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All communications relating to this JOURNAL should be addressed to the
DEAN OF THE FACULTY OF SCIENCE, IMPERIAL UNIVERSITY OF TOKYO.

Mollusca from the Upper Musashino of Tokyo and its Suburbs

By

Matajiro YOKOYAMA, *Rigakuhakushi*

With 5 Plates

General Remarks

When, in 1922, I wrote a paper¹⁾ on the Molluscan fossils of the Upper Musashino Formation of the districts surrounding Tokyo, I left untouched those found in and immediately around the city itself. My reasons for so doing were that many of them had already been described by the late Professor David Brauns²⁾ and Dr. Tokunaga,³⁾ and also that the preparation of the necessary plates at that time would have delayed the publication of the paper that I had in hand. Recently, however, as I happened to be studying the fossils of the same formation found in other parts of Japan, I keenly felt the necessity of thoroughly knowing those of Tokyo also, so many forms being common to both. The present paper gives the results of an examination of them.

The materials which I had at my disposal were partly those already examined by Brauns and Tokunaga, and kept in the Geological Institute of the Imperial University of Tokyo, and partly those collected by the late Gordon Yamakawa and others. The localities⁴⁾ where they

1) Fossils from the Upper Musashino of Kazusa and Shimosa. Jour. Coll. Sci., Vol. XLIV, Art. 1.

2) Geology of the Environs of Tokio. Mem. Sci. Dept., Tokio Daigaku, No. 4, 1885.

3) Fossils of the Environs of Tokyo. Jour. Coll. Sci., Vol. XXI, Art. 2, 1903.

4) All these places are at present inaccessible to collectors. The exact sites where the fossils were obtained were at the foot of high banks, except at Sendagaya where they were found at the bottom of a well which was being dug in the garden of Marquis Ōyama (Marshal Ōyama of the Russo-Japanese War).

were obtained were Ōji, Tabata, Dōkanyama, Shinagawa, Sendagaya and Kuruma-chō, the first five being in the suburbs of Tokyo and the last in the city itself, in Shiba ward, not far from the Shinagawa Railway Station.

The number of species described by Brauns in 1885 amounted to seventy-five, which Tokunaga, twenty-one years later, increased to one hundred and sixty-eight. My recent examination gave two hundred and seventy-five species, besides many which I am not able at present to determine on account of their imperfect preservation. The names of all the species determined are given in the following table:

		Ōji	Tabata	Dōkanyama	Kuruma-chō	Shinagawa	Sendagaya	Geological Occurrence
I. Gastropoda								
Fam. Actaeonidae								
CM 23602	1. <i>Actaeon tornatilis</i> (L.) var. <i>nippo</i>	+	+					
CM 23603	nensis Yam.							
CM 23604	2. <i>Leucotina gigantea</i> (Dkr.)	+			+			Recent (Japan). Up. Musashino
CM 23605	Fam. Tornatinidae							
CM 23606	3. <i>Tornatina exilis</i> Dkr.	+	+	+				Rec. (W. Japan). Up. Musashino
CM 23609	4. <i>Tornatina simplex</i> A. Ad.			+				Rec. (Japan)
CM 23610	5. <i>Tornatina fontinalis</i> Yok.					+		
CM 23611	6. <i>Tornatina longispinata</i> Yam.	+						Up. Musashino
CM 23612	7. <i>Retusa globosa</i> Yam.	+		+				Up. Musashino
CM 23613	8. <i>Retusa minima</i> Yam.	+		+				Up. and Low. Musashino
CM 23615	9. <i>Volvula artiaperta</i> Yam.				+			
CM 23616	10. <i>Volvula acuminata</i> (Brug.)	+			+			Rec. (Atlantic). Up. Musashino
CM 23617	Fam. Scaphandridae							
CM 23618	11. <i>Cylichna musashiensis</i> Tok.	+	+	+	+			Rec. (C. Japan). Up. a. Low. Musashino
CM 23619	12. <i>Cylichna sibaensis</i> Yam.	+		+				Up. a. Low. Musashino
CM 23620	13. <i>Cylichna yamakawai</i> Yok.			+				Up. Musashino
CM 23621	Fam. Philinidae							
CM 23622	14. <i>Philina scalpta</i> A. Ad.	+						Rec. (C. W. Japan). Up. Musashino
CM 23623	15. <i>Philina japonica</i> Lke.	+						Rec. (C. Japan)
CM 23624	16. <i>Philina ornatissima</i> Yok.				+			
CM 23627	Fam. Bullidae							
CM 23628	17. <i>Bulla ovula</i> Sow.				+			Rec. (C.W.S. Japan). Up. Musashino
CM 23629	Fam. Ringiculidae							
CM 23630	18. <i>Ringicula musashinoensis</i> Yok.	+	+	+	+	+		Rec. (C. Japan). Up. a. Low. Musashino
CM 23631								
CM 23632								

		Oji	Tabata	Dokwanayama	Kuruma-chô	Shinagawa	Sendagaya	Geological Occurrence
2 CM23688								
CM23689								
CM23690								
CM23691	47. Chrysodomus arthriticus (Val.)	+				+		Rec. (N. Japan)
CM23692	48. Sipho obesiformis Yok.					+		Up. a. Low. Musashino
CM23693	49. Siphonalia cassidaraeformis (Rve.)	+				+		Rec. (C.W. Japan). Pliocene
CM23694	50. Siphonalia trochulus (Rve.)				+	+		Rec. (C. Japan). Up. a. Low. Musash.
CM23695	51. Siphonalia spadicea (Rve.)				+			Rec. (N.C. Japan). Up. a. Low. Musashino
CM23696	52. Volutharpa perryi (Jay)	+	+	+				Rec. (N.C. Japan). Up. a. Low. Musash.
CM23697								
CM23698	53. Eburna japonica Rve.	+			+	+		Rec. (N-S. Japan). Up. Musashino
CM23699								
CM23700	Fam. Nassidae							
CM23701	54. Nassa (Hima) japonica A. Ad.	+	+	+	+	+		Rec. (C. W. Japan). Up. Musash.-Pliocene
CM23702								
CM23703	55. Nassa (Hima) festiva Powis	+	+	+	+	+		Rec. (N.C. W. Japan). Up. a. Low. Musash.
CM23704								
CM23705	56. Nassa (Hima) fraterculus Dkr.				+			Rec. (N.C.W. Japan). Up. Musashino
CM23706	57. Nassa (Niotha) livescens Phil.				+	+		Rec. (C.W. Japan, Philippines). Up. a. Low. Musash.
CM23707								
CM23708								
CM23709								
CM23710	Fam. Columbelloidea							
CM23711	58. Columbella (Mitrella) dunkeri Tryon	+	+	+	+	+		Rec. (N.C.W. Japan). Up. Musash.-Pliocene
CM23712								
CM23713	59. Columbella (Atilia) masakadoi Yok.	+	+					Rec. (C. Japan). Up. Musashino
CM23714	60. Columbella (Atilia) martensi Lke.	+	+		+			Rec. (N.C.W. Japan). Up. Musashino
CM23715	61. Columbella (Atilia) smithi Yok.	+	+		+			Rec. (C. Japan). Up. Musashino-Pliocene
CM23716								
CM23717	62. Columbella (Atilia) pumila Dkr.	+	+	+				Rec. (C.W. Japan)
CM23718								
CM23719	Fam. Muricidae							
CM23720	63. Trophon subclavatus Yok.	+						Up. Musashino
CM23721	64. Ocinebra falcata (Sow.)				+			Rec. (N.C.W. Japan). Up. Musashino
CM23722	65. Urosalpinx birileffii Lke.				+			Rec. (C.W. Japan). Pliocene. Miocene
CM23723	66. Rapana bezoar (L.) var. thomasiانا	+	+		+			Rec. (N.C.W. Japan). Up. Musash.-Pliocene
CM23724								
CM23725	Or.							
CM23726	67. Purpura alveolata Rve.	+						Rec. (C.W. Japan, Panama). Pliocene
CM23727								
CM23728	Fam. Tritonidae							
CM23729	68. Triton nodiferus Lam.				+			Rec. (C. W. Japan, Philippines.)
CM23730	69. Triton tenuilratus Lke.				+			Rec. (C. W. Japan). Up. Musash.-Pliocene
CM23731								
CM23732								
CM23733	Fam. Cassididae							
CM23734								
CM23735	70. Cassis strigata (Gm.)	+		+				Rec. (C.W. Japan). Up. Musashino
CM23736								
CM23737								
CM23738								

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		Oji	Tabata	Dokuyama	Kuruma-cho	Shinagawa	Sendagaya	Geological Occurrence
CM23739	Fam. Doliidae							
CM23740	71. <i>Dolium luteostomum</i> Küst.				+	+		Rec. (N.C.W. Japan). Up. a. Low. Musashino
CM23742	Fam. Cypraeidae							
CM23743	72. <i>Cypraea</i> (<i>Trivia</i>) <i>oryza</i> Lam. (18)	+				+		Rec. (S. Japan)
CM23744	73. <i>Erato callosa</i> Ad. et Rve.							Rec. (C.W. Japan). Up. Musashino.
CM23745	Fam. Cerithiidae							
CM23746	74. <i>Cerithium kochi</i> Phil.					+		Rec. (C.W. Japan, East Africa). Up. Musashino.
CM23747	75. <i>Bittium binodulosum</i> Yok.				+	+		Up. a. Low. Musashino
CM23748	76. <i>Potamides</i> (<i>Tympanotonos</i>) <i>fluvialis</i> (P. et M.)			+			+	Rec. (C.W. Japan). Up. Musashino
CM23749	77. <i>Potamides</i> (<i>Batillaria</i>) <i>zonalis</i> (Brug.)	+	+				+	Rec. (N.C.W. Japan, Hongkong). Up. Musashino
CM23750	78. <i>Potamides</i> (<i>Batillaria</i>) <i>multiformis</i> (Lke.)			+				Rec. (C.W. Japan). Up. Musashino
CM23751	Fam. Trichotropidae							
CM23752	79. <i>Trichotropis unicarinata</i> Br. et Sow.	+					+	Rec. (N.C.W. Japan). Up. Musashino
CM23753	Fam. Vermetidae							
	80. <i>Vermetus defrenatus</i> Yok. (19)	+				+		
	81. <i>Vermetus ebaranus</i> Yok. (20)						+	
	Fam. Litiopidae							
	82. <i>Litiopa simplex</i> Yok. (21)				+			
	83. <i>Diala semistriata</i> (Phil.) (22)				+			Rec. (W. Japan). Pleistocene of Awa
	Fam. Rissoidae							
CM23770	84. <i>Rissoa</i> (<i>Cingula</i>) <i>paludinoides</i> Yok. (23)	+	+					
CM23771	85. <i>Rissoina yendoi</i> Yok. (24)					+		
CM23772	86. <i>Rissoina</i> (?) <i>pagodula</i> Yok. (25)					+		
CM23773	87. <i>Fenella septentrionalis</i> Tok.	+	+	+	+			Rec. (C. Japan). Up. Musashino
	88. <i>Fenella orientalis</i> Yok.				+	+		Rec. (C. Japan). Up. Musashino
	89. <i>Fenella tokunagai</i> Yok. (26)	+	+					
	Fam. Skeneidae							
CM23777	90. <i>Skenea nipponica</i> Yok.	+			+	+		Rec. (C. Japan). Up. Musashino
	Fam. Naticidae							
CM23778	91. <i>Natica janthostoma</i> Desh.	+	+	+	+	+		Rec. (N.C. Japan). Up. Mus.-Miocene
CM23779	92. <i>Polinices</i> (<i>Neverita</i>) <i>ampla</i> (Phil.)	+	+	+	+	+		Rec. (N.-S. Japan). Up. Mus.-Miocene

		Oji	Tabata	Dokwan-yama	Kuruna-chô	Shinagawa	Sendagaya	Geological Occurrence
CM23790 CM23791 CM23792	93. <i>Sigaretus papilla</i> Gm.	+			+	+		Rec. (C.W. Japan, Philippines). Up. Musashino-Pliocene
	Fam. Scalidae							
CM23793 CM23794	94. <i>Scala aurita</i> (Sow.)	+						Rec. (C. Japan). Up. Musashino
	95. <i>Scala azumana</i> (Yok.)	+						Rec. (C. Japan). Up. Musashino
	96. <i>Scala pulcherrima</i> (Sow.) (27)	+						Rec. (W. Japan, Philippines)
	97. <i>Scala lyra</i> (Sow.) (28)				+			Rec. (C. Japan)
	98. <i>Scala replicata</i> (Sow.) (29)				+			Rec. (W. S. Japan)
	99. <i>Scala (Acrila) densicostata</i> (Yok.)	+						Lower Musashino
	100. <i>Scala (Acrila) ojiensis</i> Yok. (20) 1	+						
	101. <i>Scala rissoinaeformis</i> Yok. (31) 1	+						
	Fam. Eulimidae							
CM23804	102. <i>Eulima (Leiostraca) shibana</i> Yok. (32) 1			+				
	Fam. Pyramidellidae							
CM23805 CM23806 CM23807 CM23808 CM23809 CM23810 CM23811 CM23812	103. <i>Pyramidella (Actaeopyramis) eximia</i> (Lke.)	+						Rec. (C. W. Japan). Up. Musashino-Pliocene
	104. <i>Pyramidella (Agatha) virgo</i> (Ad.) v. brevis Yok.	+	+	+	+	+		Rec. (C. Japan). Up. Musashino
	105. <i>Pyramidella (Tiberia) pulchella</i> (Ad.)	+	+		+			Rec. (C.W. Japan). Up. Musashino
	106. <i>Pyramidella (Tiberia) ebarana</i> Yok. (22)	+			+			
CM23814 CM23815	107. <i>Pyramidella (Iphiana) mira</i> Yok.	+			+			Upper Musashino
CM23820 CM23821 CM23822 CM23823	108. <i>Pyramidella (Syrnola) toshimana</i> Yok. (34)	+			+			
CM23824 CM23825 CM23826 CM23827	109. <i>Pyramidella (Syrnola) inturbida</i> Yok. (35)	+			+			
CM23828 CM23829 CM23830	110. <i>Odostomia (Odostomia) hilgen-dorffi</i> Cl.	+	+	+	+	+		Rec. (N. Japan). Up. Musashino
	111. <i>Odostomia (Odostomia) sublimpida</i> Yok.	+			+			Upper Musashino
	112. <i>Odostomia (Odostomia) venusta</i> Yok.	+						Upper Musashino
	113. <i>Odostomia (Odostomia) gordonis</i> Yok.	+						Rec. (C. Japan). Up. Musashino
	114. <i>Odostomia (Odostomia) desimana</i> D. et. B.	+			+			Rec. (C. Japan). Up. Musashino
	115. <i>Odostomia (Odostomia) shimosenensis</i> Yok.			+				Rec. (C. Japan). Up. Musashino
	116. <i>Odostomia (Odostomia) fujitanii</i> Yok. (36)	+						
	117. <i>Odostomia (Odostomia) optata</i> Yok. (37)	+						

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		Oji	Tabata	Dokanyama	Kuruma-chō	Shinagaya	Sendagaya	Geological Occurrence
CM23834 CM23835	118. <i>Odostomia</i> (<i>Parthenina</i>) <i>takinogawensis</i> Tok.	+	+					
CM23839	119. <i>Odostomia</i> (<i>Egilina</i>) <i>affectuosa</i> Yok.	(25)	+					Up. Musashino
	120. <i>Odostomia</i> (<i>Egilina</i>) <i>marielloides</i> Yok.	+						
	121. <i>Odostomia</i> (<i>Odetta</i>) <i>lectissimoides</i> Yok.	(32)	1	+				
	122. <i>Odostomia</i> (<i>Iolaea</i>) <i>amicalis</i> Yok.	(28)	1	+				
	123. <i>Odostomia</i> (<i>Menestho</i>) <i>nishiana</i> Yok.	(4)						
CM23847	124. <i>Odostomia</i> (<i>Besla</i>) <i>bicinctella</i> Yok.	(42)	1	+				
	125. <i>Odostomia</i> (<i>Besla</i>) <i>shibana</i> Yok.	(42)	1	+				
CM23854	126. <i>Turbonilla</i> (<i>Chemnitzia</i>) <i>imbana</i> + Yok.							Rec. (C. Japan). Up. Musashino
	127. <i>Turbonilla</i> (<i>Chemnitzia</i>) <i>dunkeri</i> Cl.	(42)	1	+				Rec. (W. Japan)
CM23855	128. <i>Turbonilla</i> (<i>Chemnitzia</i>) <i>multigyrata</i> Dkr.	(45)	1	+				Rec. (Japan)
	129. <i>Turbonilla</i> (<i>Chemnitzia</i>) <i>keiskeana</i> + Yok.	(26)						
	130. <i>Turbonilla</i> (<i>Chemnitzia</i>) <i>edoensis</i> Yok.	(42)		+				
CM23858	131. <i>Turbonilla</i> (<i>Mormula</i>) <i>paucicostulata</i> + Tok.							Up. Musashino
CM23859	132. <i>Turbonilla</i> (<i>Mormula</i>) <i>scrobiculata</i> + Yok.							Rec. (C. Japan). Up. Musashino
CM23860	133. <i>Turbonilla</i> (<i>Mormula</i>) <i>semicolorata</i> + Yok.	(42)	1	+				
CM23861	134. <i>Turbonilla</i> (<i>Cingulina</i>) <i>triarata</i> Pits. +							Rec. (W. Japan)
	135. <i>Turbonilla</i> (<i>Careliopsis</i>) <i>obscura</i> Yok.	+		+				Up. Musashino
	136. <i>Turbonilla</i> (<i>Ptycheulimella</i>) <i>missella</i> Yok.	+						Up. Musashino
CM23867	137. <i>Turbonilla</i> (<i>Ptycheulimella</i>) <i>kurumana</i> Yok.	(23)						
CM23868	138. <i>Turbonilla</i> (<i>Pyrgolampros</i>) <i>subplanicostata</i> Yok.	+	(50)	1				
	139. <i>Turbonilla</i> (<i>Pyrgisculus</i>) <i>shigeyasui</i> Yok.	(52)	+	1				
	140. <i>Turbonilla</i> (<i>Strioturbonilla</i>) <i>sagamiana</i> Yok.					+		Rec. (C. Japan). Up. Musashino
	Fam. <i>Turbinidae</i>							
	141. <i>Turbo</i> (<i>Marmorostoma</i>) <i>granulatus</i> Gm.	+						Rec. (C.W. Japan, Indian O.) Up. Musashino

		Oji	Tabata	Dokwanayama	Kuruma-chō	Shinagawa	Sendagaya	Geological Occurrence
CM23869	142. <i>Leptothyra purpurea</i> (Dkr.)	+		+	+	+		Rec. (Japan). Up. Musashino
CM23870	143. <i>Leptothyra pygmaea</i> Yok.				+			Rec. (C. Japan). Up. Musashino
CM23871	Fam. Trochidae							
CM23872	144. <i>Chlorostoma umbilicata</i> (Lke.)	+						Rec. (C.W. Japan)
CM23873	145. <i>Enida japonica</i> A. Ad. (52) /				+			Rec. (W. Japan)
CM23874	146. <i>Monilea ojiensis</i> Yok. (53)	+						
CM23878	147. <i>Solariella angulata</i> (Tok.)	+			+			Up. Musashino
CM23879	148. <i>Solariella philippensis</i> Wat.	+						Rec. (C. Japan). Up. Musashino
CM23880	149. <i>Bembix crumpii</i> (Pils.)				+			Rec. (Japan). Low. Musashino
CM23881	150. <i>Turcica imperialis</i> A. Ad.				+			Rec. (N.C.W. Japan). Up. Musashino
CM23882	151. <i>Calliostoma unicum</i> (Dkr.) v. <i>shinagawensis</i> Tok.				+	+		Up. Musashino
CM23883	152. <i>Umbonium costatum</i> (Val.)	+		+	+			Rec. (N.C.W. Japan). Up. a. Low. Musashino
CM23884	153. <i>Umbonium giganteum</i> (Les.)				+			Rec. (C.W. Japan). Up. a. Low. Musashino
CM23885	Fam. Cyclostrematidae							
CM23886	154. <i>Cyclostrema lamellata</i> Yok. (54) /	+						
CM23887	Fam. Fissurellidae							
CM23888	155. <i>Macroschisma sinensis</i> Ad. v. <i>brevis</i> Yok.				+			Up. Musashino
CM23891	Fam. Patellidae							
CM23893	156. <i>Helcioniscus toreuma</i> (Rve.) (55)	+						Rec. (N.C.W. Japan)
CM23894	II. Scaphopoda							
CM23895	Fam. Dentaliidae							
CM23896	157. <i>Dentalium weinkauffii</i> Dkr.			+	+			Rec. (C. Japan). Up. Mus.-Pliocene
CM23897	158. <i>Dentalium octogonum</i> Lam.	+		+	+			Rec. (N.C.W. Japan, Ceylon). Up. a. Low. Musashino.
CM23898	159. <i>Dentalium edoense</i> Tok.			+	+			Rec. (C.W. Japan). Up. a. Low. Musashino.
CM23899	160. <i>Dentalium semipolatum</i> Sow. (57) /				+			Rec. (C.W. Japan, Low. California).
CM23900	161. <i>Dentalium yawakawai</i> Yok. (58) /	+	+	+	+			
CM23908	III. Lamellibranchiata							
	Fam. Pholadidae							
	162. <i>Pholas fragilis</i> Sow.			+				Rec. (W. Japan, Philippines). Up. Musashino
	163. <i>Martesia striata</i> (L.) v. <i>tokyoensis</i> Yok. (59)	+						

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	Oji	Tabata	Dokuranyama	Kuruma-chō	Shingawa	Sendagaya	Geological Occurrence
Fam. Saxicavidae							
164. <i>Panope generosa</i> (Gld.)	+		+	+			Rec. (N. Japan). Up. Musashino-Pliocene
Fam. Corbulidae							
165. <i>Corbula venusta</i> Gld.	+			+			Rec. (N. Japan). Up. Musashino-Pliocene
166. <i>Corbula pustulosa</i> Yok.	+	+					Up. Musashino
167. <i>Basterotia trapezium</i> Yok.				+			Up. Musashino
Fam. Myacidae							
168. <i>Cryptomya busoensis</i> Yok.	+	+		+	+		Rec. (C. Japan). Up. Musashino
169. <i>Mya arenaria</i> L.				+			Rec. (N.C.W. Japan). Pliocene
Fam. Cardiliidae							
170. <i>Cardilia semisulcata</i> (Lam.) (59)				+			Rec. (Japan, Indian Ocean)
Fam. Mactridae							
171. <i>Mactra sulcataria</i> Desh.	+	+		+	+		Rec. (N.C.W. Japan). Up. Musashino
172. <i>Mactra sachalinensis</i> Schr. var. <i>imperialis</i> Yok.	+	+					Up. Musashino
173. <i>Mactra ovalina</i> Lam.	+			+			Rec. (C. Japan). Up. Musashino
174. <i>Mactra dunkeri</i> Yok.	+			+			Rec. (C. Japan). Up. Musashino
175. <i>Mactra crossei</i> Dkr.	+						Rec. (C. Japan). Pliocene
176. <i>Raeta yokohamensis</i> Pils.	+	+		+			Rec. (C. Japan). Up. Musashino-Pliocene
177. <i>Raeta magnifica</i> Yok.				+			Up. Musashino
178. <i>Tresus nuttali</i> (Conr.)	+	+		+			Rec. (N.C.W. Japan). Up. Musashino
179. <i>Lutraria sieboldii</i> Desh. (60)				+			Rec. (C. W. Japan)
Fam. Solenidae							
180. <i>Solen krusensternii</i> Schr.	+	+		+	+		Rec. (N. Japan). Up. Musashino-Pliocene
181. <i>Solen gouldii</i> Conr.		+					Rec. (N.C.W. Japan). Pliocene
182. <i>Siliqua pulchella</i> Dkr.			+				Rec. (C.W. Japan). Up. Musashino
183. <i>Solecuretus divaricatus</i> (Lke.)	+			+	+		Rec. (C.W. Japan). Up. Musashino
Fam. Donacidae							
184. <i>Donax semigranosus</i> Dkr.	+						Rec. (C. Japan)
Fam. Semelidae							
185. <i>Theora lubrica</i> Gld. (61)				+			Rec. (N.C.W. Japan).
Fam. Tellinidae							
186. <i>Tellina jodoensis</i> Lke.	+		+	+			Rec. (C.W. Japan). Up. Musashino
187. <i>Tellina venulosa</i> Schr.	+						Rec. (N. Japan). Up. Musashino

		Oji	Tabata	Dokunanyama	Kuruma-cho	Shinagawa	Sendagaya	Geological Occurrence
CM23964 CM23965 CM23966 CM23967 CM23968 CM23969 CM23970 CM23971 CM23972 CM23973 CM23974 CM23975 CM23976 CM23977 CM23978 CM23979 CM23980 CM23981 CM23982 CM23983 CM23984 CM23985 CM23986 CM23987 CM23988 ② CM23989 CM23990 CM23991 CM23992 CM23993 CM23994 CM23995 CM23996 CM23997 CM23998 CM24000 CM24005 CM24006 CM24010 CM24011 CM24012 CM24013 CM24014 CM24015 CM24016 CM24017 CM24018 CM24019 CM24020 CM24021 CM24022 CM24023 CM24024 CM24025 CM24026	188. <i>Tellina nitidula</i> Dkr. 189. <i>Tellina iridella</i> Mart. 190. <i>Tellina ojiensis</i> Tok. 191. <i>Tellina vestalioides</i> Yok. 192. <i>Tellina serriocostata</i> Tok. 193. <i>Tellina miyagensis</i> Yok. 194. <i>Tellina delta</i> Yok. 195. <i>Macoma praetexta</i> (Mart.) 196. <i>Macoma dissimilis</i> (Mart.) 197. <i>Macoma nipponica</i> (Tok.) Fam. Veneridae 198. <i>Dosinia troscheli</i> Lka. 199. <i>Dosinia angulosa</i> Phil. 200. <i>Cyclina chinensis</i> (Chem.) 201. <i>Lucinopsis divaricata</i> Lke. 202. <i>Meretrix meretrix</i> (L.) 203. <i>Meretrix</i> (<i>Callista</i>) <i>chinensis</i> (Chem.) 204. <i>Meretrix limatula</i> (Sow.) 205. <i>Meretrix gordonis</i> Yok. (62) 2 206. <i>Venus</i> (<i>Mercenaria</i>) <i>stimpsoni</i> Gld. 207. <i>Venus rigida</i> Gld. (63) 1 208. <i>Chione isabellina</i> (Phil.) 209. <i>Circe scripta</i> (L.) 210. <i>Tapes variegatus</i> Hanl. 211. <i>Tapes philipinarum</i> Ad. et Rve. 212. <i>Tapes euglyptus</i> Phil. 213. <i>Saxidomus purpuratus</i> (Sow.)	+	+	+	+	+	+	Rec. (C.W. Japan). Up. a. Low. Musash. Rec. (C.W. Japan) Rec. (N.C. Japan). Up. Musashino Rec. (N. Japan). Up. Musashino Up. a. Low. Musashino Up. Musashino Rec. (C. Japan). Up. Musashino Rec. (C.W. Japan). Up. Musash.-Miocene Rec. (C. Japan). Up. Musash.-Pliocene Rec. (N. Japan). Up. Musashino Rec. (C.W. Japan). Up. Musash.-Pliocene Rec. (C.W. Japan, Philippines). Pliocene Rec. (N.C.W. Japan, Annam). Up. Mus.-Pliocene Rec. (C.W. Japan). Up. Musashino Rec. (N.C.W. Japan, Philippines). Up. Mus.-Pliocene Rec. (N.C.W. Japan, China). Up. Musash.-Miocene Rec. (C. Japan, Moluccas). Pleistocene Rec. (N.C.W. Japan). Up. Musash.-Pliocene Rec. (N. Japan) Rec. (Japan, China). Up. Musash.-Pliocene Rec. (C.W. Japan, Red Sea). Up. Musashino Rec. (C.W. Japan, Philippines). Up. Musashino-Pliocene Rec. (N.C.W. Japan, Philippines). Up. Musashino Rec. (C.W. Japan). Up. Musash.-Pliocene Rec. (N.-S. Japan). Up. Musashino

		Oji	Tabata	Dokwanjama	Kuruma-cho	Shinagawa	Sendagaya	Geological Occurrence
CM24027 CM24028 CM24029 CM24030 CM24031	Fam. Cardiidae							
CM24032	214. <i>Cardium californiense</i> Desh.	+	+	+	+	+	+	Rec. (N.C.W. Japan). Up. Musashino
CM24033 CM24034 CM24035	215. <i>Cardium muticum</i> Rve.	+	+	+	+	+	+	Rec. (C. Japan, Philippines). Up. Musash.-Pliocene
CM24036	216. <i>Cardium braunsi</i> Tok.	+	+	+				Up. Musashino
CM24037	217. <i>Cardium tokunagai</i> Yok.	+			+			Up. Musashino
CM24038 CM24039	218. <i>Cardium ebaranum</i> Yok. (62) 1				+			
CM24040	Fam. Leptonidae							
CM24041	219. <i>Kellia subelliptica</i> Yok. (63) 1			+				
CM24042	220. <i>Kellia fujitaniana</i> Yok. (64) 1	+						
CM24043	221. <i>Kellia pumila</i> Wood. (65) 1				+			Rec. (W. Japan). Crag
CM24044	222. <i>Kellia</i> (?) <i>ojiana</i> Yok. (66) 1	+						
CM24045	223. <i>Montacuta oblongata</i> Yok.	+	+	+	+	+	+	Up. Musashino
CM24046	224. <i>Montacuta japonica</i> Yok.	+			+			Rec. (C. Japan). Up. Musashino
CM24047	225. <i>Montacuta subtruncata</i> Yok. (67) 1	+						
CM24048	226. <i>Montacuta</i> (?) <i>crassa</i> Yok.				+			
CM24049	227. <i>Thyasira gouldii</i> Phil. (68) 1				+			Rec. (N. Japan). Plioc. a. Pleistoc. (America).
CM24050	Fam. Diplodontidae							
CM24051	228. <i>Diplodonta usta</i> Gld.	+	+					Rec. (N.C. Japan). Up. Musashino.-Pliocene
CM24052	229. <i>Diplodonta semiaspera</i> Phil.	+			+			Rec. (C.W. Japan, West Indies). Up. a. Low. Musashino
CM24053	230. <i>Diplodonta lunaris</i> Yok. (69) 2				+	+		
CM24054	Fam. Lucinidae							
CM24055	231. <i>Lucina</i> (<i>Phacoides</i>) <i>borealis</i> L.	+	+	+	+	+	+	Rec. (C. Japan). Up. Musashino.-Miocene
CM24056	232. <i>Lucina contraria</i> Dkr.	+		+	+	+	+	Rec. (C. Japan). Up. a. Low. Musashino
CM24057	233. <i>Lucina pisidium</i> Dkr.	+						Rec. (N.-S. Japan). Up. Musashino
CM24058	234. <i>Loripes philippiana</i> (Rve.) (70) 1				+			Rec. (C.W. Japan)
CM24059	Fam. Carditidae							
CM24060	235. <i>Venericardia ferruginea</i> A. Ad.	+			+			Rec. (N. Japan). Up. a. Low. Musash.
CM24061	236. <i>Venericardia toneana</i> Yok.	+			+			Upper Musashino
CM24062	Fam. Crassatellidae							
CM24063	237. <i>Crassatella nana</i> Ad. et Rve. (71) 1				+			Rec. (Eastern seas)
CM24064	238. <i>Crassatella oblongata</i> Yok.				+			Up. a. Low. Musashino
CM24065	Fam. Cyrenidae							
CM24066	239. <i>Corbicula sandaiformis</i> , Yok.							Rec. (C. Japan). Up. Musashino

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	Oji	Tabata	Dokwanayama	Kuruna-cho	Shinagawa	Sendagaya	Geological Occurrence
Fam. Pleurophoridae							
240. Trapezium nipponicum Yok.	+	+	+	+			Rec. (C.W. Japan). Up. Musashino
Fam. Cuspidariidae							
241. Cuspidaria (Cardiomya) gouldiana Hinds			(75)	+			Rec. (C.W. Japan)
Fam. Myochamidae							
242. Myodora fluctuosa Gld.	+	+	+	+	+		Rec. (W. Japan). Up. Musashino
Fam. Thraciidae							
243. Thracia transmontana Yok.	+			+			Rec. (C. Japan). Up. Musashino
Fam. Mytilidae							
244. Modiola barbata (L.) T	+			+	+		Rec. (N.C.W. Japan). Up. Musashino
245. Modiola senhansui Yok. (76)	+			+	+		Rec. (C.W. Japan)
246. Crenella divaricata Yok.	+	+		+	+		Rec. (C. Japan). Up. Musashino
247. Crenella spectabilis A. Ad. (77)	+			+	+		Rec. (W. Japan)
Fam. Anomiidae							
248. Anomia lischkei F. et D.	+	+		+	+		Rec. (N.C.W. Japan). Up. a. Low. Musash.
Fam. Limidae							
249. Lima angulata Sow.				+	+		Rec. (N.C. Japan). Up. a. Low. Musash.
250. Lima subauriculata (Mont.)	+			+			Rec. (Atlantic). Up. Musashino
Fam. Pectinidae							
251. Pecten squamatus (Gm.)				+			Rec. (C.W. Japan, Philippines). Up. a. Low. Musash.
252. Pecten laetus Gld.				+			Rec. (N. C. W. Japan). Up. Mus-Pliocene
253. Pecten tokyoensis Tok.	+	+		+			Up. Musashino
254. Pecten laqueatus Sow.	+	+		+	+		Rec. (N.C.W. Japan). Up. Musashino
255. Pecten excavatus Hanl.	+	+		+	+		Rec. (N.C. Japan). Up. Musashino
Fam. Ostreidae							
256. Ostrea gigas Thunb.	+			+	+		Rec. (N.C.W. Japan). Up. Mus-Pliocene
257. Ostrea denselamellosa Lke.	+			+	+		Rec. (N.-S. Japan). Up. Musashino
258. Ostrea irregularis Tok.	+	+	+	+	+		Rec. (C. Japan). Up. Musashino
Fam. Pinnidae							
259. Pinna japonica Hanl.	+			+			Rec. (C.W. Japan). Up. Musash-Pliocene

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	Oji	Tabata	Dokwanayama	Kuruma-chō	Shinagawa	Sendagaya	Geological Occurrence
Fam. Arcidae							
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	261. <i>Arca kobeltiana</i> Pils.			+			Rec. (N.C. Japan). Up. a. Low. Musash.
	262. <i>Arca subcrenata</i> Lke.	+	+	+	+		Rec. (N.C.W. Japan). Up. Musash-Pliocene
	263. <i>Arca inflata</i> Rve.	+		+			Rec. (C.W.S. Japan). Up. a. Low. Musashino
	264. <i>Pectunculus yessoensis</i> Sow.	+	+				Rec. (N. Japan). Up. Musash-Pliocene
	265. <i>Pectunculus vestitus</i> Dkr.	+	+	+	+	+	Rec. (C. Japan). Up. Musash-Miocene
	266. <i>Pectunculus albolineatus</i> Lke.	+					Rec. (C. Japan). Up. Musash-Pliocene
Fam. Limopsidae							
	267. <i>Limopsis woodwardi</i> A. Ad.	+		+	+		Rec. (C. Japan). Up. Musash-Pliocene
Fam. Lediidae							
	268. <i>Leda confusa</i> Hanl.	+		+	+		Rec. (C. Japan). Up. Musash-Pliocene
	269. <i>Yoldia notabilis</i> Yok.	+	+				Up. Musashino
Fam. Nuculidae							
	270. <i>Nucula insignis</i> A. Ad.	+	+				Rec. (N. Japan). Up. Musash-Miocene
	271. <i>Nucula mirabilis</i> Ad. et Rve.				+		Rec. (C. W. Japan). Up. Musash-Pliocene
Fam. Solemyidae							
	272. <i>Solemya dunkeri</i> Yok.				+		
IV. Brachiopoda							
Fam. Terebratulidae							
	273. <i>Eudesia grayi</i> (Dav.)				+		Rec. (N.C.W. Japan). Up. Musashino
Fam. Lingulidae							
	274. <i>Lingula hians</i> Swain.	+					Rec. (C. Japan)

Of the six fossil localities already named, the one which yielded the greatest number of species was Ōji with 161. Next came Kuruma-chō with 133; then Shinagawa with 108, and Tabata with 65; while Dōkwanyama and Sendagaya gave only 27 and 19 respectively.

As regards the entire fauna, it consists of the following elements:

1. Species hitherto found only Recent	35
2. Species hitherto found Recent as well as youngest Pleistocene	2
3. Species hitherto ranging between Recent and Upper Musashino	78
4. Species hitherto ranging between Recent and Lower Musashino	20
5. Species hitherto ranging between Recent and Pliocene older than Lower Musashino	45
6. Species hitherto ranging between Recent and Miocene	8
7. Species hitherto found only in Upper Musashino	24
8. Species hitherto found only in Lower Musashino	3
9. Species hitherto found in both Upper and Lower Musashino	7
10. Species hitherto ranging between Upper Musashino and Pliocene	2
11. Species hitherto not found either fossil or Recent (new)	50

274

From what is stated above, it is quite evident that the fauna is most closely related to that of the *Upper Musashino* found in districts not far from Tokyo and also on Sado Island; for out of the 274 species constituting it, 184, or nearly two-thirds, are those which are either recorded as occurring in the said formation, or may possibly occur in it, because already known from older layers as well as from recent seas. With the *Lower Musashino*, our Tokyo fauna has much less affinity, the number of species already common, together with those that are possibly so, amounting to only 84 (30.6%), or somewhat less than one third of the whole.

As regards *Recent* species, they are quite numerous, as might be expected from the geologically very young age of the formation. Their number amounts to 188, or a little more than two-thirds of the whole, which in the future is sure to be increased by the discovery that species called extinct are still living. These 188 species, however, grouped according to their recent habitat,¹⁾ give an interesting result, as is shown below:

1) The division of Japan into four parts, Northern, Central, Western and Southern has already been elucidated in my previous papers on the Musashino fossils. But for convenience sake, I will repeat that by *Northern Japan* I mean that part of the country lying north of the 38th parallel, north latitude, including Sakhalin and the Kuriles also, while by *Central Japan* I mean the part lying south of the same parallel and east of the 136th meridian, east longitude, a line passing through Lake Biwa. Then *Western Japan* will be the part of the country west of that line, consisting of the Kinki District, a greater part of the Kii Peninsula, Chugoku, Shikoku and Kyushu. Lastly, *Southern Japan* will include all the islands south of Kyushū, such as the Satsunan Islands, the Ryukyus, Formosa, and the Bonins.

1. Species now living near the fossil localities (Central Japan) or in about the same latitudes (Western Japan)	93
2. Species now living in Central and Western Japan as well as north of it (Northern Japan)	39
3. Species now living in Central and Western Japan as well as south of it (Southern Japan)	27
4. Species now living throughout Japan (Northern, Central, Western, and Southern Japan)	5
5. Species now living only in Northern Japan	13
6. Species now living only in Southern Japan, or further south . . .	1
7. Species whose habitat in Japan is not exactly known	7
8. Species whose habitat is said to be the Eastern Seas	1
9. Species now living in the Atlantic	2

A glance at the above grouping shows that the predominating forms are those which live near the fossil localities (Central Japan), or in about the same latitudes (Western Japan), their number amounting to 164 (87 %). This is quite natural when we consider the geologically very young age of the fauna. But when we compare those which also live north with those which also live south, the former is greater, being 39 as against 27. Furthermore there are 13 species (4.7%) which at present are known only from Northern Japan, whilst there is only 1 which is exclusively southern. This shows to a certainty that the character of the fossil fauna is slightly more *northern* than that of the recent seas. That similar results had been obtained by the study of the Musashino fossils of other parts of Japan is, I believe, familiar to all who have read my previous papers. This, viewed palaeoclimatologically, is quite noteworthy, as in a much younger deposit, the so-called Coral Bed of Awa,¹⁾ Mollusca of a decidedly more southern, or I might even say of a decidedly tropical aspect occur together with several species of large reef-building corals.

1) Since the publication of my work on the Coral Bed of Awa, evidence has been found to show that this warm climate did probably continue down to our neolithic period. To this subject I shall have occasion to return in the near future.

Description of New or Rare Species

I. GASTROPODA

Family Actaeonidae

1. *Actaeon tornatilis* (Linné) var. *nipponensis*, YAMAKAWA

Pl. XLVI. Fig. 1

Actaeon tornatilis var. *nipponensis*. Yamakawa, Descript. Foss. Opisthobr. Diluv. Dep. Japan, p. 39, pl. X, figs. 1-3. Jour. Geol. Soc. Tokyo, Vol. XVIII, 1911.

Yamakawa described this shell as follows:

"Shell small, ovate, pointed above, rounded and somewhat elongated below, not solid; spire short, conical, with almost straight flanks. Whorls five, flat; sutures deep, making the upper edge of the whorls look like a shoulder; body-whorl ovate, produced below into a swollen outer lip, somewhat angulate at the periphery. Surface sculptured with spiral grooves, three of which are above the periphery; of these three, two are situated near the upper suture, while the remaining one is near the periphery; below the periphery there are sixteen equidistant grooves, alternately large and small (fig. 3 a), down to the columella, beyond which there are still seven equal ones (fig. 3 b). Aperture oblong, elongated, narrow, bluntly pointed above and rounded below, and somewhat widened toward the inner side. Columella twisted, concave in the upper part, convex in the lower, slightly produced forward and reflected with a strong spiral fold above. Umbilicus absent. Callus on the wall of the aperture found below only near the columella, spiral, very thin. Lips thin, simple, the outer one being moderately arcuate towards the front. Height 11 millim. Diameter 6 millim. Length of aperture 7 millim."

This variety, when compared with the typical form, has the whorls more convex, the periphery less angulate and the spiral grooves more in number. Very rare. The type species lives in the Atlantic and is also fossil in the English Crag.

Fossil occurrence.—Oji and Dokwanyama.

Family Tornatinidae

2. *Tornatina simplex*, (A. ADAMS)

Pl. XLVI. Fig. 2

Tornatina simplex. Pilsbry, Catalogue, p. 7. Tryon, Man. Conch., XV, p. 153, pl. 25, fig. 51.

(4) CM 23599-46-1

CM 235600

CM 235601

CM 23607-46-2

Bulla simplex. A. Adams, Ann. Mag. Nat. Hist., (3), LX, p. 153. Sowerby, Thes. Conch., II, p. 570, pl. 121, fig. 38.

A single specimen with the outer lip broken. But its ovately cylindrical shape together with the elevated spire and slightly callous columella leaves no doubt of its being Adams's species.

Fossil occurrence.—Kuruma-chō.

Living.—Japan (Adams). Philippines.

3. *Tornatina fontinalis*, nov. spec.

CM 23608-46-3

Pl. XLVI. Fig. 3

Shell minute, cylindrical, pointed above, rounded below. Spire low-conical, occupying about one-seventh of the height of the shell, with apex mammilated. Whorls five, somewhat terraced except the last, which is rounded at the shoulder. Surface smooth save for coarse lines of growth. Aperture somewhat shorter than the height of the body-whorl, narrow above, gradually widening below and occupying at base the greater part of the breadth (diameter) of the shell. Outer lip thin, running down almost vertically downward, curving in only very slightly in the middle. Inner lip with a narrow belt of glaze, somewhat widened near the base. Columella-fold single, weak.

A single example measuring 3.8 millim. in height and 1.5 millim. in diameter.

This shell is closely related to *Tornatina longispirata* Yamakawa (Descript. Foss. Opisthobr. Diluv. Dep. Japan, p. 41, pl. X, figs. 8-10), but is more slender with the spire much shorter.

Fossil occurrence.—Sendagaya.

4. *Volvula artiaperta*, YAMAKAWA

Pl. XLVI. Fig. 4

CM 23614-44-4

Volvula artiaperta. Yamakawa, Descript. Foss. Opisthobr. Diluv. Dep. Japan, p. 50, pl. XI, figs. 33-36.

This species was first founded by Yamakawa, who gave the diagnosis as follows:

"Shell thin, elongato-ovate, convolute, most inflated at the part about two-thirds of the shell-length from the bottom and slightly compressed in the middle portion of the shell, tapering both above and below: above into an obtuse summit and below into a rounded base. Surface smooth with some transverse striae except in the middle portion.

Vertex depressed with a sunken spire. Aperture as long as the shell, linear, regularly curved, narrowed above, dilated below, though not much widened at the base. Lip simple, curved inward and rounded below. Callus present in the posterior portion of the wall of the aperture. Pillar-lip of the columella strong, curved forward and provided with an obsolete fold. Height 3.2 millim. Diameter 1.2 millim."

A single specimen only.

Fossil occurrence.—Kuruma-chō.

Family Philinidae

5. *Philine japonica*, LISCHKE

CM23625-46-5

Pl. XLVI. Fig. 5

Philine japonica. Lischke, Jap. Meeresconch., III, p. 77, pl. V, figs. 13, 14.

A single example of *Philine*, 12.4 millim. high and 9.5 millim. broad, subquadrate in outline, with the surface ornamented with very fine wavy impressed spiral lines, is undoubtedly a form described by Lischke under the above mentioned name.

Fossil occurrence.—Ōji.

Living.—Central Japan.

6. *Philine ornatissima* nov. spec.

CM 23626-46-6

Pl. XLVI. Fig. 6

A single example with the lower portion of the outer lip broken, but so characteristic in its surface-sculpture that I can not leave it without a name.

The shell is small, thin, squarish-ovate in outline and inflated, with the surface finely spirally sulcate, the sulci being closely beset with round pits. The inner lip is covered with a smooth glaze. The outer lip is produced behind and finely denticulate at margin, the denticles at the posterior end being long and spiny. The dimensions can not be exactly given, but the height is estimated at about 3 millim., and the breadth at about 2 millim.

A. Adams described from the Strait of Corea a species called *Philine crenata* (Ann. Mag. Nat. Hist., IX, p. 160, 1862) which seems to resemble the present one; but the latter has a denticulate border and not a crenate one.

Fossil occurrence.—Kurama-chō.

Family Terebridae

7. *Terebra textilis*, HINDS

Pl. XLVI. Fig. 9

CM 23636-46-9

Terebra textilis. Hinds, Voy. Sulphur. p. 34. Reeve, Conch. Icon., *Terebra*, fig. 130. Tryon, Man. Conch., VII, p. 20, pl. V, figs. 75, 76. CM 23637

A subulate shell with flat longitudinally plicate whorls which are provided with a subsutural band equal in breadth to about one-third of the height of a whorl. The interpaces of the plicae are spirally striate. Three examples.

Fossil occurrence.—Shinagawa.

Living.—Central and Western Japan. South Seas. Sandwich Islands.

8. *Terebra edoensis*, nov. spec.

Pl. XLVI. Fig. 8

CM 23639-46-8

CM 23640

This shell is closely allied to *Terebra naumanni* Yok. (Foss. Miura Penin., p. 32, pl. I, fig. 12) from the Upper Musashino of Naganuma, from which, however, it differs in having the main spiral band subsutural and not suprasutural, what appears as a suprasutural band being only a row of tubercles formed by the swelling of the longitudinal plicae at this part. Moreover, the periphery is rounded and the base more convex. The longitudinal and spiral sculptures are similar to those of *Terebra naumanni*, so that it is not impossible that the difference is only a varietal one.

Four examples, the best preserved of which is one about 22 millim. high and 5 millim. in diameter, the number of whorls being over fifteen. The canal in this specimen is strongly curved sideways, while in others it is much less curved.

Fossil occurrence.—Kuruma-chō.

Family Pleurotomidae.

9. *Pleurotoma oxytropis* SOWERBY

Pl. XLVI. Fig. 7

CM 23643-46-7

Pleurotoma oxytropis. Sowerby, Proc. Zool. Soc., 1833. Tryon, Man. Conch., VI, p. 168, pl. IV, figs. 37-39. CM 23644

Pleurotoma leucotropis. Adams and Reeve, Voy. Samarang, p. 40, pl. X, fig. 7. Pilsbry, Catal., p. 15.

Pleurotoma albicarinata. Dunker, Index Moll. Mar. Jap., p. 21.

Several examples, although more or less broken. The form is very characteristic, being elongately fusiform and with the whorls angulate.

Fossil occurrence.—Shinagawa.

Living.—Central and Western Japan. China. Panama. Gulf of California.

10. *Drillia fortilirata*, SMITH

Pl. XLVI. Fig. 20

Drillia fortilirata. Smith, Proc. Zool. Soc., 1879, p. 195, pl. XIX, fig. 22. Mart. Chemn. Syst. Conch. Cab., Pleurotomidae, p. 198, pl. 38, fig. 10. Pilsbry, Catal., p. 16.

This species is very frequent at Ōji, though rare in other localities.

The shell is small, and turrete with whorls about twelve in number. These whorls are convex and longitudinally as well as spirally sculptured. The longitudinal sculpture consists of strong, rounded and somewhat oblique plicae whose number on the last whorl is eleven or twelve. The spiral sculpture consists of distant threads, five in number, the lowest being close to the suture and much weaker than the others. The periphery is subangulate, below which the surface is somewhat excavated with several fine spiral lirae. Below the excavation, the surface is flattish and almost vertical, with several spiral threads on it. Aperture subquadrate, with canal short and bent. Lip-sinus deep, finger-like and situated at a little distance from the suture. Height 13.5 millim. Diameter 3.7 millim.

Fossil occurrence.—Ōji, Tabata, Kuruma-chō and Shinagawa.

Living.—Central and Western Japan.

11. *Mangilia tabatensis*, (TOKUNAGA)

Pl. XLVI. Fig. 11

Pleurotoma (Drillia) tabatensis. Tokunaga, Foss. Env. Tokyo, p. 15, pl. I, fig. 27.

This species was first described by Tokunaga on some specimens from Tabata. But these seem to have been subsequently lost. Fortunately there are some from Kuruma-chō and Dōkwanyama.

The shell is small and fusiform, the body-whorl surpassing the spire in height. The whorls are about six and the postnuclear ones are shouldered and ornamented with eleven longitudinal ribs which are strong, rounded and somewhat oblique. The spiral sculpture is absent. Height 5 millim. Diameter 1.8 millim.

Fossil occurrence.—Dōkwanyama and Kuruma-chō.

(4) CM 23655-46-20

CM 23656

(2) CM 23657

CM 23658

CM 23659

(2) CM 23669

CM 23670-46-11

(R)

CM 23671

12. *Mangilia parva*, TOKUNAGA

Pl. XLVI. Fig. 12

Pleurotoma (Mangilia) parva. Tokunaga. Foss. Env. Tokyo, p. 16.

Tokunaga left this species unfigured. But from his description, I believe, he meant the following shell:

Shell small, fusiform in outline. Whorls about seven, of which the first three are nuclear; postnuclear whorls convex near the upper suture, flattish below, and somewhat receding at the lower suture. Longitudinally plicate, with plicae about ten on the last whorl, strong, rounded, somewhat oblique, flattening towards the last part of the body-whorl. Spirally ornamented with fine impressed lines which are rather distant from one another and often indistinct. Body-whorl higher than spire. Base gradually narrowed with impressed lines quite distinct near the caudal end, making the interspaces appear like flat spiral threads. Longitudinal plicae vanishing before attaining the lower end. Aperture elongated, with outer lip thickened outside by a plica. Height 5.8 millim. Diameter 2 millim.

This species is akin to the preceding, from which it is distinguished by the presence of spiral sculpture and broader, more rounded plicae. Numerous examples.

Fossil occurrence.—Ōji.

13. *Mangilia gracilentia*, (REEVE)

Pl. XLVI. Fig. 13

Pleurotoma (Mangilia) gracilentia. Tokunaga, Foss. Env. Tokyo, p. 15, pl. I, fig. 26.

This is also a frequent shell at Ōji. It is related to *Mangilia oyumana* Yok. (Foss. Up. Musashino, p. 43, pl. I, fig. 36) from Shimōsa, but is somewhat more slender. The main spiral threads are two in number, dividing the surface of the whorls into three nearly equal parts. Between these main ones or between the lower one and the lower suture, there is usually an interstitial. The longitudinal plicae are about twelve, much flattened towards the last part of the body-whorl, although the last one just outside of the outer lip is specially large and varix-like. Height 9.5 millim. Diameter 2.6 millim.

Fossil occurrence.—Ōji.

Living.—Central and Western Japan. Philippines. North Australia.

CM 23672-46-12

CM 23673

CM 23674-46-73

CM 23675

Family Fasciolaridae

14. *Fusus nodosoplicatus*, DUNKER

Pl. XLVI. Fig. 14

CM 23683-46-14
CM 23684
Fusus nodosoplicatus. Dunker. Nov. Conch., p. 99, pl. 33, figs. 3, 4. Lischke, Jap. Meeresconch., II, p. 27, pl. III, fig. 6. Tokunaga, Foss. Env. Tokyo, p. 5, pl. I, fig. 5.

This shell resembles *Fusus perplexus* A. Adams, but is distinguished from it by a longer canal. Frequent.

Fossil occurrence.—Shinagawa.

Living.—Central Japan.

15. *Fusus nigrirostratus*, SMITH

Pl. XLVI. Fig. 21

CM 23685-46-21
RCM 23686
Fusus nigrirostratus. Smith, Proc. Zool. Soc., 1879, p. 202, pl. 20, fig. 34. Tryon, Man. Conch., p. 62, pl. 37, fig. 151.

This shell also resembles *Fusus perplexus* Adams, but has decidedly angulate whorls which are also longitudinally plicate, although plicae are indistinct on the last part of the body-whorl. Only one specimen.

Fossil occurrence.—Shinagawa.

Living.—Central and Western Japan.

Family Columbelloidae

16. *Columbella (Atilia) pumila*, DUNKER

Pl. XLVI. Fig. 10

CM 23726-46-10
Columbella pumila. Dunker, Moll. Jap., p. 6, pl. I, fig. 4. Tokunaga, Foss. Env. Tokyo, p. 11, pl. I, fig. 14.

A small short-fusiform shell whose whorls are longitudinally costate, with costae about sixteen on the last whorl. The caudal part of this whorl is devoid of costae and spirally lirate. *Columbella awana* Yok. (Moll. Coral Bed Awa, p. 13, pl. I, fig. 1) may possibly be a broad form of this species.

Only two examples, one of which is 3.6 millim. height and 1.6 millim. in diameter.

Fossil occurrence.—Tabata.

Living.—Central and Western Japan.

Family Tritonidae

17. *Triton nodiferus*, LAMARCK

Pl. XLV. Fig. 25

Triton nodiferus. Tryon, Man. Conch., III, p. 10, pl. I, figs. 2, 3, pl. III, fig. 17.*Tritonium nodiferum*. Dunker, Index, p. 27.*Triton sauliae*. Reeve, Conch. Icon., Triton, pl. V, fig. 17. Tokunaga, Foss. Env. Tokyo, p. 5, pl. I, fig. 4.

A worn and broken specimen already figured by Tokunaga in his work above cited. Although it is frequent in our seas, it is very rare as a fossil.

Fossil occurrence.—Shinagawa.

Living.—Central and Western Japan. Philippines. South Seas.

Family Cypraeidae

18. *Cypraea (Trivia) oryza*, LAMARCK

Pl. XLVI. Fig. 22

Cypraea oryza. Iwakawa, Cat. Jap. Moll. Nat. Hist. Departm., Tokyo, Imp. Museum, p. 97. Tryon, Man. Conch., VII, p. 200, pl. 21, figs. 79, 82, 83. Syst. Conch. Cab. Mart. Chemn., Cypraea, p. 171, pl. V, figs. 12, 13, pl. XLI, figs. 13-16.

A single example. The shell is spirally costellated with interspaces longitudinally partitioned by numerous striae giving them an appearance of being ornamented with pits. Height 8.3 millim. Greatest diameter 5.7 millim.

This species is essentially tropical in distribution, having never been met with in Japan until now except in the Ogasawara (Bonin) and Ryukyu Islands, although Weinkauff in the "Systematischen Conchylien Cabinet" mentions Japan as one of its habitats on the authority of Lischke. On this account, I am now in doubt whether our specimen is a real fossil. The colour of the shell is more like that of a recent one.

Fossil occurrence.—Ōji.

Living.—Southern Japan. Philippines. East Indies.

Family Vermetidae

19. *Vermetus defrenatus*, nov. spec.

Pl. XLVI. Figs. 18, 19

Shell minute, loosely coiled, prone, circular in section, with surface transversely corrugated and partly with a net-like structure. Diameter 1.5-2 millim.

CM 23735-47-25

(2)

CM 23741-46-22

LM 23754 - 46-18

CM 23755 - 46-19

CM 23756

CM 23757

Many fragments.

This shell resembles *Vermetus tokyoensis* Pilsbry (Catalogue, p. 61, pl. I, fig. 61) living in Tokyo Bay, but more loosely coiled.

Fossil occurrence.—Ōji and Shinagawa.

CM 23758-15

CM 23759-16

CM 23760-17

CM 23761

20. *Vermetus ebaranus*, nov. spec.

Pl. XLVI. Figs. 15-17

Only in fragments, but all more or less straight or sinuous, mostly circular in section, up to 10 millim. in diameter. The shell consists of two layers, the inner which is thick and the outer which is thin. The surface of the latter is ornamented with fine transverse lirae which are often connected with one another and form transversely elongated nets. The inner layer is smooth on the surface, but often uneven and covered with irregularly formed shallow depressions.

Fossil occurrence.—Shinagawa.

Family Litiopidae

(R) CM 23762-46-26

(R) CM 23763

21. *Litiopa simplex* nov. spec.

Pl. XLVI. Fig. 26

Shell small, rather thin, ovate-conic. Whorls five or six, somewhat convex, receding near the lower suture so that here a blunt angle is generally formed, smooth. Body-whorl higher than spire, with periphery subangulate. Base convex. Aperture ovate, with the lower end somewhat protruding and showing an indication of a broad channel. Inner lip with a layer of glaze, smooth. Outer lip thin and sharp. Height 5 millim. Diameter 2.7 millim. The shell seems to attain a much larger size. There is a broken specimen measuring 5 millim. in diameter.

There is a great variation in the shape of the shell, some being more slender than others.

Fossil occurrence.—Dōkwanyama.

CM 23764-46-24

22. *Diala semistriata*, (PHILIPPI)

Pl. XLVI. Fig. 24

Litiopa (Diala) semistriata. Yokoyama, Moll. Coral Bed Awa, p. 25, pl. I, fig. 20.

This living species first found fossil in the Coral Bed of Awa was again found fossil in the Musashino. But the specimen is single,

measuring 3.9 millim. in height and 1.4 millim. in diameter.

Fossil occurrence.—Dōkwanyama. Pleistocene of Awa.

Living.—Western Japan.

Family Rissoidae.

23. *Rissoa (Cingula) paludinoides*, nov. spec.

(K) CM 23765

(R) CM 23 766-46-23

Pl. XLVI. Fig. 23.

(R) CM 23767

Shell small, ovately conic. Whorls four or five, smooth, somewhat shouldered, there being a very narrow, slightly sloping shelf below the shoulder, convex. Periphery rounded. Base convex, smooth. Aperture ovate with peristome continuous. Umbilicus usually with a chink, although sometimes quite closed. Height 2.3 millim. Diameter 1.6 millim.

Fossil occurrence.—Dōkwanyama (many). Ōji (very rare).

24. *Rissoina yendoi*, nov. spec.

CM 23768-46-27

Pl. XLVI. Fig. 27

Shell small, turrete, subcylindrical. Whorls six and a half, of which one and a half are nuclear. Postnuclear whorls moderately convex, spirally closely threaded, the number of the threads being about thirteen, rather indistinct, except in the lower part of the whorl. Base convex, with several spiral threads more distinct than those of the whorls. Aperture subsemilunar, the inner lip being somewhat arched. Outer lip slightly thickened. Peristome continuous.

A single example, 4.3 millim. high and 1 millim. in diameter.

Fossil occurrence.—Kuruma-chō.

25. *Rissoina (?) pagodula*, nov. spec.

CM 23769-46-28

Pl. XLVI. Fig. 28

Shell minute, turrete, subcylindrical. Whorls about seven, convex, ornamented with many fine impressed spiral lines. Base strongly convex, similarly sculptured as the whorls. Aperture subelliptic. Height 2 millim. Diameter 0.4 millim.

Somewhat resembling the preceding species, but with a different sculpture and differently formed aperture.

A single specimen.

Fossil occurrence.—Dōkwanyama.

② CM 23774 - 46 - 25

~~CM~~ 23775

CM 23776

26. *Fenella tokunagai*, nov. spec.

Pl. XLVI. Fig. 25

Tokunaga in his "Fossils from the Environs of Tokyo" (p. 26, pl. I, fig. 54) described this species under the name of *Rissoa* (*Fenella*) *cfr. cerithina* Phil. which is a quite different one. It may be described as follows:

Shell small, pupoid. Whorls five or six, of which one is nuclear. Postnuclear whorls convex, coarsely reticulate with elevated longitudinal and spiral threads of nearly equal size. Longitudinal threads about sixteen on the body-whorl. Spiral ones two, dividing the surface of the whorls into three nearly equal parts; besides, there is a weaker one close to the upper suture, while on the body-whorl there is also one close to the lower suture. The nets formed by the two series of threads are nearly square, with the points of intersection more or less tubercular. Base convex with four spiral threads. Aperture elliptical, with peristome thickened and continuous. Outer lip varicose on the outside.

This shell is closely akin to what I described under the name of *Rissoa lusoria* from Sado (Foss. Shells fr. Sado, p. 273, pl. XXXIII, fig. 18). But the latter is more ovate in shape with aperture more circular and the outer lip not varicose outside. Height 3.5 millim. Diameter 1.5 millim.

Frequent.

Fossil occurrence.—Tabata and Dōkwan-yama.

Family Scalidae

CM 23795 - 47 - 5

27. *Scala pulcherrima*, (SOWERBY)

Pl. XLVII. Fig. 5

Scala pulcherrima. Pilsbry, Catal., p. 74.

Scaloria pulcherrima. Sowerby, Thes. Conch., I, p. 97, pl. 34, fig. 92.

This is a small ovately conical shell with spiral striae between the lamellar ribs which number about twenty on the last whorl. Up to this time, it had never been found as a fossil.

A single example, 2.2 millim. in height and 1.2 millim. in diameter.

Fossil occurrence.—Ōji.

Living.—Western Japan. Philippines.

28. *Scala lyra*, (SOWERBY)

(R) CM 23796-47-2

Pl. XLVII. Fig. 2

Scala lyra. Pilsbry, Catalogue, p. 74.*Scaloria lyra*. Sowerby, Thes. Conch., I, p. 89, pl. 33, figs. 81, 82.

This species resembles the preceding in shape. The shell has more than five whorls which are strongly convex, with about thirty ribs on the last one. Aperture oval, with a thick peristome and a strong varix on the outside of the outer lip, and another also on the penultimate whorl. Height about 5.3 millim. Diameter 3.3 millim. A single specimen only.

Fossil occurrence.—Kuruma-chō.

Living.—Central Japan.

29. *Scala replicata*, (SOWERBY)

CM 23797-47-1

Pl. XLVII. Fig. 1

Scala replicata. Pilsbry, Catal., p. 74.*Scaloria replicata*. Sowerby, Thes Conch., I, p. 84, pl. 32, figs. 23, 24.

Only one specimen. The shell is small, with whorls seven, rapidly increasing in size, convex, ornamented with nine distant lamellar ribs which are spiny at the shoulders. Aperture roundly oval. Height 3.5 millim. Diameter 1.8 millim.

Fossil occurrence.—Kuruma-chō.

Living.—Western and Southern Japan.

30. *Scala (Acrila) ojiensis*, nov. spec.(R) CM 23798-47-3
(R) CM 23799

Pl. XLVII. Fig. 3

Shell small, turrete. Whorls about eleven, of which usually three are nuclear and smooth; postnuclear whorls, convex, longitudinally costellate, with costellae thin, lamellar, elevated, subequal, about forty on the body-whorl; interspaces finely spirally striate. Periphery angulate. Base flattish, the costellae continuing into it down to the caudal end, although spiral striae are absent. Aperture elliptical. Height 8.2 millim. Diameter 2.9 millim.

Three examples, somewhat varying in the proportion of height to diameter.

Fossil occurrence.—Ōji.

CM 23800-47-4

CM 23801

31. *Scala rissinaeformis*, nov. spec.

Pl. XLVII. Fig. 4

Shell small, thick, turrete. Whorls eight or nine, of which the first one or two are nuclear; postnuclear whorls flattened in the upper one-third and convex in the lower two-thirds, longitudinally costellate and spirally striate. Longitudinal costellae about fourteen on the last whorl, strong, more or less elevated, rounded and not lamellar, narrower than interspaces, one in almost every whorl being changed into a strong varix. Spiral striae usually distinct only in interspaces, although upon the varices they are generally quite distinct. The interstices of the striae are crossed by still finer striae so that each of them is turned into a spiral row of small pits. Periphery angulate. Base flattish, with sculpture similar to that of the whorls. Aperture elliptical, surrounded on the outside by a thick varix.

Many examples. Some are more slender than others. One of the slender forms measures 8.4 millim. in height and 2.2 millim. in diameter, while one of the shorter measures 6 millim. in height and 2 millim. in diameter.

Fossil occurrence.—Ōji.

Family Eulimidae

CM 23802-47-8

(R) CM 23803

32. *Eulima* (*Leiostraca*) *shibana*, nov. spec.

Pl. XLVII. Fig. 8

Shell small, subulate. Whorls about eleven, nearly flat except those near the apex which are slightly convex, polished and smooth, with sutures indistinct. Periphery rounded. Base convex. Aperture ovate with the posterior corner acute. Outer lip somewhat produced beyond a straight line laid on the apertural side of the shell. Height 3.3 millim. Diameter 0.9 millim. Only two examples.

This species resembles *Eulima sarissa* Wat. (Challenger Gastropoda, p. 514, pl. 36, fig. 2) from Pernambuco which, however, has the outer lip produced less prominently than in the Japanese fossil.

Fossil occurrence.—Kuruma-chō.

Family Pyramidellidae

CM 23813-47-6

33. *Pyramidella* (*Tiberia*) *ebarana*, nov. spec.

Pl. XLVII. Fig. 6

Shell small, thick, elongate-conic. Whorls about nine, of which two are nuclear; postnuclear whorls almost flat, receding near the

lower suture, so that the sutures are quite distinct, smooth. Base convex. Aperture rhomboidal, with posterior corner pointed. Inner lip with two folds, the upper of which is very strong and elevated, while the lower is very weak. Outer lip with two tubercles within, the upper of which is the more prominent. A thin brownish spiral colour-band surrounds the whorls at the angle where they recede toward the suture. A single example. Height 11.2 millim. Diameter 2.3 millim.

This species is closely akin to *Pyramidella* (*Tiberia*) *japonica* Dall and Bartsch (Notes on Jap. Pyramidellidae, p. 324, pl. XXIV, fig. 2) in which, however, the whorls do not recede at the lower suture and lack the colour-band.

Fossil occurrence.—Shinagawa.

34. *Pyramidella* (*Syrnola*) *toshimana*, nov. spec.

Pl. XLVII. Fig. 9

Shell small, turrete. Whorls about ten, the first obliquely standing on edge on the second and partly immersed in it; the second and third convex, while the rest are almost flat. Sculpture absent, save for microscopic spiral lines. Periphery rounded. Base convex. Aperture ovate with a strong columellar-fold. A narrow spiral colour-band (brown) is present at the lower end of each whorl.

Two examples, one of which measures 6.8 millim. in height and 2 millim. in diameter.

Fossil occurrence.—Ōji.

35. *Pyramidella* (*Syrnola* ?) *inturbida*, nov. spec.

Pl. XLVII. Fig. 7

Shell small, turrete, somewhat pupoid. Whorls about eight, the first standing with its edge on the second; postnuclear whorls only slightly convex, perfectly smooth. Aperture semioval, pointed behind. Columellar fold very weak and indistinct. Height 6 millim. Diameter 1.5 millim. Two specimens only.

The shape of the aperture reminds us of the genus *Rissoina*, but as there is a weak, indistinct fold on the columella, I have provisionally brought it under *Pyramidella*.

Fossil occurrence.—Ōji.

36. *Odostomia* (*Odostomia*) *fujitanii*, nov. spec.

Pl. XLVII. Fig. 15

Shell small, ovato-conic. Whorls five, somewhat convex, separated

CM 23816-47-9
CM 23817

CM 23818-47-7
CM 23819

CM 23831-47-15
CM 23832

by impressed sutures, smooth. Periphery rounded. Base convex. Aperture ovate. Columella-plait strong. Height 2.7 millim. Diameter 1.2 millim. Three examples.

This shell resembles *Odostomia mauritiana* Dall et Bartsch (Notes on Jap. Pyramid., p. 363, pl. XXVI, fig. 6) which, however, has the periphery more angular. *Odostomia sublimpida* Yok. (Foss. Miura Penin., p. 82, pl. V, fig. 13) is also akin to the present species, although somewhat more slender.

Fossil occurrence.—Ōji.

CM 23 833-47-11

37. *Odostomia (Odostomia) optata*, nov. spec.

Pl. XLVII. Fig. 11

Shell small, ovately-conical. Whorls seven, smooth, convex, most convex below the sutures so that they appear subgradate. Body-whorl higher than spire. Periphery rounded. Base convex. Aperture subsemilunar. Lip-fold distinct. Height 4 millim. Diameter 2.1 millim.

One specimen only.

Fossil occurrence.—Ōji.

CM 23 836-47-10

38. *Odostomia (Egilina) affectuosa*, nov. spec.

Pl. XLVII. Fig. 10

Shell very small, ovately-conical. Whorls six, the first nuclear, rounded and smooth, the succeeding flat, separated by deep, channel-like sutures, longitudinally ribbed; ribs about eighteen on the body-whorl, rounded, slightly flexuous, oblique, the lower end projecting more than the lower, broader than, or equal to, interspaces, linked together by a spiral thread lying just above the suture. Periphery angulate, below which there is a spiral sulcus. Base rapidly narrowed downward, with faint continuations of axial ribs running into it. Aperture ovate. Outer lip rather thick. Height 2.1 millim. Diameter 0.7 millim. A single example.

The species resembles *Odostomia mariella* Dall and Bartsch (Notes on Jap. Pyramidel., p. 354, pl. XX, fig. 4) which, however, has the ribs oblique in the opposite direction, the whorls less in number and the base spirally corded. *Odostomia marielloides* Yok. of the Upper Musashino (Foss. ap. Musash., 100, pl. IV, fig. 34) is also a related form in which, however, the periphery is more rounded.

Fossil occurrence.—Kuruma-chō. Recently this species has also been found in the Coral Bed of Awa.

39. *Odostomia (Odetta) lectissimoides*, nov. spec.

CM 23838-47-12

Pl. XLVII. Fig. 12

CM 23839

Shell small, elongato-ovate. Whorls five, the first standing obliquely on edge at the summit and partly immersed in it, the rest convex, shouldered, usually with seven flattish spiral cords broader than the intervals, the uppermost as well as the lowest lying close to the respective suture and weaker than the others; interspaces ornamented with fine longitudinal threads. Periphery broadly rounded. Base quite convex with several spiral cords weaker than those of the whorls. Aperture ovate, bluntly pointed behind, the inner lip being bent in the middle. Height 2.1 millim. Diameter 0.9. Several examples.

This shell has a close resemblance to *Odostomia lectissima* Dall and Bartsch (Notes on Jap. Pyramidel., p. 358, pl. XXXIII, fig. 3), but the spiral cords are more in number and the interspaces broader.

Fossil occurrence.—Kuruma-chō.

40. *Odostomia (Iolaea) amicalis*, nov. spec.

CM 23840-47-18

Pl. XLVII. Fig. 18

CM 23841

Shell small, rather thin, elongato-conic. Whorls about seven, of which the first is nuclear; postnuclear whorls with a narrow horizontal shelf below the suture, below which the surface is vertical and somewhat convex, spirally corded. Spiral cords six on the ultimate and penultimate whorls, and five on the preceding, flattish or rounded, usually broader than interspaces, although between the second and third cords the interspace is broader and provided with an intercalary; all the interspaces are longitudinally finely lirate. Periphery rounded. Base convex, with six or seven spiral cords, the interspaces being longitudinally lirate as on the whorls. Umbilicus open, rather funnel-shaped. Aperture oval with posterior corner sharply rounded. Peristome continuous. Height 4.5 millim. Diameter 2 millim. Two specimens.

Fossil occurrence.—Ōji.

41. *Odostomia (Menestho) nishiana*, nov. spec.

CM 23842-47-14

Pl. XLVII. Fig. 14

Shell small, elongato-ovate. Whorls five, convex, shouldered, with the surface above the shoulders inclined, longitudinally and spirally threaded. Spiral threads five, equally distributed. Longitudinal threads of about the same size as the spiral, coinciding with the growth-lines,

being so to speak coarse growth-lines themselves. Base convex with several spiral threads. Imperforate. Aperture ovate, bluntly pointed behind. Height 2.4 millim. Diameter 1 millim. A single specimen.

This species is named in honour of the late Mr. Matsujiro Nishi who, as an assistant of the late Professor Brauns, rendered great service in the collection of the Ōji shells.

Fossil occurrence.—Ōji.

42. *Odostomia* (Besla) *bicinctella*, nov. spec.

Pl. XLVII. Fig. 17

Shell minute, ovately conic, with blunt apex. Whorls four, the first nuclear, flatly rounded and smooth, the rest almost flat, longitudinally costate and spirally threaded. Longitudinal costae rounded, narrower than interspaces, slightly sinuous, about twenty on the body-whorl. Spiral threads lying close to the lower suture, two on the ultimate and penultimate whorls, and only one on the second, found solely in the interspaces of the costae. Periphery rounded. Base convex with six or seven spiral threads, the costae also entering it, but gradually weakening and vanishing toward its end. Aperture ovate. Height 1.4 millim. Diameter 0.5 millim. Two examples.

Fossil occurrence.—Dōkwanyama.

43. *Odostomia* (Besla) *shibana*, nov. spec.

Pl. XLVII. Fig. 13

Shell small, elongato-conic. Nuclear whorl one, smooth, rounded. Postnuclear whorls six, one or two less in younger individuals, somewhat convex, longitudinally plicate and spirally threaded. Longitudinal plicae about twenty-five on the penultimate whorl, increasing in number and becoming at the same time indistinct toward the last part of the body-whorl, rounded, somewhat sinuous, oblique with the lower end more forward, equal to interspaces in breadth. Spiral threads two, situated above the lower suture, appearing only in the interspaces of the plicae. On the body-whorl there is one more thread at the rounded periphery. Base convex with several fine spiral threads, while the longitudinal plicae entering it become weaker and finally vanish. Aperture ovate. Height 3.4 millim. Diameter 1 millim.

Several examples.

Fossil occurrence.—Kuruma-chō.

CM 23843-47-17

CM 23844

CM 23845-47-13

CM 23846

44. *Turbonilla (Chemnitzia) dunkeri*, CLESSIN

Pl. XLVII. Fig. 21

(R) CM 23848-47-21
CM 23849

Turbonilla (Chemnitzia) dunkeri. Dall and Bartsch, Notes on Japanese Pyramidellidae, Proc. United States Nat. Museum, vol. XXX, p. 336, pl. XX, fig. 3.

The species is fully described in the work above cited. The shell is elongate-conic with very slightly rounded whorls, the last bearing about twenty-one longitudinal ribs. The interspaces between the ribs are about as wide as the ribs themselves. Periphery slightly angulate. Aperture subquadrate, with the posterior angle obtuse.

Only two examples, one of which measures 4.8 millim. in height and 1.4 millim. in diameter.

Fossil occurrence.—Shinagawa.

Living.—Western Japan.

45. *Turbonilla (Chemnitzia) multigyrate*, DUNKER

Pl. XLVII. Fig. 20

CM 23850-47-20
CM 23851

Turbonilla (Chemnitzia) multigyrate. Dall and Bartsch, Notes on Japan. Pyramid., p. 335, pl. XX, fig. 4.

Turbonilla multigyrate. Dunker, Index, p. 79, pl. XIII, figs. 18-20.

This species shows a great resemblance to the preceding, but its whorls and longitudinal ribs are more numerous. The sutures are more or less channelled.

Two examples which are both immature.

Fossil occurrence.—Kuruma-chō.

Living.—Japan (Dunker).

46. *Turbonilla (Chemnitzia) keiskeana*, nov. spec.

Pl. XLVII. Fig. 19

CM 23852-47-19

Shell small, elongato-conic, pointed at apex. Postnuclear whorls nine, on the summit of which the nuclear whorl stands on edge, almost flat, slightly receding at the lower suture, longitudinally costate. Costae about sixteen on the last whorl, one less on the preceding one, strong, rounded, broader than interspaces, oblique, somewhat sinuous. Periphery rounded. Base convex, smooth. Aperture oval.

A single specimen measuring 4.3 millim. in height and 1 millim. in diameter.

Named in honour of the late Keiské Katō who frequently assisted the late Professor Brauns in collecting the fossils of Ōji.

Fossil occurrence.—Ōji.

CM 23853-47-24

47. *Turbonilla* (*Chemnitzia*) *edoensis*, nov. spec.

Pl. XLVII. Fig. 24

Shell small, elongato-conic. Nuclear whorls standing on edge at the summit. Postnuclear whorls six, almost flat, longitudinally costate. Costae eighteen on the last whorl and two less on the penultimate, broadly rounded, broader than intervals, straight, vertical, much flattened in the last part of the last whorl. Periphery rounded. Base convex, the costae more or less running into it and then vanishing. Aperture subovate; inner lip bent in the middle; outer lip thick. Height 4.5 millim. Diameter 1 millim.

One example only.

Fossil occurrence.—Kuruma-chō.

CM 23856-47-22

CM 23857

48. *Turbonilla* (*Mormula*) *semicolorata*, nov. spec.

Pl. XLVII. Fig. 22

Shell small, subcylindric. Nuclear whorls standing obliquely on edge at the summit. Postnuclear whorls eleven, flat, slightly concave in the middle, longitudinally costate. Costae varying somewhat in number, twenty to twenty-three on the last whorl, usually straight and vertical, although sometimes a little oblique in the younger whorls, rounded, broader than interspaces which are spirally striate. Periphery rounded. Base convex, with costae just entering it and then immediately vanishing. Aperture subquadrate, the upper side coinciding with the upper part of the inner lip being oblique. Outer lip sharp, but with a rib on the outside. Height 7.3 millim. Diameter 3.5 millim. A few examples.

The lower half of the whorls seems to have been coloured brown, as there is still a faint trace of that colour in every one of the specimens.

Fossil occurrence.—Kuruma-chō.

CM 23862-47-16

49. *Turbonilla* (*Ptycheulimella* ?) *kurumana*, nov. spec.

Pl. XLVII. Fig. 16

A single example lacking the apex, the whorls intact being eight.

The shell is small, elongato-conic. The first three whorls are convex, comparatively high and nearly equal in diameter; the rest are rapidly grown, nearly flat and smooth. Periphery rounded. Base convex. Aperture four-sided, the posterior side being oblique and longest. A narrow spiral colour-band is present close to the lower suture appearing on the body-whorl at the periphery. Height without apex 4 millim. Diameter 1.2 millim.

Fossil occurrence.—Kuruma-chō.

50. *Turbonilla* (*Pyrgolampros*) *subplanicostata*, nov. spec.

Pl. XLVII. Fig. 23

CM 23863-47-23
CM 23864

Shell small, elongato-conic. Postnuclear whorls eleven, convex, most convex in the lower half, longitudinally costate and spirally striate. Costae about thirty on the body-whorl, flatly rounded, separated by much narrower interspaces, flattening and becoming indistinct on the last part of the body-whorl, slightly sinuous, vertical. Spiral striae very fine, only visible in the interspaces of the costae. Periphery rounded. Base convex, the costae entering it for only a short distance, when their lower ends become weak and disappear. Aperture oval. Height 3.7 millim. Diameter 1.8 millim. A single specimen.

There are two narrow spiral colour-bands, one in the middle of the whorl and the other close to the lower suture.

This shell is allied to *Turbonilla planicostata* Yok. (Foss. Up. Musash., p. 104, pl. V, fig. 11), but has a greater number of whorls as well as of costae.

Fossil occurrence.—Ōji.

51. *Turbonilla* (*Pyrgisculus*) *shigeyasui*, nov. spec.

Pl. XLVII. Fig. 26.

(2) CM 23865-47-26
(2) CM 23866

Pyramidella spirata. Tokunaga, Foss. Env. Tokyo, p. 23, pl. I, fig. 47.

Tokunaga took this shell for *Pyramidella spirata*, A. Adams, as can be judged from his description. But as it has no columella-fold, it must be brought under *Turbonilla*.

The shell is small, elongato-conic in form and consists of nine whorls which are tabulated, there being a narrow sloping shelf below the suture. The surface below the shelf is gently convex and longitudinally costellate as well as spirally striate. The costellae number about twenty on the body whorl, rounded, straight, slightly oblique, narrower than the interspaces and weakening both above and below toward the sutures. The spiral striae are about ten, all of which are on the convex surface and not on the shelf, distant from one another and most distinct between the costellae. Periphery rounded. Base convex, provided only with spiral striae which are about ten in all. Aperture oval, the sharper end being behind. Height 6 millim. Diameter 2.2 millim. A few examples.

Fossil occurrence.—Tabata and Dōkwanyama.

Family Trochidae

52. *Enida japonica*, A. ADAMS

Pl. XLVIII. Fig. 1

Enida japonica. A. Adams, Ann. Mag. Nat. Hist., 1860, p. 408. Dunker, Index, p. 144, pl. XII, figs. 17, 18.

A low-conical, widely umbilicate and spirally corded shell with channelled sutures.

Several examples.

Fossil occurrence.—Shinagawa.

Living.—Western Japan.

53. *Monilea ojiensis*, nov. spec.

Pl. XLVII. Fig. 27

Shell small, nacreous within, depressed-turbinate. Whorls about five, rapidly increasing in size, somewhat flattened and horizontal near the upper suture, below convex, spirally corded; cords three, rounded, broader than intervals, one at the boundary between the flat and convex surfaces, two on the latter. On the body-whorl there are six, the uppermost weak and the lowest situated on the rounded periphery. Base convex, smooth. Umbilicus large, surrounded with double spiral cords of which the outer is rather indistinct. Spiral funicle strong, with end reflected outward. Aperture subquadrate. Outer lip thin.

A single example, 1.8 millim. in height and 2.6 millim. in diameter.

Fossil occurrence.—Ōji.

Family Cyclostrematidae

54. *Cyclostrema lamellata*, nov. spec.

Pl. XLVIII. Fig. 5

Shell small, depressed. Whorls four, convex, circular in cross-section. Growth-lines conspicuous, elevated so as to make the whorls appear densely lamellate. Umbilicus very wide. Aperture quite circular with continuous peristome, the outer layer of which is reflected outward so that it looks double. A slight constriction is present on the last whorl at a short distance from the aperture. Height 2 millim. Diameter 4 millim. Two examples.

Fossil occurrence.—Ōji.

CM 23875-48-1
CM 23876

CM 23877-47-27

CM 23887-48-5
CM 23890

Family Patellidae

55. *Helcioniscus toreuma*, (REEVE)

R CM 23892-48-4

Pl. XLVIII. Fig. 4

Patella toreuma. Reeve, Conch., Icon., Patella, pl. 27, fig. 69. Lischke, Jap. Meeresconch., I, p. 109, pl. VIII, figs. 12-15, II, p. 102, pl. VI, fig. 12.

Helcioniscus toreuma. Pilsbry, Catal., p. 118.

Patella amussitata. Reeve, Conch. Icon., Patella, pl. 33, Fig. 83. Schrenck, Nordjap. Moll., pl. XIV, figs. 4, 5.

Two worn young specimens.

Fossil occurrence.—Tabata.

Living.—Northern, Central and Western Japan.

II. SCAPHOPODA

Family Dentaliidae

56. *Dentalium yamakawai*, nov. spec.

① CM 23903

CM 23904

Pl. XLVIII. Fig. 6

② CM 23905

Shell small, curved, rapidly increasing in size, circular in cross-section, anterior end slightly oblique, posterior opening circular; surface perfectly smooth. ③ CM 23906-48-6
④ CM 23907

A nearly perfect example 14 millim in length is 1 millim. in diameter at the anterior end and 0.4 millim. at the posterior.

Fossil occurrence.—Ōji, Tabata, Kuruma-chō and Shinagawa.

57. *Dentalium semipolitum*, BRODERIP et SOWERBY

CM 23901-48-7

Pl. XLVIII. Fig. 7

CM 23902

Dentalium semistriatum var. *semipolitum*. Tryon, Man. Conch., XVII. p. 91, pl. XVI, fig. 54.

Pilsbry in Tryon's Manual of Conchology gives the diagnosis of this species as follows:

"Shell slender, moderately or decidedly curved, attenuated toward the apex; rather thin, milk-white and very glossy. Sculpture: deeply engraved with very numerous, fine, close, subequal, longitudinal striae, extending from the apex downward one-third to two-thirds the shell's length (and of course covering the entire length of young shells); the remaining one- or two-thirds smooth and polished, brilliant, scarcely

showing growth-lines. Aperture circular with peristome thin. Anal orifice minute and round, no notch or slit."

This species was first described from the west coast of America, but is also living in Japan. Several specimens.

Fossil occurrence.—Shinagawa.

Living.—Central and Western Japan. West coast of America, south of San Diego in California.

III. LAMELLIBRANCHIATA

Family Pholadidae

- CM 23909-48-2. 58. *Martesia striata*, (LINNÉ) var. *tokyoensis*, YOKOYAMA

Pl. XLVIII. Figs. 2, 3

CM 23910-48-3

CM 23911

Martesia striata, Tokunaga, Foss. Env. Tokyo, p. 35, pl. II, fig. 18.

The specimens are frequent, but are invariably bluntly pointed behind, while the figure of the species given in Sowerby's Thesaurus (pl. CIV, fig. 42) represents the posterior end as truncate. Perhaps his figure 43, plate CV is more like ours, although it is still far from the shape of the latter. On this account I treat the Japanese fossil for the present as a variety under the name of *tokyoensis*.

Fossil occurrence.—Tabata.

Living.—The typical form of *Martesia striata* is living in Western Japan as well as in the Atlantic Ocean.

Family Cardiliidae

CM 23925

59. *Cardilia semisulcata*, (LAMARCK)

Pl. XLVIII. Fig. 16

Isocardia semisulcata. Lamarck, Anim. sans Vert., Ed. 2, Vol. 6, p. 447.

Cardilia semisulcata. Dunker, Ind. Moll., p. 213, pl. VIII. figs. 1-3.

A single right valve 8.5 millim. high, 5.5 millim. long and 3.6 millim. deep. It has a longitudinally oval shape and has the posterior half of the surface coarsely radiately sulcated. The shell is very rare, fossil as well as living.

Fossil occurrence.—Kuruma-chō.

Living.—Japan (Dunker). South Seas. Indian Ocean.

Family Mactridae

60. *Lutraria sieboldtii*, DESHAYES

Pl. XLIX. Figs. 8, 9

Lutraria sieboldtii. Deshayes, Proc. Zool. Soc., 1854, p. 71. Reeve, Conch. Icon., *Lutraria* spec. 15. CM 23944-49-8
~~CM 23945-49-9~~

Lutraria ovalis. Tokunaga, Foss. Env. Tokyo, p. 41. Pl. II. fig. 28.

Comparison with the figure of *Lutraria sieboldtii* Desh. given in the Conchologia Iconica of Reeve shows that the specimens named *Lutraria ovalis* by Tokunaga are quite identical.

Fossil occurrence.—Shinagawa.

Living.—Central and Western Japan.

Family Semelidae

61. *Theora lubrica* GOULD

Pl. XLVIII. Figs. 11, 12

Theora lubrica. Gould, Otia Conchologica, p. 162. Dunker, Index, p. 181, pl. VII, figs. 20-22. CM 23957-48-11
CM 23958-48-12
CM 23959

This shell is small, thin, compressed, transversely elongato-oval, with the anterior end more sharply rounded than the posterior. The inner side of both valves is furnished with an oblique rib in the posterior part.

Frequent.

Fossil occurrence.—Kuruma-chō.

Living.—Northern, Central and Western Japan.

Family Veneridae

62. *Meretrix gordonis*, nov. spec.

Pl. XLVIII. Figs. 13, 14

Shell very small, rather thick, roundly ovate, convex, about as high as long, somewhat inequilateral, with anterior side a little shorter than posterior, rounded both in front and behind, although somewhat more broadly in the latter, antero-and postero-dorsal borders sloping, the former straight and the latter slightly arched. Surface smooth, with only rude lines of growth. Beaks small, prominent. Lunula short-lanceolate, bounded on both sides by an impressed line. Main teeth

CM 24001-48-13
CM 24002-48-14
CM 24003
CM 24004

three, diverging; lunular tooth of the left valve horizontal and prominent. Pallial line indistinct. Not rare.

One of the left valves measures 2.8 millim. in length and height, and 1.1 millim. in depth, while one of the right measures 2.7 millim. in length, 2.6 millim. in height and 1.1 millim. in depth.

Fossil occurrence.—Kuruma-chō and Shinagawa.

CM 24007-50-3

63. *Venus rigida*, GOULD

CM 24008-50-4

Pl. L. Figs. 3, 4

CM 24009

Venus rigida. Gould, Otia Conch., p. 85.

Tapes rigidus. Brauns, Geol. Env. Tokio, p. 39, pl. V. fig. 19. Tokunaga, Foss. Env. Tokyo, p. 40.

This is a large beautiful shell, convex and oval in shape, very inequilateral and ornamented on the surface with concentric lamellae and fine radiating striae. The shell, so to speak, combines the characters of the genus *Venus* with those of the genus *Tapes*: Namely, like the former there is a distinct lunula and the shell-borders are crenulate, while the pallial sinus as in the latter is deep and somewhat ascending with the end bluntly pointed.

Hitherto found only at Ōji. The specimens are frequent, especially the immature ones.

Fossil occurrence.—Ōji.

Living.—Northern Japan (Brauns). Puget Sound.

Family Cardiidae.

CM 24040-48-15

64. *Cardium ebaranum*, nov. spec.

CM 24041

Pl. XLVIII. Fig. 15.

Shell small, rather thin, ventricose, oval in outline, with postero-ventral corner as the sharper end, rounded in front, obliquely truncate behind, with postero-ventral corner roundly angulate, very inequilateral, radiately ribbed. Ribs about thirty-three, flat, elevated, separated by narrower interspaces, longitudinally striate, the striae few in number, ornamented with a longitudinal row of inverted V-shaped scales which are at equal distances from one another except near the ventral border where they are closer. A blunt posterior edge runs from the beak to the postero-ventral corner. Dentition: of the two main teeth of the right valve, the anterior is process-like, short and horizontal.

Only two right valves, one of which measures 9.3 millim. in height, 11.5 millim. in length and 4.3 millim. in depth.

The species resembles *Cardium adamsi* Ad. et Rve. (Zool. Samarang, p. 77, pl. XXII, fig. 2) of Borneo, which, however, has the shell more quadrate and the scales differently formed.

Fossil occurrence.—Shinagawa.

Family Leptonidae

65. *Kellia subelliptica*, nov. spec.

Pl. XLVIII. Figs. 9, 10

Shell small, rather thin, smooth, convex, transversely subelliptical, rounded in front and behind, although decidedly more sharply in front, inequilateral, with posterior side nearly twice as long as anterior, Dentition: only one process-like tooth in each valve. Two right and two left valves. One of the former measures 3.6 millim. in length, 1.8 millim. in height and 0.8 in depth; while one of the latter measures 4.1 millim. in length, 3 millim. in height and 1 millim. in depth.

Closely akin to *Kellia elliptica* Scacchi (Wood, Crag Moll., Bivalves, p. 121, pl. XII, fig. 13) which, however, has the shell more regularly elliptical in form and comparatively higher.

Fossil occurrence.—Dōkwanyama.

66. *Kellia fujitaniana*, nov. spec.

Pl. XLVIII. Figs. 17, 18

This shell resembles the preceding in general form, but transversely is more elongated with the anterior and posterior ends nearly equally rounded, so that the outline is rather regularly oblong. Moreover, the inequilateral nature is more marked, the posterior side being almost three times as long as the anterior. Surface smooth.

There are several specimens. One of the right valves is 6.8 millim. long, 4 millim. high and 16 millim. deep; while one of the left is 6.2 millim. long, 3.7 millim. high and 1.4 millim. deep.

Fossil occurrence.—Ōji.

67. *Kellia pumila*, S. Wood

Pl. XLIX. Figs. 1, 2

Kellia pumila. S. Wood, Crag Moll. Bivalves, p. 124, pl. XII, fig. 15. Pilsbry, Catalogue, p. 130.

CM 24042-48-9

CM 24043-48-10

CM 24044

CM 24045-48-17

CM 24046-48-18

CM 24047

CM 24048-49-1

CM 24049-49-2

This is a small transversely ovate shell, very inequilateral and with two lateral teeth besides one main one. A perfect left valve and a broken right.

Fossil occurrence.—Kuruma-chō.

Living.—Western Japan.

(P) CM 24050-50-7

68. *Kellia* (?) *ojiana*, nov. spec.

(P) CM 24051-50-8

Pl. L. Figs. 7, 8

CM 24052

Shell very small, moderately thick, convex, ovately trigonal, about as high as long, somewhat inequilateral, rounded in front and behind, though more sharply behind. Surface smooth. Beaks small, pointed. Teeth, one in each valve. A right valve measures 2 millim. in length and height and 0.7 millim. in depth; a left measures 2 millim. in length, 1.9 millim. in height and 0.7 millim. in depth.

Quite numerous.

Fossil occurrence.—Ōji.

CM 24059-48-8

69. *Montacuta subtruncata*, nov. spec.

Pl. XLVIII. Fig. 8

A single left valve.

The shell is very small, rather thin, convex, transversely elliptical, truncate in front and rounded behind, inequilateral. The surface is smooth, with an indistinct posterior edge. Teeth two, diverging. Length 2 millim. Height 1.4 millim. Depth 0.4 millim.

This species shows a close resemblance to *Montacuta truncata* Wood (Crag Moll., Bivalves, p. 127, pl. XII, fig. 16) but the posterior part is higher.

Fossil occurrence.—Ōji.

CM 24060-49-4

70. *Montacuta* (?) *crassa*, nov. spec.

CM 24061-49-5

Pl. XLIX. Figs. 4, 5

CM 24062

Shell very small, thick, convex, ovato-trigonal, somewhat inequilateral, with anterior side a little longer than posterior, rounded both in front and behind, though more sharply in the latter. Surface concentrically furrowed. Dentition: two strong diverging teeth in the right valve, the shell-margin on both sides of them made double by a longitudinal groove found in its middle. One of the right valves measures 3.4

millim. in length, 3.3 millim. in height and 1.1 millim. in depth, while one of the left measures 3.1 millim. in length, 3 millim. in height and 1.1 millim. in depth. Frequent.

Fossil occurrence.—Ōji.

71. *Thyasira gouldii*, (PHILIPPI)

CM 24063-50-9

Pl. L. Fig. 9

Thyasira gouldii. Yabé and Nomura, Notes on the Recent and Tertiary Species of *Thyasira* from Japan, p. 94, pl. XXIII, figs. 6 ab (Sci. Rep. Tohoku Imp. Univ., II Series, Vol. II, No. 4).

Yabé and Nomura, in the work above cited, figured a left valve of this shell collected at Shinagawa. I, too, possess a left valve found in the same locality, which is shown in our figure.

Fossil occurrence.—Shinagawa. Pliocene and Pleistocene of California.

Living.—Northern Japan. East coast of America from Greenland down to Connecticut.

Family Diplodontidae

72. *Diplodonta lunaris*, nov. spec.

CM 24068

Pl. L. Figs. 5, 6

CM 24069-50-5

CM 24070-50-6

CM 24071

Shell small, thin, inflated, suborbicular, slightly inequilateral, broadly rounded in front and behind, though generally more so in front, broadly arched at ventre or often also almost straight in its middle portion. Surface smooth, with distinct, more or less raised, concentric lines. Beaks small, acute. Teeth two in each valve, thicker in the right valve than in the left, the posterior in the right valve and the anterior in the left being bifid, while the posterior in the left valve is thin compared with the others. Right valve: length 7.3 millim., height 7 millim., depth 3.3 millim. Left valve: length 7 millim., height 6.4 millim., depth 3.3 millim.

Frequent.

Gould in his *Otia Conchologica* p. 212, describes a species similar to the Japanese from San Diego under the name of *Diplodonta orbella* which, however, seems to be a much larger shell.

Fossil occurrence.—Kuruma-chō and Shinagawa.

Family Lucinidae

CM 24080-50-1

CM 24081-50-2

CM 24082

73. *Loripes philippiana*, (REEVE)

Pl. L. Figs. 1, 2

Loripes philippiana. Pilsbry, Catalogue, p. 133.*Lucina philippiana*. Reeve, Conch. Icon., *Lucina*, spec. 23.

This is a large, thin-shelled, orbicular, ventricose shell quite edentulous and resembling *Lucina edentula* Chem. (Reeve, Conch. Icon, Species 9) and *Loripes bialata* Pilsbry, (Catalogue, p. 133) in form. The lunula is large, but rather indistinctly marked. Frequent.

Fossil occurrence.—Kuruma-chō.

Living.—Central and Western Japan.

Family Crassatellidae

(R) CM 24088-49-11

CM 24089

74. *Crassatella nana*, A. ADAMS et REEVE

Pl. XLIX. Fig. 11

Crassatella nana. Adams and Reeve, Voy. Samarang, p. 81, pl. 23, fig. 2.

This is the shell described by Adams and Reeve as "subtrigonally ovate, compressed, concentrically furrowed, etc." It is rounded in front and truncate behind. Four isolated valves.

Fossil occurrence.—Shinagawa.

Living.—Eastern seas (Adams and Reeve).

Family Cuspidariidae

CM 24096-49-7

75. *Cuspidaria (Cardiomya) gouldiana*, HINDS

Pl. XLIX. Fig. 7

Cuspidaria (Cardiomya) gouldiana. Pilsbry Catal., p. 136.

Naeva gouldiana. Hinds, Ann. Mag., Nor. 1868, p. 367. Dunker, Index. p. 180. Tokunaga, Foss. Env. Tokyo, p. 39, pl. II, fig. 23.

A single left valve. It is a neat little shell with about twelve radiating ribs on the surface, occasionally also with an intercalary. Length 11 millim. Height 7.2 millim. Depth 3.5 millim.

Fossil occurrence.—Shinagawa.

Living.—Central and Western Japan.

Family Mytilidae

76. *Modiola senhausii*, REEVE

CM 24107-49-6

Pl. XLIX. Fig. 6

(2)

Modiola senhausii. Reeve, Conch. Icon., Species 22. Dunker, Index, p. 224.
Lischke, Jap. Meeresconch., II, p. 147.

A thin, swollen, elongated shell, rounded behind and excavated at the ventral border. A single right valve.

Fossil occurrence.—Shinagawa.

Living.—Northern, Central and Western Japan. China.

77. *Crenella spectabilis*, A. ADAMS

CM 24111-49-3

Pl. XLIX. Fig. 3

CM 24112

Crenella spectabilis. Pilsbry, Cat., p. 141. Ann. Mag., 1862, p. 228.

This is a thin, inflated, oblongo-orbicular shell, somewhat higher than long, with the antero-dorsal and ventral borders crenulate, and the postero-dorsal lamellar. The surface-sculpture consists of very fine radiating striae. Beaks inflated, prominent.

A broken right and a broken left valve. The former measures 15.7 millim. in height about 13.5 millim. in length and 5.8 millim in depth.

Fossil occurrence.—Kuruma-chō.

Living.—Western Japan.

Family Solemyidae

78. *Solemya yamakawai*, nov. spec.

CM 24172-50-10

Pl. L. Figs. 10, 11

RCM 24173-50-11

Shell rather small, thin, transversely elongated, inflated, very inequilateral, the posterior side being more than four times the anterior, subtruncate in front, rounded behind, antero-dorsal border sloping, somewhat excavated, meeting with anterior border at an angle little greater than a right angle, postero-dorsal only slightly arched, so that it may be taken for nearly straight, ventral almost straight, slightly excavated in the middle, and parallel with the postero-dorsal. Surface radiately striated, with striae straight and rather distant from one another. Lunula well defined, broadly lanceolate.

A perfect shell with both valves intact measures 12 millim. in length, 3 millim. in height and thickness. A left valve about 16 millim. long is 5.8 millim. high and 2.3 millim. deep.

Fossil occurrence.—Oji.

IV. BRACHIOPODA

Family Lingulidae

79. *Lingula hians*, SWAINSON

Pl. XLIX. Fig. 10

Lingula hians. Tokunaga, Foss. Env. Tokyo, p. 69, pl. IV., fig. 10.

A single, partly broken valve, already mentioned by Tokunaga in his work above cited.

Fossil occurrence.—Ōji.

Living.—Central Japan. China Sea.

Pic B 24176-49-10

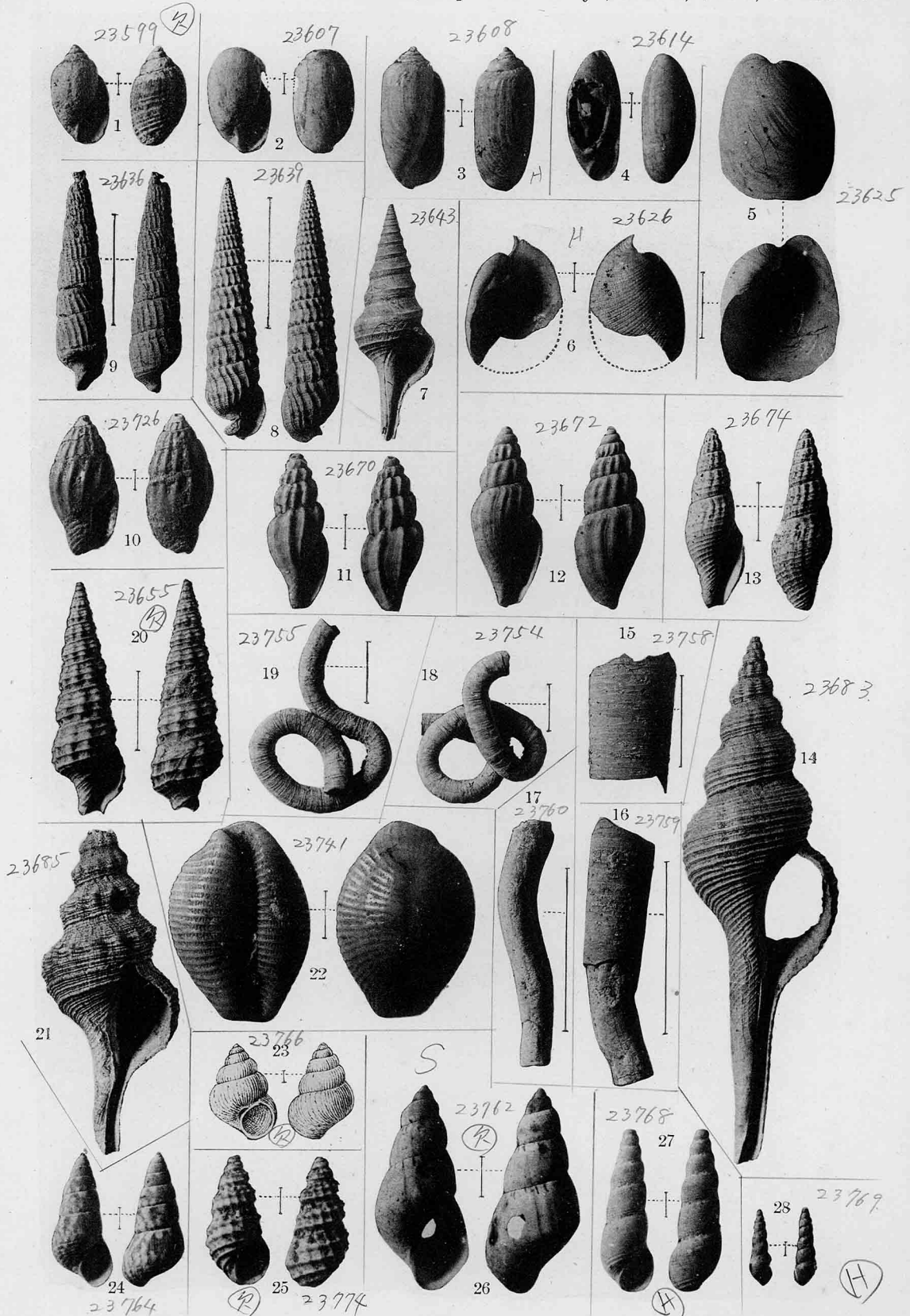
✓

INDEX OF DESCRIBED SPECIES

	Page		Page
<i>Actaeon tornatilis nipponensis</i> Yam.	406	<i>Odostomia bicinctella</i> Yok.	422
<i>Cardilia semisulcata</i> Lam.	428	„ <i>fujitanii</i> Yok.	419
<i>Cardium ebaranum</i> Yok.	430	„ <i>lectissimoides</i> Yok.	421
<i>Columbella pumila</i> Dkr.	412	„ <i>nishiana</i> Yok.	421
<i>Crassatella nana</i> Ad. et Rve.	434	„ <i>optata</i> Yok.	420
<i>Crenella spectabilis</i> Ad.	435	„ <i>shibana</i> Yok.	422
<i>Cuspidaria gouldiana</i> Hinds.	434	<i>Philina japonica</i> Lke.	408
<i>Cyclostrema lamellata</i> Yok.	426	„ <i>ornatissima</i> Yok.	408
<i>Cypraea oryza</i> Lam.	413	<i>Pleurotoma oxytropis</i> Sow.	409
<i>Dentalium semipolitum</i> Bets.	427	<i>Pyramidella ebarana</i> Yok.	418
<i>Dentalium yamakawai</i> Yok.	427	„ <i>inturbida</i> Yok.	419
<i>Diala semistriata</i> Phil.	414	„ <i>toshimana</i> Yok.	419
<i>Diplodonta lunaris</i> Yok.	433	<i>Rissoa paludinoides</i> Yok.	415
<i>Drillia fortilirata</i> Sm.	410	<i>Rissoina yendoi</i> Yok.	415
<i>Enida japonica</i> Ad.	426	„ <i>pagodula</i> Yok.	415
<i>Eulima shibana</i> Yok.	418	<i>Scala lyra</i> Sow.	417
<i>Fenella tokunagai</i> Yok.	416	„ <i>ojiensis</i> Yok.	417
<i>Fusus nigrirostratus</i> Sm.	412	„ <i>pulcherrima</i> Sow.	416
<i>Fusus nodoso-plicatus</i> Dkr.	412	„ <i>replicata</i> Sow.	417
<i>Helcioniscus toreuma</i> Rve.	427	„ <i>rissoinaeformis</i> Yok.	418
<i>Kellia fujitaniana</i> Yok.	431	<i>Solemya yamakawai</i> Yok.	435
„ <i>ojiana</i> Yok.	432	<i>Terebra edoensis</i> Yok.	409
„ <i>pumila</i> Wood	431	„ <i>textilis</i> Hinds.	409
„ <i>subelliptica</i> Yok.	431	<i>Theora lubrica</i> Gld.	429
<i>Lingula hians</i> Swains.	436	<i>Thyasira gouldii</i> Phil.	433
<i>Litiopa simplex</i> Yok.	414	<i>Tornatina fontinalis</i> Yok.	407
<i>Loripes philippiana</i> Rve.	434	„ <i>simplex</i> Ad.	406
<i>Lutraria sieboldtii</i> Desh.	429	<i>Triton nodiferus</i> Lam.	413
<i>Mangilia gracilenta</i> Rve.	411	<i>Turbonilla dunkeri</i> Cl.	423
„ <i>parva</i> Tok.	411	„ <i>edoensis</i> Yok.	424
„ <i>tabatensis</i> Tok.	410	„ <i>keiskeana</i> Yok.	423
<i>Martesia striata tokyoensis</i> Yok.	428	„ <i>kurumana</i> Yok.	424
<i>Meretrix gordonis</i> Yok.	429	„ <i>multigrata</i> Dkr.	423
<i>Modiola senhausii</i> Rve.	435	„ <i>semicolorata</i> Yok.	424
<i>Monilea ojiensis</i> Yok.	426	„ <i>shigeyasui</i> Yok.	425
<i>Montacuta crassa</i> Yok.	432	„ <i>subplanicostata</i> Yok.	425
<i>Montacuta subtruncata</i> Yok.	432	<i>Venus rigidus</i> Gld.	430
<i>Odostomia affectuosa</i> Yok.	420	<i>Vermetus defrenatus</i> Yok.	413
„ <i>amicalis</i> Yok.	421	„ <i>ebaranus</i> Yok.	414
		<i>Volvula artiaperta</i> Yam.	407

Plate XLVI

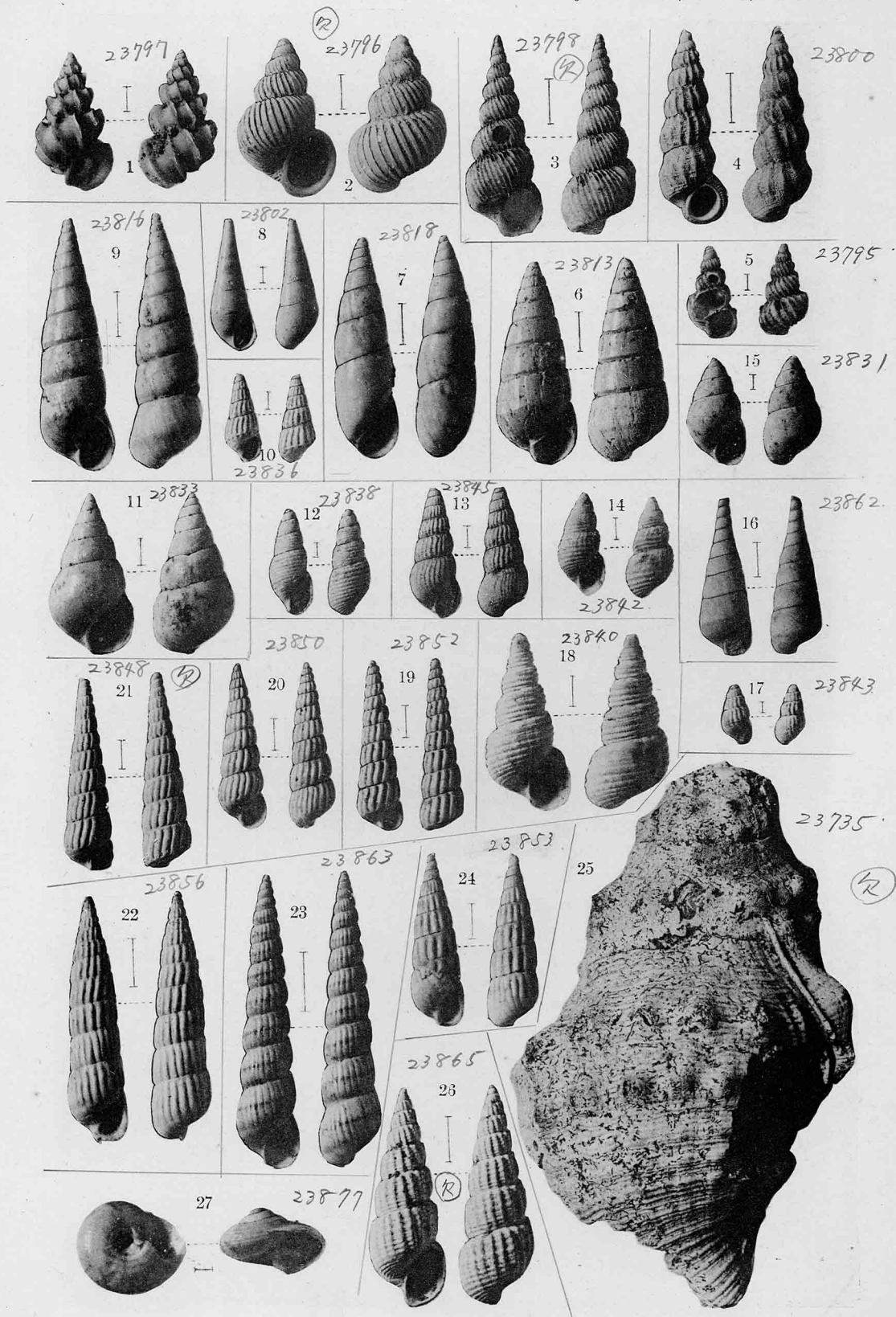
- Fig. 1. *Actaeon tornatilis* (L.) var. *nipponensis* Yok. Ōji. P. 405
 Fig. 2. *Tornatina simplex* (Ad.) Kuruma-chô. P. 406
 Fig. 3. *Tornatina fontinalis* Yok. Sendagaya. P. 407
 Fig. 4. *Volvula artiaperta* Yam. Kuruma-chô. P. 407
 Fig. 5. *Philine japonica* Lke. Ōji. P. 408
 Fig. 6. *Philine ornatissima* Yok. Kuruma-chô. P. 408
 Fig. 7. *Pleurotoma oxytropis* Sow. Shinagawa. P. 409
 Fig. 8. *Terebra edoensis* Yok. Kuruma-chô. P. 409
 Fig. 9. *Terebra textilis* Hinds. Shinagawa. P. 409
 Fig. 10. *Columbella (Atilia) pumila* Dkr. P. 412
 Fig. 11. *Mangilia tabatensis* Tok. Dôkwanyama. P. 410
 Fig. 12. *Mangilia parva* Tok. Ōji. P. 411
 Fig. 13. *Mangilia gracilentia* (Rve.). Ōji. P. 411
 Fig. 14. *Fusus nodoso-plicatus* Dkr. Shinagawa. P. 412
 Fig. 15-17. *Vermetus ebaranus* Yok. Shinagawa. 15. Shows surface. 16. Lower half devoid of the outer layer. 17. Quite devoid of the outer layer showing only the inner. P. 417
 Fig. 18, 19. *Vermetus defrenatus* Yok. Ōji. P. 413
 Fig. 20. *Drillia fertilirata* Sm. Ōji. P. 410
 Fig. 21. *Fusus nigrirostratus* Sm. Shinagawa. P. 412
 Fig. 22. *Cypraea (Trivia) oryza* Lam. Ōji. P. 413
 Fig. 23. *Rissoa (Cingula) paludinoides* Yok. Dôkwanyama. P. 415
 Fig. 24. *Diala semistriata* (Phil.) Dôkwanyama. P. 414
 Fig. 25. *Fenella tokunaga*; Yok. Tabata. P. 416
 Fig. 26. *Litiopa simplex* Yok. Dôkwanyama. P. 414
 Fig. 27. *Rissoina yendoi* Yok. Kuruma-chô. P. 415
 Fig. 28. *Rissoina pagodula* Yok. Dôkwanyama. P. 415



M. YOKOYAMA: Mollusca from the Upper Musashino of Tokyo and its Suburbs.

Plate XLVII

- Fig. 1. *Scala replicata* (Sow.). Kuruma-chô. P. 417
- Fig. 2. *Scala lyra* (Sow.). Kuruma-chô. P. 417
- Fig. 3. *Scala (Acrila) ojiensis* n. sp. Ôji. P. 417
- Fig. 4. *Scala rissoinaeformis* n. sp. Ôji. P. 418
- Fig. 5. *Scala pulcherrima* (Sow.). Ôji. P. 416
- Fig. 6. *Pyramidella (Tiberia) ebarana* n. sp. Shinagawa. p. 418
- Fig. 7. *Pyramidella (Syrnola ?) inturbida* n. sp. Ôji. P. 419
- Fig. 8. *Eulima (Leiostraca) shibana* n. sp. Kuruma-chô. P. 418
- Fig. 9. *Pyramidella (Syrnola) toshimana* n. sp. Ôji. P. 419
- Fig. 10. *Odostomia (Egilina) affectuosa* n. sp. Kuruma-chô. P. 420
- Fig. 11. *Odostomia (Odostomia) optata* n. sp. Ôji. P. 420
- Fig. 12. *Odostomia (Odetta) lectissimoides*, n. sp. Kuruma-chô. P. 421
- Fig. 13. *Odostomia (Besla) shibana* n. sp. Kuruma-chô. P. 422
- Fig. 14. *Odostomia (Menestho) nishiana*, n. sp. Ôji. P. 421
- Fig. 15. *Odostomia (Odostomia) fujitani*, n. sp. Ôji. P. 419
- Fig. 16. *Turbonilla (Ptycheulimella) kurumana* n. sp. Kuruma-chô. P. 424
- Fig. 17. *Odostomia (Besla) bicinctella* n. sp. Dôkwanyama. P. 421
- Fig. 18. *Odostomia (Iolaea) amicalis* n. sp. Ôji. P. 421
- Fig. 19. *Turbonilla (Chemnitzia) keiskeana* n. sp. Ôji. P. 423
- Fig. 20. *Turbonilla (Chemnitzia) multigyrata* Dkr. Kuruma-chô. P. 423
- Fig. 21. *Turbonilla (Chemnitzia) dunkeri* Cl. Shinagawa. P. 423
- Fig. 22. *Turbonilla (Mormula) semicolorata* n. sp. Kuruma-chô. P. 424
- Fig. 23. *Turbonilla (Pyrgolampros) subplanicostata* n. sp. Ôji. P. 425
- Fig. 24. *Turbonilla (Chemnitzia) edoensis*, n. sp. Kuruma-chô. P. 424
- Fig. 25. *Triton nodiferus* Lam. Shinagawa. P. 413
- Fig. 26. *Turbonilla (Pyrgisculus) shigeyasui* n. sp. Dôkwanyama. P. 425
- Fig. 27. *Monilea ojiensis* n. sp. Ôji. P. 426



M. YOKOYAMA: Mollusca from the Upper Musashino of Tokyo and its Suburbs.

Plate XLVIII

- Fig. 1. *Enida japonica* Ad. Shinagawa. P. 426
Figs. 2, 3. *Martesia striata* (L.) var. *tokyoensis* Yok. Tabata. P. 428
Fig. 4. *Helcioniscus toreuma* (Rve.) Tabata. P. 427
Fig. 5. *Cyclostrema lamellata* Yok. Ōji. P. 426
Fig. 6. *Dentalium yamakawai* Yok. Shinagawa. P. 427
Fig. 7. *Dentalium semipolitum* Brod. et Sow. Shinagawa. P. 427
Fig. 8. *Montacuta subtruncata* Yok. Ōji. P. 432
Figs. 9, 10. *Kellia subelliptica* Yok. Dōkwanyama. 9. Right valve. 10 Left valve.
P. 431
Figs. 11, 12. *Theora lubrica* Gld. Kuruma-chō. 11 Left valve. 12 Right valve.
P. 429
Figs. 13, 14. *Meretrix gordonis* Yok. Shinagawa. 13. Right valve. 14 Left valve.
P. 429
Fig. 15. *Cardium ebaranum* Yok. Left valve. Shinagawa. P. 430
Fig. 16. *Cardilia semisulcata* (Lam.). Right valve. Kuruma-chō. P. 425
Figs. 17, 18. *Kellia fujitaniana* Yok. Ōji. 17. Left valve. 18. Right valve. P. 431

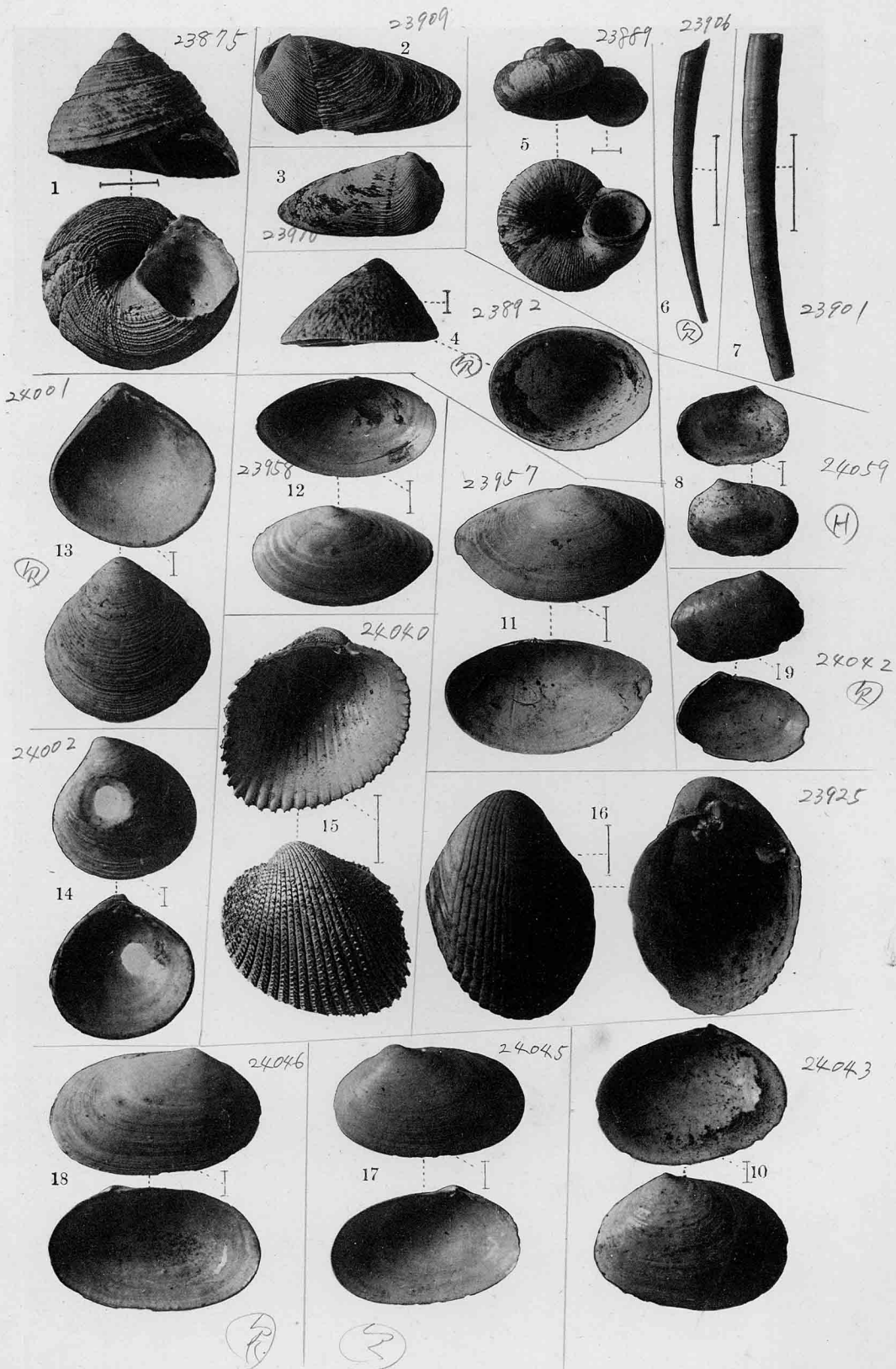


Plate XLIX

Figs. 1, 2. *Kellia pumila* Wood. Kuruma-chô. 1. Right valve. 2. Left valve.
P. 431

Fig. 3. *Crenella spectabilis* Ad. Right valve. Kuruma-chô. P. 435

Figs. 4, 5. *Montacuta* (?) *crassa* Yok. Ôji. 4. Left valve. 5. Right valve. P. 432

Fig. 6. *Modiola senhausii* Rve. Right valve. Shinagawa. P. 435

Fig. 7. *Cuspidaria* (*Cardiomya*) *gouldiana* Hinds. Left valve. Shinagawa. P. 434

Figs. 8, 9. *Lutraria sieboldtii* Desh. Shinagawa. 8. Right valve. 9. Left valve.
P. 429

Fig. 10. *Lingula hians* Swainson. Ôji. P. 436

Fig. 11. *Crassatella nana* Ad. et Rve. Right valve. Shinagawa. P. 434

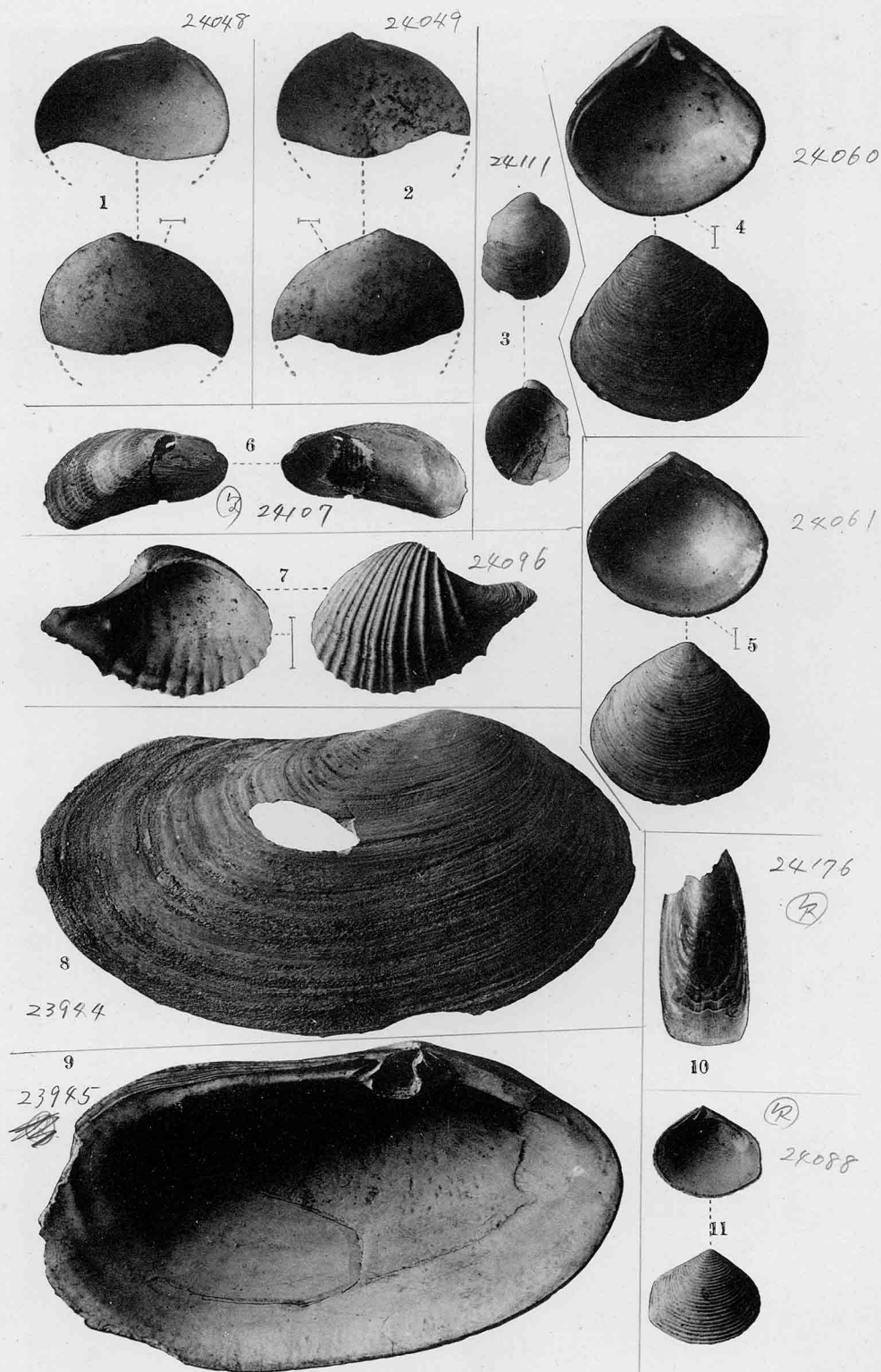


Plate L

Figs. 1, 2. *Loripes philippiana* (Rve.). Kuruma-chô. 1. Right valve. 2. Left valve. P. 434

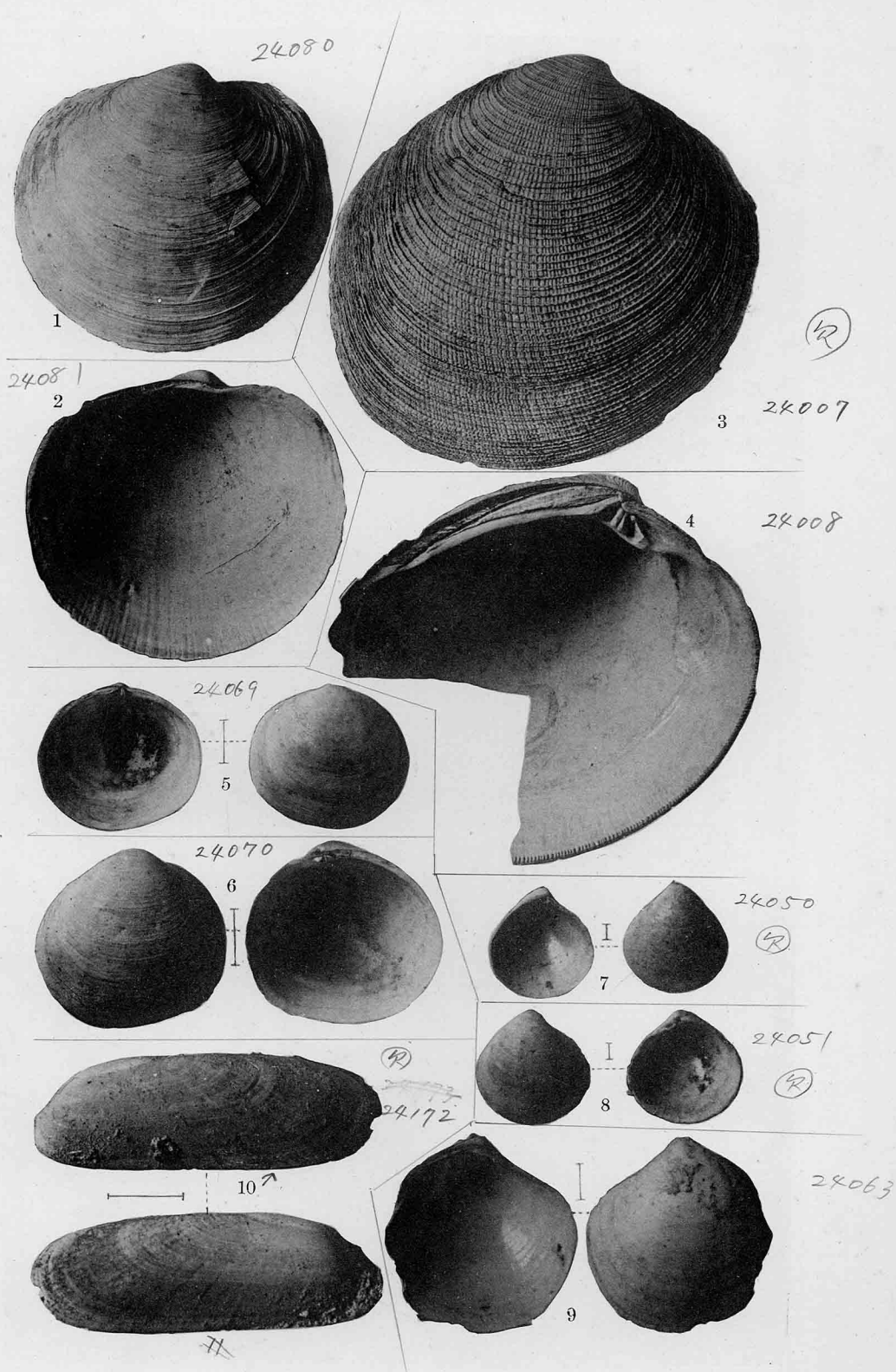
Figs. 3, 4. *Venus rigida* Gld. Ôji. 3. Right valve. 4. Left valve. P. 430

Figs. 5, 6. *Diplodonta lunaris* Yok. Shinagawa, 5. Left valve. 6. Right valve. P. 433

Figs. 7, 8. *Kellia* (?) *ojiana* Yok. Ôji. 7. Left valve. 8. Right valve. P. 432

Fig. 9. *Thyasira gouldii* (Phil.). Left valve. Shinagawa. P. 433

Figs. 10, 11. *Solemya yamakawai* Yok. Ôji. 10. Left valve. 11. Right valve. P. 435



M. YOKOYAMA: Mollusca from the Upper Musashino of Tokyo and its Suburbs.

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CONTENTS

- M. YOKOYAMA:—Mollusca from the Upper Musashino of
Tokyo and its Suburbs 391
- M. YOKOYAMA:—Mollusca from the Upper Musashino of
Western Shimōsa and ' 439

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