ambulacra is considerably larger. Diameter, 1.

Localities.—Broken River (L).

ARACHNOIDES.

8. **A. zealandiæ**, *Gray*; *Cat. N.Z. Echinodermata*, p. 12.
Localities.—Wanganui (v); Castle Point; Awamoā.

9. **A. conica**, *sp. nov.* Obtusely conical above; margin sinuated; ambulacra nearly straight, with about fifty pairs of pores; interambulacral spaces hollowed, irregularly distantly granulated; ambulacral spaces raised on the edges, but depressed towards the middle, down which runs a smooth groove; granules arranged in curved oblique lines sloping outwards and towards the groove; below the same, but the granules are larger, and the interambulacral spaces broader. Diameter, 2·8.

Localities.—Awamoā.

FAMILY—GALERITIDÆ.

Elongated or sub-circular, covered with small tubercles; anus posterior or inferior; ambulacra simple.

CARATOMUS.

Mouth angular, oblique; anus infra-marginal.

10. **C. nuperus**, *sp. nov.* Ovate, inflated, papillose, apex central; mouth sub-central, oval, oblique, situated in a deep depression; vent infra-marginal, moderate, oblique; ambulacra stellate, the anterior pair petaloid, acutely pointed; posterior pair with parallel sides and truncated at the end; odd anterior ambulacrum shorter, truncated, pores distinct. Length, 1·6; breadth, 1·35; height, ·85.

Localities.—The Deans, Waipara.

FAMILY—NUCLEOLITIDÆ.

Like *Galeritidæ*, but the ambulacra petaloid.

NUCLEOLITES.

Sub-carinated; anus superior; mouth pentagonal, not margined.

11. **N. papillosus**, *Zittel, Voy. Novara, Palæ., p. 62, pl. ix., f. 2.* Body sub-quadrangular, oblong, depressed, papillose; apex eccentric; genital pores four; ambulacra petaloid, unequal, pores not joined; anus placed in a deep sulcus, margins distant; peristome pentagonal, sub-central. Length, '95; breadth, '7; height, '3.

Localities.—West Coast south of Port Waikato (Hochstetter).

This species is not represented in the Colonial Museum.

FAMILY—SPATANGIDÆ.

HEMIPATAGUS.

Ambulacra petaloid, lodged in deep grooves; no peripetalous fasciole; anus supra-marginal.

12. **H. formosus**, *Zittel, Voy. Novara, Palæ., p. 63., pl. xii., f. 2.* Body depressed, cordate, broader behind; apex sub-central; lateral ambulacra petaloid, open, pores close, each pair connected by a groove; anterior ambulacrum placed in a rather shallow groove; pores sub-obsolete; the four anterior interambulacral spaces with numerous tubercles arranged in series; posterior smooth; peristome transverse, lipped; ventral surface with numerous papillæ. Length, 2'55; breadth, 2'15.

Localities.—Cape Farewell; Black-birch Creek; Curiosity Shop; Waimea Plains, Southland.

13. **H. tuberculatus**, *Zittel, Voy. Novara, Palæ., p. 63, pl. xii., f. 1.* Body ovato-cordiform, emarginate in front, blunt behind, keeled; apex central; genital pores four; lateral ambulacra petaloid, open, pores connected by a groove, anterior ambulacrum in a deepish groove, pores sub-obsolete; the four anterior interambulacral spaces with a few large tubercles irregularly placed, posterior smooth; tubercles circular, deeply margined; margins of peristome approximating in front, lipped, transverse. Length, 2'55; breadth, 2'15.

Localities.—Cape Farewell.

MACROPNEUSTES.

Ambulacral petals elongated, open; a lateral fasciole passing above the anus.

14. **M. spatangiformis**, *sp. nov.; Echinobrissus spatangiformis, Hector, Cat. Col. Mus., p. 192.* Ovato-cordiform; vertex rather anterior; surface minutely granular, and with larger scattered papillæ; ambulacra long, open at the end; mouth eccentric; vent posterior; peripetalous fasciole none(?). Length, 3'5; breadth, 3'2; height, 1'75.

Localities.—Cobden.

15. **M. cordatus**, *sp. nov.; Echinobrissus cordatus, Hector, Cat. Col. Mus., p. 192.* Orbicular, cordiform, elevated; vertex rather anterior; ambulacra long, open; mouth eccentric; vent posterior. Length, 2'7; breadth, 2'8; height, 2.

Localities.—Cobden.

16. **M. australis**, *sp. nov.* Oval, elevated, vertex sub-anterior; surface covered with small irregularly placed tubercles, most of which are crenulated round the margin; mouth eccentric. Length, 3·5; breadth, 2·75; height, 1·75.

Localities.—Cobden.

EUPATAGUS.

Oval; ambulacra unequal; some large tubercles between the petals, limited by a peripetalous fasciole.

17. **E. greyi**, *sp. nov.* *Brissus greyi*, *Hector, Cat. Col. Mus.*, 1870. Shell thin, oval; vertex posterior; interambulacral areas with many tubercles, each situated on a crenulated base, posterior area smooth; ambulacra petaloid, in broad shallow grooves, the posterior pair shorter; pores of the anterior odd ambulacrum obliterated; anterior groove deep, not extending to the vertex; peripetalous fasciole distinct, not sinuated. Length, 4·7; breadth, 3·7.

Localities.—Cobden.

AMPHIDOTUS.

18. **A. sulcatus**, *sp. nov.* Orbicular-cordate; anterior groove deep and angled on each side; posterior lateral ambulacra shorter, both pairs slightly curved. Length, 2·7; breadth, 2·9.

Localities.—Oamaru.

KLEINIA.

Vertex sub-central; lateral ambulacra sunken, confluent near the vertex, where the inner pores are nearly obliterated, anterior pair diverging, posterior pair nearly parallel.

19. **K. conjuncta**, *sp. nov.* Ovato-cordate, depressed, edge thin, tubercles on the back small and equal; apex slightly anterior; ambulacra sunk in deep grooves; anterior pair sub-petaloid, bent rather backwards; posterior pair longitudinal, coalescent nearly as far as the apices, which diverge; anterior odd ambulacrum sunk in a deep groove that forms a deep notch in the anterior margin, pores distinct; peripetalous fasciole indistinct. Length, 1·85; breadth, 1·65; height, ·5.

Localities.—Grey River.

In form and in the presence of an anterior groove this species approaches *Tripylus*, but the longitudinal position of the posterior pair of ambulacra keep it out of that genus, while the distinct pores of the anterior ambulacrum take it out of *Brissus*.

BRISSUS.

Anterior ambulacra rather transverse, posterior longitudinal, odd ambulacra almost obsolete; apex eccentric.

20. **B. eximius**, *Zittel, Voy. Novara, Palæ., p. 65, pl. xii., f. 3.* Large, oblong, depressed, keeled behind, papillose; apex anterior; ambulacra petaloid, unequal; the anterior obsolete, hardly conspicuous;

anterior pair widely diverging, deep, forming a transverse line; posterior close together; anus marginal; peristome margined, anterior, lipped. Length, 5·5; breadth, 4·35.

Localities.—Motupipi (Hochstetter); Waikata South Head (Hochstetter).

This species is not represented in the Colonial Museum.

BRISSIOPSIS.

Ambulacra short, broad; apical part of odd ambulacra with large pores; apex sub-median; tubercles crenulated.

21. **B. hectori**, *sp. nov.* Oblong, anterior ambulacrum short, truncated, deeply sunk, straight, pores well marked; lateral ambulacra, sub-equal, posterior rather longer, sub-petaloid, in shallow grooves; apex sub-central. Length, 2·25; breadth, 1·65; height, ·95.

Localities.—Brighton.

22. **B. alta**, *sp. nov.* Ovate, elevated, higher behind; anterior ambulacrum slightly sunk; laterals in shallow grooves; anterior pair rather transverse; posterior longitudinal; apex anterior; mouth very eccentric, lipped. Length, 2; breadth, 1·75; height, 1·4.

Localities.—Oamaru.

HEMIASTER.

Like *Brissiopsis*, but without a sub-anal fasciole.

23. **H. posita**, *sp. nov.* Cordate, inflated, posterior end higher, apex sub-central, covered with small tubercles; ambulacra stellate, the posterior lateral pair shorter and with the pores on the inner side near the apex obliterated; lateral ambulacra rather sunken, sub-petaloid, blunt at their apices; odd anterior ambulacrum rectilinear, in a shallow groove that extends round the anterior end to the mouth; no sub-anal nor peripetalous fasciole. Length, 2·35; breadth; 2·15; height at posterior end, 1·5.

Localities.—Curiosity Shop.

MEOMA.

Heart-shaped; vertex sub-central; ambulacra in deep grooves, the odd anterior one entirely obliterated.

24. **M. crawfordi**, *sp. nov.*; *Brissus crawfordi* and *B. brevipetalata*, *Hector, Cat. Col. Mus.*, 1870, p. 190; not *B. brevipetalata*, *l.c.*, p. 192. Cordate, depressed, covered with small sunken tubercles; apex rather anterior; ambulacra long, deeply sunken, anterior pair rather shorter, odd anterior entirely obliterated; anterior groove shallow near the apex, but deepening gradually, and forming a deep anterior sinus; peripetalous fasciole very sinuous, with a deep inflection just above the anterior lateral ambulacra; posterior ambulacra nearly straight, anterior slightly curved forwards. Length, 4·8; breadth, 4·4; height, 1·6.

Localities.—Oamaru; Curiosity Shop; Waimea Plains, Southland; Caversham (drawing).

25. *M. tuberculata*, *sp. nov.* Oval, depressed, some of the tubercles at the anterior end larger, and raised; apex anterior; ambulacra sunken, petaloid, unequal, the anterior pair shorter; odd anterior ambulacrum entirely obliterated; anterior groove shallow. Length, 3·35; breadth, 2·8; height, 1·1.

Localities.—Broken River (L).

26. *M. brevipetalata*, *sp. nov.*; *Brissus brevipetalata*, *Hector, Cat. Col. Mus.*, 1870, p. 192. Orbicular-cordate; vertex sub-central; lateral ambulacra narrow, sub-equal, short, less than half the distance from the apex to the margin; anterior odd ambulacrum obliterated, situated in a shallow groove, which extends round the margin; peripetalous fasciole indistinct, apparently sinuated. Length, 4; breadth, 3·8.

Localities.—Cobden.

SCHIZASTER.

Depressed in front, high and narrow behind; apex eccentric; anterior ambulacra nearly parallel to the odd anterior one, which is very broad and deep; posterior ambulacra much deeper.

27. *S. lyoni*, *sp. nov.* Ovate, broad in front, and narrowed behind, depressed; apex posterior, surface smooth; lateral ambulacra narrow, straight, sunk; the posterior pair only one-third of the length of the anterior; anterior groove narrow and deep; peripetalous fasciole flexuous. Length, 4·5; breadth, 4.

Localities.—Cobden; Culverden.

28. *S. rotundatus*, *Zittel, Voy. Novara, Palæ.*, p. 64, pl. xi, f. 1. Sub-orbicular, elevated behind, with numerous papillæ, apex approaching the posterior margin, two genital pores; anterior odd ambulacrum placed in a deep broad groove; anterior pair petaloid, curved, directed towards the anterior margin, rather long, sunk, closed, pores joined in pairs; posterior pair very short; anus supra-marginal, peristome lipped, transverse. Length, 1·9; breadth, 1·9; height, 1.

Localities.—Waikato South Head; Oamaru; Aotea (Hochstetter); Cape Farewell (Hochstetter); Weka Pass (L).

29. *S. exoletus*, *sp. nov.* Sub-orbicular, narrower behind, depressed; ambulacra in deep grooves, posterior pair broad and rounded at the end, about half of the length of the anterior pair, which are also moderately broad and straight; anterior groove broad and deep to the apex. Length, 1·5; breadth, 1·45.

Localities.—Grey River; Pakarori River, West Coast of Nelson.

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[The synonyms are printed in italics.]

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