PLATE XV.

Plate XV

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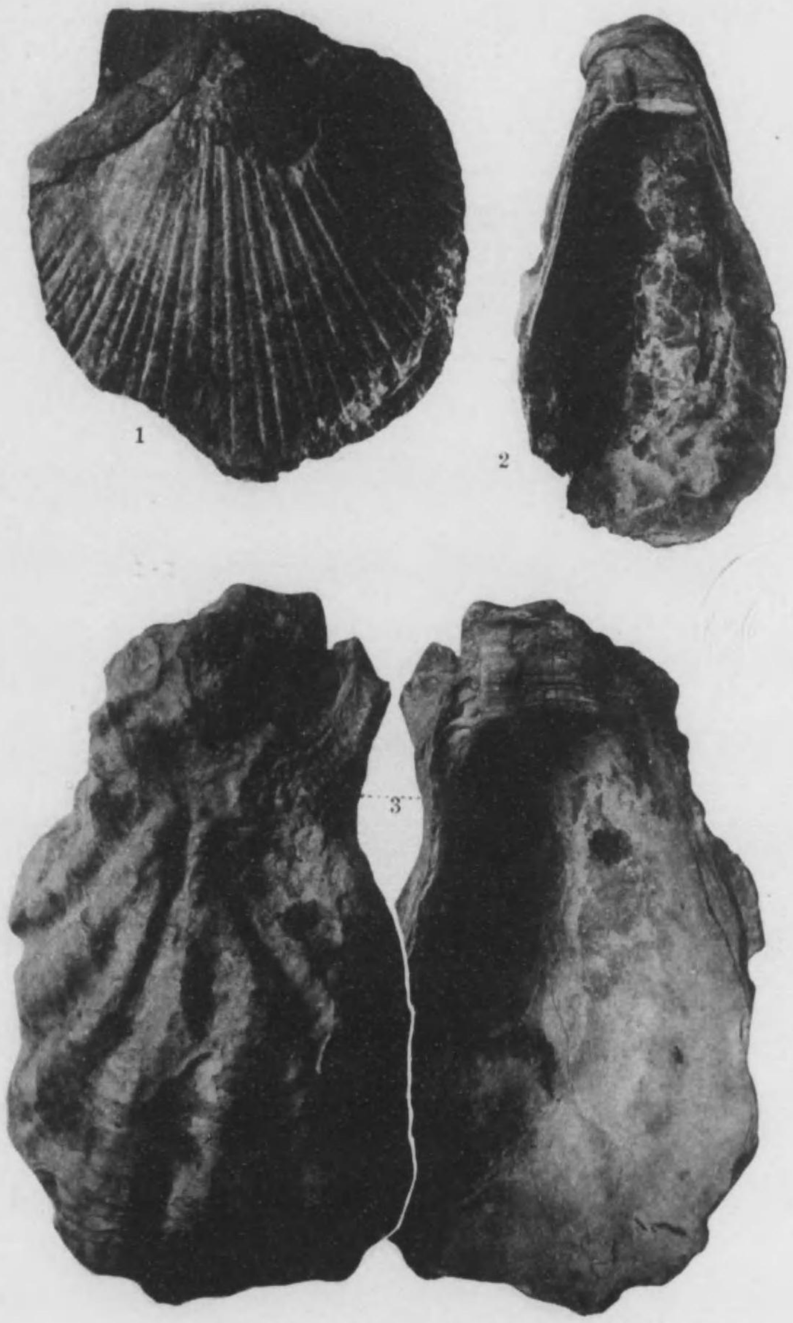

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PLATE XVI.

Plate XVI

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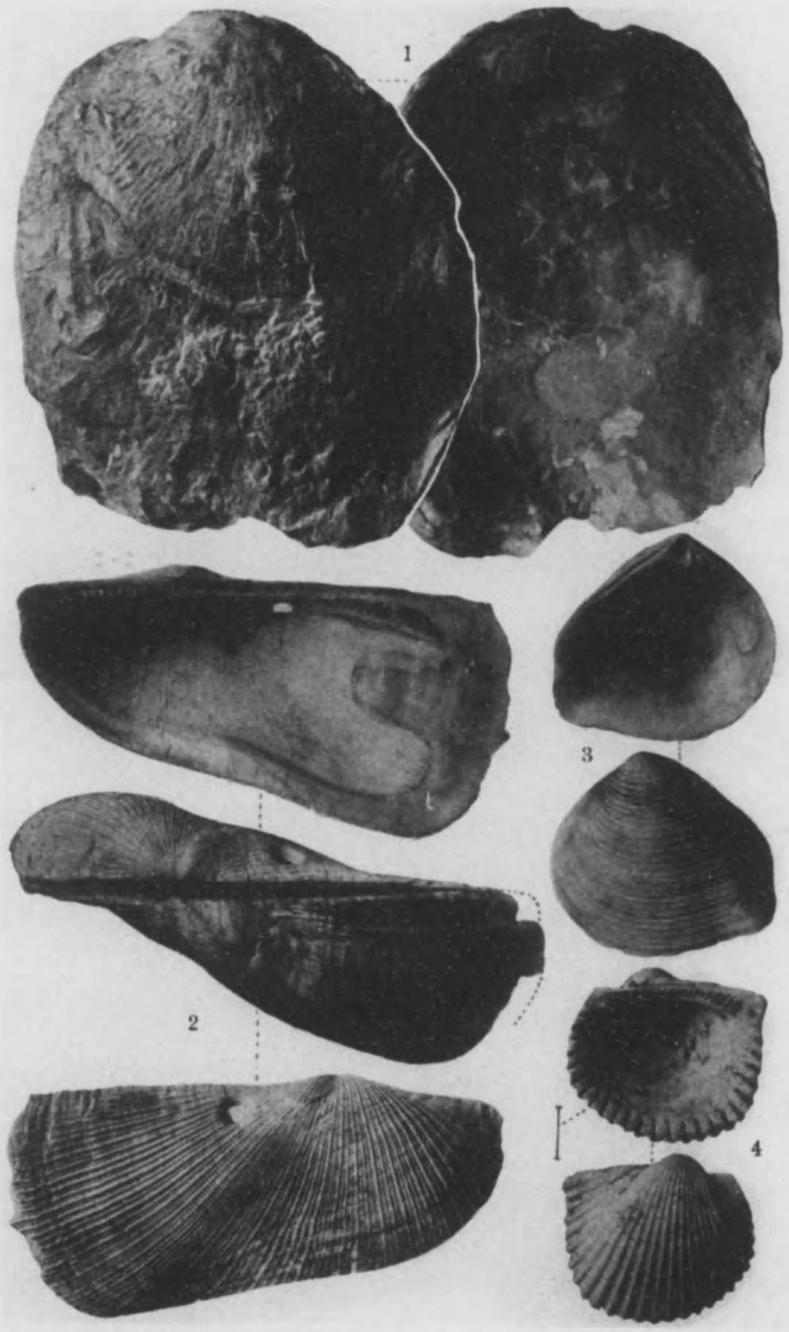

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PLATE XVII.

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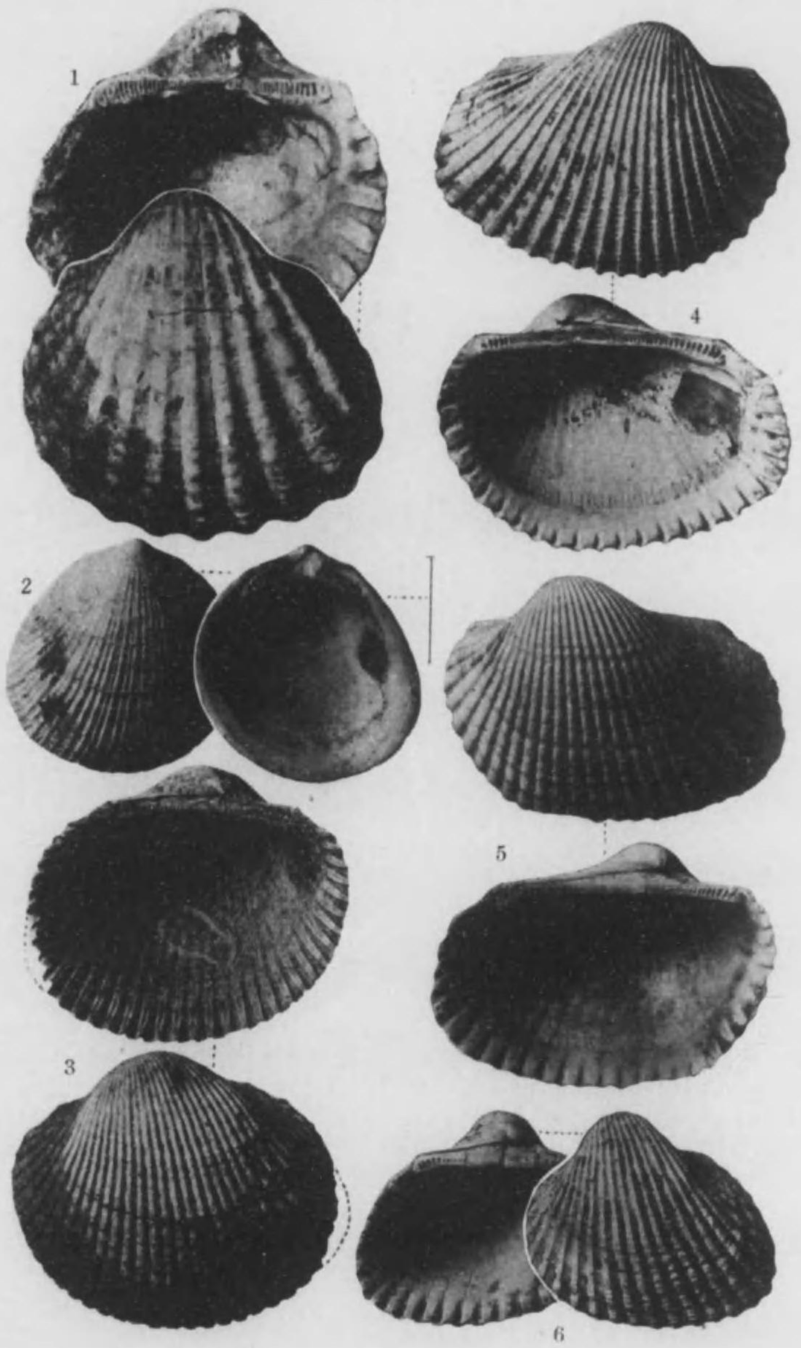

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PLATE XVIII.

Plate XVIII

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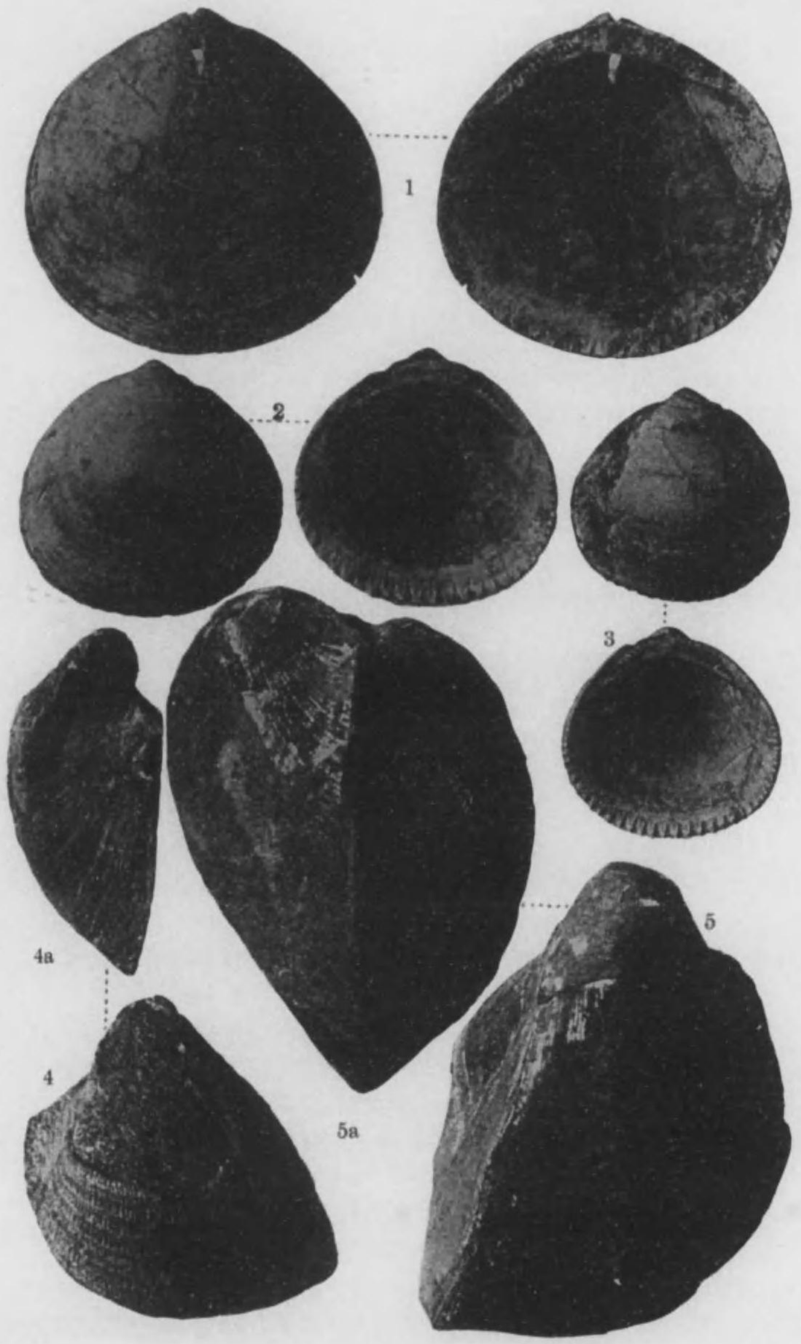


Mollusca from the Oil-Field of Taiwan

Semi-Fossil Shells from Noto

By

Matajiro YOKOYAMA, *Rigakuhakushi*

On the west shore of Port Nanao, Noto, a province of Central Japan facing Japan Sea and forming a peninsula, there is at several places a horizontal layer of sand covering the foot of the hills made up of inclined Tertiary strata containing fossils. These fossils which are probably Pliocene in age, though few in number, have already been mentioned by me in the April number of the Journal of the Geological Society of Tokyo, 1926. They are the following:

Terebratulina septentrionalis Couth.
Terebratulina japonica (Sow.)
Terebratella crossei Dav.
Laqueus rubellus Sow.
Magellania lenticularis Desh.
Pecten permirus Yok. n. sp.

The upper sand-layer is also fossiliferous and often rich in shells which are quite young-looking, retaining in many instances their original colour, though more or less faded. In the autumn of 1927 I had an opportunity of making a collection at a place where a hill-side was cut down to obtain a sufficient level ground for the compound of a newly established cement-making company. The layer was several feet thick covered above with that of a soil. Soon after my return to Tokyo, Mr. Katsumi Mochizuki, then a student of geology in the Imperial University of Tokyo, visited Nanao, kindly seizing the occasion for making a further collection for me at the same place, which added not a little to the number of the species already collected. The names of all the species found are given in the following table:

Gastropoda	Geological Occurrence
1. Solidula strigosa Gld.	Rec. (C. W. S. Japan). Up. Musashino
2. Cylichna andenica Yok.	Up. Musashino
3. Cylichna incisula n. sp.	
4. Pleurotoma vertebrata Sm.	Rec. (C. W. Japan). Up. Musashino
5. Clathurella centrosa Pils.	Rec. (S. Japan). Coral Bed (Pleistocene?)
6. Cancellaria spengleriana Desh.	Rec. (C. Japan, Philippines). Up. Musashino-Pliocene
7. Fusus perplexus Ad.	Rec. (N. C. W. Japan). Up. Musashino-Pliocene
8. Nassa (Hima) japonica Ad.	Rec. (C. W. Japan). Up. Musashino-Pliocene.
9. Nassa (Hima) festiva Pow.	Rec. (N. C. W. Japan). Up. a. Low. Musashino
10. Nassa (Niotha) livescens Phil.	Rec. (C. Japan, Philippines). Coral Bed-Low. Musashino
11. Ocinebra contracta Rve.	Rec. (N.-S. Japan). Coral Bed. Up. Musashino
12. Cuma pseudodiadema n. sp.	
13. Columbella (Mitrella) dunkeri Try.	Rec. (N. C. W. Japan). Coral Bed-Pliocene
14. Rapana bezoar L. v. thomasiana Cr.	Rec. (N. C. W. Japan). Up. Musashino-Pliocene
15. Purpura alveolata Rve.	Rec. (C. W. Japan, Panama). Up. Musashino-Pliocene
16. Strombus japonicus Rve.	Rec. (C. W. S. Japan). Up. Musashino
17. Cerithium (Clava) kochi Phil.	Rec. (C. W. Japan). Coral Bed. Up. Musashino
18. Cerithium kobelti Dkr.	Rec. (C. Japan). Up. Musashino
19. Potamides (Tympanotomus) fluviatilis (P. et M.)	Rec. (C. W. Japan). Up. Musashino-Pliocene
20. Triforis otsuensis Yok.	Rec. (C. Japan). Up. Musashino.
21. Thylacodes medusae Pils.	Rec. (C. W. S. Japan). Coral Bed. Up. Musashino
22. Vermetus ebaranus Yok.	Up. Musashino
23. Litiopa simplex Yok.	Up. Musashino
24. Rissoa (Cingula) subdharma n. sp.	
25. Rissoina submerculialis Yok.	Rec. (C. Japan). Coral Bed. Up. Musashino

26. Rissoina cancellata Phil.	Rec. (Japan, W. Indies). Coral Bed.
27. Fenella septentrionals Tok.	Rec. (C. Japan). Up. Musashino.
28. Natica colliei Recl.	Rec. (W. Japan). Pliocene
29. Polinices pallidus Br. et Sow.	Rec. (N. Japan). Up. a. Low. Musashino
30. Polinices ampla (Phil.)	Rec. (N.-S. Japan). Up. Musashino-Pliocene
31. Sigaretus (Eunaticina) papilla Gm.	Rec. (C. W. Japan, Philippines). Up. Musashino-Pliocene
32. Pyramidella (Syrnola) toshimana Yok.	Upper Musashino
33. Turbo (Marmorostoma) coreensis Recl.	Rec. (C. W. Japan). Up. Musashino
34. Turbo (Marmorostoma) granulatus Gm.	Rec. (C. W. Japan, Indian O.). Coral Bed. Up. Musashino.
35. Chlorostoma umbilicatum (Lke.)	Rec. (C. W. Japan). Up. Musashino
36. Chlorostoma argyrostomum Gm.	Rec. (C. W. Japan). Up. Musashino
37. Monodonta labio L.	Rec. (N.-S. Japan, Moluccas). Coral Bed.
38. Cantharidus japonicus (Ad.)	Rec. (C. W. Japan). Coral Bed
39. Cyclostrema duplicatum Lke.	Rec. (C. Japan). Up. Musashino
40. Fissuridea sieboldi Rve.	Rec. (C. W. Japan).
41. Acmaea schrencki Lke.	Rec. (N. C. W. Japan). Up. Musashino
Scaphopoda	
42. Dentalium octagonum Lam.	Rec. (N.-S. Japan, Ceylon). Coral Bed-Pliocene
Lamellibranchiata	
43. Pholas fragilis Sow.	Rec. (W. Japan, Philippines). Up. Musashino
44. Martesia striata L. var. tokyoensis Yok.	Up. Musashino
45. Panope generosa (Gld.)	Rec. (N. Japan). Up. Musashino-Pliocene
46. Mya arenaria L.	Rec. (N. C. W). Up. Musashino-Pliocene
47. Mactra ovalina Lam.	Rec. (C. Japan). Up. Musashino
48. Raeta yokohamensis Pils.	Rec. (C. Japan). Up. Musashino-Pliocene

	Geological Occurrence
49. Solen krusensternii Schr.	Rec. (N. Japan). Up. Musashino-Pliocene
50. Solecurtus abbreviatus Gld.	Rec. (W. Japan)
51. Semele sinensis Ad.	Rec. (C. Japan)
52. Tellina iridella Mart.	Rec. (C. W. Japan). Coral Bed. Up. Musashino
53. Tellina gargadia L.	Rec. (C. Japan, Philippines)
54. Macoma inquinata (Desh.)	Rec. (N. C. W. Japan). Coral Bed-Miocene
55. Macoma praetexta v. Mart.	Rec. (C. W. Japan). Up. Musashino-Miocene
56. Loripes philippiana (Rve.)	Rec. (C. W. Japan). Up. Musashino
57. Petricola japonica Dkr.	Rec. (N. Japan)
58. Dosinia trosheli Lke.	Rec. (C. W. Japan). Up. Musashino-Pliocene
59. Meretrix tigrina (Lam.)	Rec. (W. Japan (Osumi), Moluccas). Coral Bed.
60. Venus jedoensis Lke.	Rec. (N. C. W. Japan). Coral Bed. Up. Musashino
61. Chione crenifera (Sow.)	Rec. (W. Japan, Peru). Up. Musashino
62. Circe scripta L.	Rec. (C. W. Japan, Red Sea). Up. Musashino-Miocene.
63. Circe divaricata Chem.	Rec. (C. W. Japan)
64. Venerupis insignis (Desh).	Rec. (C. Japan). Coral Bed. Up. Musashino
65. Tapes variegatus Harl.	Rec. (C. W. Japan, Philippines). Up. Musashino-Pliocene
66. Cardium muticum Rve.	Rec. (N. C. W. Japan, Philippines). Up. Musashino-Pliocene.
67. Kellia notoensis n. sp.	
68. Diplodonta japonica Pils.	Rec. (C. Japan), Up. Musashino-Pliocene
69. Diplodonta semiaspera Phil.	Rec. (C. W. Japan, W. Indies). Coral Bed-Low. Musashino
70. Codakia bella Conr. var. delicatula Pils.	Rec. (S. Japan). Coral Bed.

71. Lucina contraria Dkr.	Rec. (C. Japan). Coral Bed-Low. Musashino
72. Lucina pisidium Dkr.	Rec. (N.-S. Japan). Coral Bed. Up. Musashino
73. Chama semipurpurata Lke.	Rec. (C.-S. Japan). Coral Bed. Up. Musashino
74. Cardita crassicosta Lam.	Rec. (Philippines). Coral Bed
75. Trapezium nipponicum Yok.	Rec. (C. W. Japan). Up. Musashino
76. Coralliophaga coralliophaga Gm.	Rec. (C. W. Japan, South Sea). Coral Bed. Up. Musashino
77. Anomia lischkei F. et D.	Rec. (N. C. W. Japan). Up. a. Low. Musashino
78. Lima angulata Sow.	Rec. (N. C. Japan, Philippines). Up. Musashino-Pliocene
79. Spondylus cruentus Lke.	Rec. (C. W. Japan). Coral Bed. Up. Musashino
80. Pecten (Chlamys) laetus Ged.	Rec. (N. C. W. Japan). Coral Bed-Pliocene
81. Pecten (Vola) laqueatus Sow.	Rec. (N. C. W. Japan) Up. Musashino-Pliocene
82. Pecten (Vola) sinensis Sow.	Rec. (N. C. Japan, China). Up. Musashino
83. Ostrea gigas Thunb.	Rec. (N. C. W. Japan, N. China). Up. Musashino-Pliocene
84. Ostrea denselamellosa Lke.	Rec. (N.-S. Japan). Up. Musashino-Pliocene
85. Arca kobeltiana Pils.	Rec. (N. C. Japan). Coral Bed-Pliocene
86. Arca (Barbatia) stearnsii Pils.	Rec. (C. W. Japan). Coral Bed. Up. a. Low. Musashino
87. Arca (Barbatia) symmetrica Rve.	Rec. (C. W. Japan, Philippines). Coral Bed-Pliocene
88. Arca (Barbatia) decurvata Lke.	Rec. (W. Japan, Philippines)
Brachiopoda	
89. Terebratulina caputserpentis L.	Rec. (C. Japan, N. Pacific). Up. Musashino-Miocene

The eighty-nine species above enumerated consist of the following elements:

	Number
Species hitherto found only Recent.	7
Species hitherto found Recent as well as in Coral Bed.	7
Species hitherto ranging between Recent and Upper Musashino.	29
Species hitherto ranging between Recent and Pliocene.	33
Species hitherto ranging between Recent and Miocene.	4
Species hitherto found only fossil (in Upper Musashino).	5
Species entirely new.	4
	89

From this we see that the living species occupy at least 90% of the whole which, however, is liable to be increased, as there is a possibility of what are here treated as extinct (only fossil or new) turning out to be living by future discoveries.

A fauna containing more than 90% of the living species, geologically considered, must be called very young, belonging either to the *Pleistocene* or to the earlier part of the *Holocene* or *Modern*. To whichever age it may belong, it is very likely that the deposit containing the shells in question approximately corresponds in horizon to the so-called Coral Bed of Awa found on the Pacific side of Central Japan and not far from Tokyo. That this bed entombs among others several forms now living only further south had already been pointed out in my paper

relating to it. Accordingly, it is essential to examine whether the Nanao bed too contains such forms. For this purpose I divide the living species which amount to eighty into the following groups according to their present habitat:

Species now known to be living only in Central Japan or in about the same latitudes (Western Japan).	32
Species now known to be living in Central (or Western Japan) as well as south of it.	17
Species now known to be living in Central (or Western Japan) as well as north of it.	16
Species now known to be living north as well as south of Central (or Western) Japan.	7
Species now known to be living only south of Central (or Western) Japan.	4
Species now known to be living only north of Central (or Western Japan).	4
	80

The greatest number is taken by those species which are now living in Central Japan or in about the same latitudes (Western Japan), as might naturally be expected, the fossil locality itself lying in the same portion of Japan. They amount to 32 or about 40% of the whole. Next come those which live in Central or Western Japan as well as south of it, amounting to 17 or about 21%; then those which live as well north of it, amounting to 16 or about 20%. The 7 species living north as well as south may be called indifferent forms. The further two groups, the exclusively southern and exclusively northern, are each represented by four species.

The fauna according to the above distribution seems to show no peculiarity, for the last two groups which decide the character of the whole are equal in number, apparently cancelling each other. However, we must bear in mind that the position of Nanao, though geographically lying *within* Central Japan, is only one degree south of the 38th parallel, north latitude, which I usually take as a boundary between Northern and Central Japan, besides being situated *not* on the Pacific side of the latter, but on Japan Sea side where the water is always somewhat cooler. Consequently the value of the four northern forms is much diminished, while that of the four southern is in a corresponding degree increased. What I take for the latter are *Clathurella centrosa Pils.*, *Meretrix tigrina* (*Lam.*), *Lucina bella Conr. var. dedicatula Pils.* and *Cardita crassicosta Lam.*, all of which occur in the Coral Bed, though in the recent seas, as far as our present knowledges goes, are not living north of the southern end of the island of Kyushu which counted by latitudes is six degrees south of Nanao. The species which is found near this island is *Meretrix tigrina*, while *Clathurella centrosa* is hitherto known only from the Bonin Islands, and *Lucina bella delicatula* only from the Ryukyus. As to *Cardita crassicosta*, its present home is said to be the Philippines.

Incidentally I may mention that the shells like those of the Coral Bed of Awa have also been discovered north of Numa, the site of the Bed. On the sea-shore of Tomiura, a place many kilometres from Numa, a sand-bed was found containing shells among which there is *Arca fusca Brug.* This shell is frequent in the Coral Bed, but at present is not known to be living north

of Tosa (Southern Shikoku). Also at Saginuma, a place near the town of Funabashi, situated at the head of Tokyo Bay, many shells were obtained from a sand-layer three feet below the surface of the ground, containing *Soletellina adamsii Desh.* (pl. XXI), a bivalve now known only from the Philippines.

That some of the Japanese shells had receded to the south since the Neolithic Period was first pointed out by the late Edward S. Morse who, nearly fifty years ago, in his "Shell Mounds of Omori" (Memoirs of the Science Department, Imperial University of Tokio, vol. I, part 1, 1879) states that *Arca granosa L.* so frequent in the shell mounds of Omori, a place between Tokyo and Yokohama, had entirely disappeared from the outlying coasts and that it is not known living north of Nagasaki, a port 900 kilometres from Tokyo in a straight line and about three degrees south counted by latitudes. Since then the species was found living also near the coast of Awa, but not *within* Tokyo Bay as rightly pointed out by Morse. Now I recall to mind the statement made by Professor K. Kishinouyé in one of his scientific papers of a find in the shell-mounds of the eastern portion of Northern Honshū of bones of a species of tunny which nowadays does not go up so far north.

From what has been said above, it is quite certain that some species of shells began their *retreat to the south* since the time of the Coral Bed and continued it through the Neolithic Period down to a comparatively recent epoch, and are perhaps still continuing it at the present time.

Description of New or Important Species

1. **Cylichna incisula,** nov. spec.

Pl. XIX. Fig. 1

Shell minute, ovato-cylindrical, with apex concealed. Height equal to about twice the diameter. Surface ornamented with fine, transverse, rather distant, incised lines. Aperture as long as shell, almost parallel-sided in the upper one-third, gradually widening below and quite dilated at the lower end which is truncate. Inner lip folded outward near the lower extremity. Outer lip thin.

A single example, measuring 7.2 millim. in height and 3.6 millim. in diameter.

This species closely resembles a living one found in Sagami, Central Japan, which seems to be still unnamed, though less slender in form.

12. **Cuma pseudodiadema,** nov. spec.

Pl. XIX. Fig. 5

Shell small, broad-fusiform. Whorls six, of which two and a half are nuclear, smooth and rounded. Postnuclear whorls angulate slightly below the middle, with the surface above the angle somewhat concave and sloping, below flat and vertical. Longitudinally plicate and spirally corded. Longitudinal plicae about fifteen, elevated but rounded, with interspaces broader and often differing in breadth. Spiral cords four on the sloping shelf, one on the angle and two below it, with interspaces usually somewhat broader. Intersection points of plicae and cords

tubercular. On the body-whorl there is a strong cord on the periphery making it angulate. On the base there are three strong spiral cords with one or two weaker ones between. Aperture ovate, angulate behind. Outer lip sinuous with transverse grooves within, corresponding in position to cords outside. Canal very short, straight.

Only one specimen, 6 4 millim. in height and 4.2 millim. in diameter. It seems to be a young individual.

The species is akin to *Cuma diadema* Rve. which according to Tryon is identical with *Cuma carinifera* (Lam.) (Man. Conch., II, p. 200, pl. LXII, figs. 319, 320, 324, 325, 327) which lives in Central Japan as well as in the Philippines. But the Japanese fossil has the sculpture finer, the plicae being about twice as many.

24. **Rissoa (Cingula) subdharma,** nov. spec.

Pl. XIX. Fig. 2

Shell minute, ovato-conical, pointed at apex. Whorls six, almost flat, the convexity being very slight, provided with a faint incised spiral line somewhat below the suture, otherwise smooth. Periphery rounded. Base convex. Aperture ovate, angular behind. Lower end of inner lip somewhat elevated.

A single example, 3 millim. in height and 1.6 millim. in diameter.

Resembling *Rissoa dharma* Yok. (Foss. Shells Sado, p. 275, pl. XXXIII, fig. 9) from the Upper Musashino of Sado in form, though differing by the presence of an incised spiral line.

29. **Polinices pallidus,** (Broderip et Sowerby)

Pl. XIX. Fig. 3

Polinices pallidus. Yokoyama, Foss. Miura Penin., p. 77, pl. IV, Fig. 1. Foss. Shells Sado, p. 278.

Many small immature individuals. The umbilicus is narrow in the adult specimen, but is wide open when very young. The shape, however, does not differ from that of the adult.

This species has already been described from the Upper and Lower Musashino. Its present habitat is Northern Japan and also circumpolar seas.

40. **Fissuridea sieboldii,** (Reeve)

Pl. XIX. Fig. 4

Fissuridea sieboldii. Pilsbry, Cat. Mar. Moll. Japan, p. 100. Man. Conch., XII, p. 204, pl. 38, figs. 58, 59.

Fissurella sieboldii. Reeve, Conch. Icon., spec. 102.

Lucapina sieboldii. Dunker, Ind. Moll. Mar. Jap., p. 149, pl. 6, figs. 14, 15.

Only one specimen, but excellently preserved. The concentric laminae are more elevated than in the figures of Dunker and Pilsbry.

This species has never been found fossil until now, though living in Central and Western Japan.

50. **Solecurtus abbreviatus,** Gould

Pl. XIX. Fig. 12

Solecurtus abbreviatus. Gould, Otia Conchologica, p. 164. Iwakawa, Catal. Jap. Moll., Nat. Hist. Dep., Tokyo Imp. Mus., p. 313. Reeve, Conch. Icon., Solecurtus spec. 6.

Reeve describes this species as follows: Shell compressed, truncated at each end, a little open; concentrically wrinkled; posterior side obliquely truncated, anterior side rather short; middle depressed with a broad groove, slightly ribbed at the middle within; ventral margin straight, sinuous at the medial groove; dorsal margin sloped at each side.

A few specimens were obtained perfectly agreeing with the above description.

The habitat is stated by Reeve as Malacca and by Gould as Hongkong. But it is also living in Awa (Central Japan) and Awaji (Western Japan).

51. **Semele sinensis,** A. Adams

Pl. XX. Fig. 3

Semele sinensis. A. Adams, Proc. Zool. Soc. London, 1853, p. 95. Dunker, Ind. Moll., p. 195.

Amphidesma sinensis. Reeve, Conch. Icon., Amphidesma spec. 28.

A fine compressed suborbicular shell with numerous radiating striae on the surface. Pallial sinus large, deep and ascending with the end rounded.

As a fossil this species was found for the first time. It is living in China as well as in Central Japan (Sagami).

53. **Tellina gargadia,** Linné

Pl. XIX. Figs. 6, 7

Tellina gargadia. Linné, Syst. Nat., Ed. XII, p. 1116, no. 44. Reeve, Conch. Icon., Tellina, spec. 84. Römer in Mart. Chem. Syst. Conch., Cab., Tellinidae, p. 38, pl. II, figs. 2-4, pl. XI, figs. 8-10.

A young individual with both valves perfect. The shell is subcompressed, obliquely oval with the posterior side shorter than anterior, rounded in front and subtruncate behind. The antero-dorsal border is sloping and slightly excavated, the postero-dorsal also sloping, somewhat convex and spinous, behind which there is a second row of less sharp spines. The surface is provided with concentric furrows.

The species is found in the Philippines as well as in Central Japan (Sagami).

57. **Petricola japonica,** Dunker

Pl. XIX. Figs. 14, 15

Petricola japonica. Dunker, Ind. Moll. Mar. Jap., p. 209, pl. IX, fig. 4-6.

Two isolated valves, both with a somewhat abnormally thickened hinge.

Living in Kesennuma (Northern Japan) according to Dunker.

59. **Meretrix tigrina,** (Lamarck)

Pl. XIX. Figs. 10, 11

Meretrix tigrina. Yokoyama, Moll. Coral Bed Awa, p. 42, pl. II, fig. 16.

Several specimens of this neat shell were obtained. The species occurs in the Coral Bed of Awa, but is at present not known to be living north of Osumi, the southernmost province of the island of Kyushū.

62. **Circe scripta,** (Linné)

Pl. XX. Fig. 2

Circe scripta. Yokoyama, Foss. Miura Penin., p. 123, pl. VIII, figs. 15, 16. Moll. Up. Musash. Tokyo, p. 400.

The specimens hitherto obtained from the Upper Musashino Formation of the neighbourhood of Tokyo are not only very small, but also very rare. Those of Nanao are large and numerous, being one of the most frequently occurring shells.

The species lives in Central and Western Japan as well as further south.

63. **Circe divaricata,** Chemnitz

Pl. XX. Fig. 1

Circe divaricata. Pilsbry, Catal. p. Dunker, Index Moll., p. 202.
Venus divaricata. Chemnitz, Conch. Cab,, VI, p. 317, pl. 30, fig, 316. Pfeiffer in Syst. Conch. Cab. Mart. Chemn., p. 44, pl. 16, pl. 8.

Distinguished from the foregoing by the divaricating sculpture of the surface. Also very frequent. The species is living in the Indian Ocean as well as in Central and Western Japan.

67. **Kellia notoensis,** nov. spec.

Pl. XIX. Fig. 13

A single left valve. Shell subcompressed, transversely oval, rounded both in front and behind, though somewhat more broadly in the former than in the latter. The anterior side is shorter than the posterior, with the beak very small and pointed. The surface is smooth save for lines of growth. Height 5 millim. Length 5.7 millim. Depth 1.6 millim.

Extremely like *Kellia pumila* Wood (Yokoyama Moll. Up. Musash. Tokyo, p. 431, pl. XL, IX, figs. 1, 2), but with the main tooth much nearer the beak.

74. **Cardita crassicosta,** LAMARCK

Pl. XIX. Figs. 8, 9

Cardita crassicosta. Yokoyama, Moll. Coral Bed Awa, p. 51, pl. III, fig. 12.

This shell already described from the Coral Bed is not rare at Nanao. At present it is not known to be living north of the Philippines.

88. **Arca decurvata,** LISCHKE

Pl. XX. Fig. 4

Arca decurvata. Lischke, Malakoz. Blätter, vol. 16, p, 108. Jap. Meeresconch., I, p. 148.

Arca obliquata. Reeve, Conch. Icon., Arca, spec. 80.

This shell found fossil for the first time is readily recognized from the other species living in Japan by its extremely inequilateral form. It is quite narrow near the anterior end and much dilated behind, with numerous radiating striae on the surface.

Living in Western Japan as well as in the Philippine Islands.

PLATE XIX.

Plate XIX

Fig. 1. Cylichna incisula n. sp. Enlarged. P. 122

Fig. 2. Rissoa (Cingula) subdharma n. sp. Enlarged. P. 123

Fig. 3. Polinices pallidus (Br. et Sow.). Enlarged. P, 124

Fig. 4. Fissuridea sieboldii (Rve.) Enlarged. P. 124

Fig. 5. Cuma pseudodiadema n. sp. Enlarged. P. 122

Figs. 6, 7. Tellina gargadia L. Enlarged. P. 125

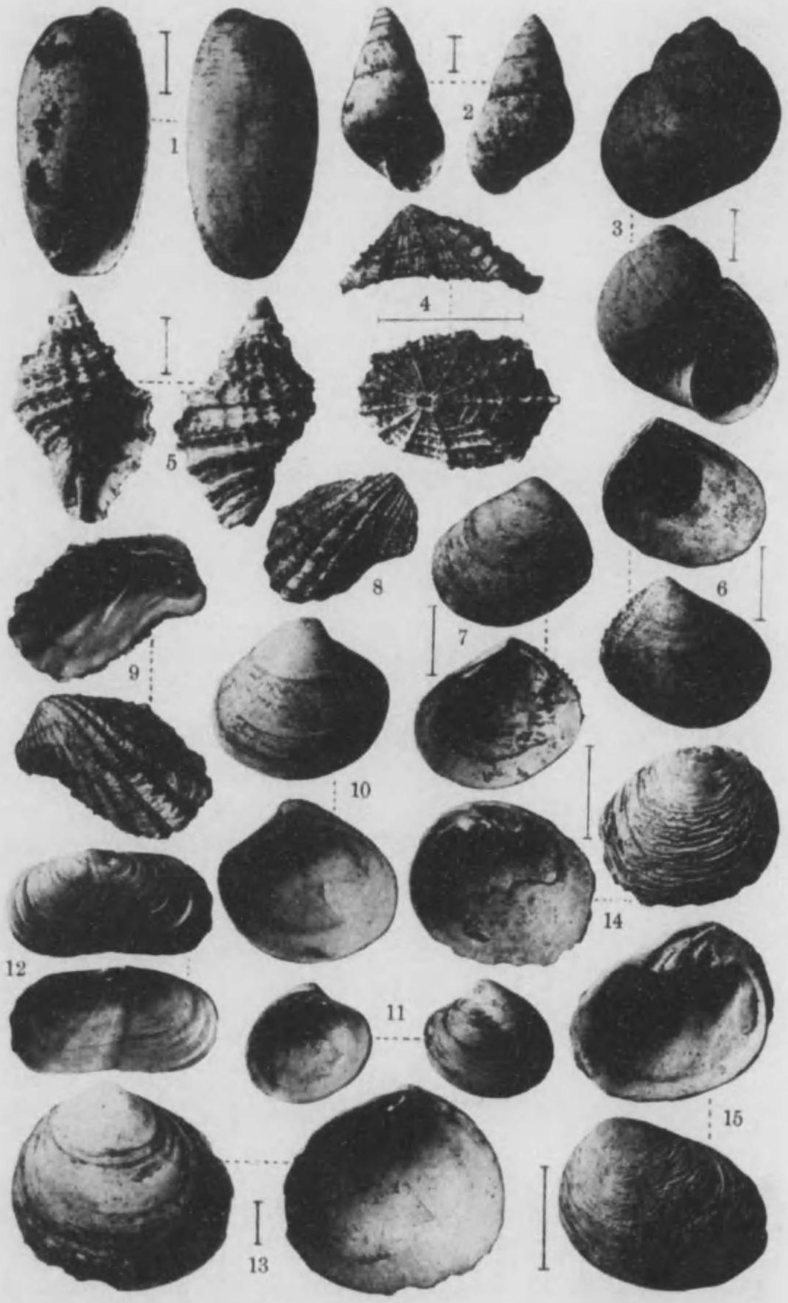
Figs. 8, 9. Cardita crassicosta Lam. P. 128

Figs. 10, 11. Meretrix tigrina (Lam.) P. 126

Fig. 12. Solecurtus abbreviatus Gld. P. 124

Fig. 13. Kellia notoensis n. sp. Enlarged. P. 127

Figs. 14, 15. Petricola japonica Dkr. Enlarged. P. 126



Semi-Fossil Shells from Noto

PLATE XX.

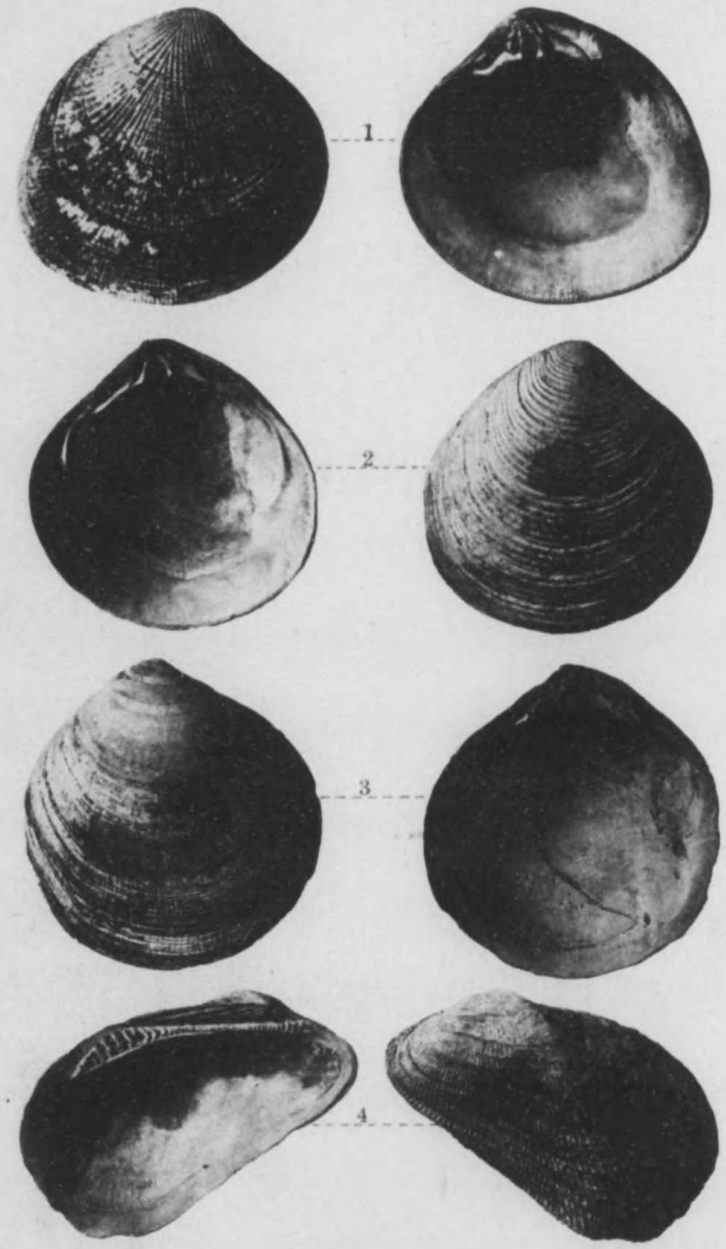
Plate XX

Fig. 1. Circe divaricata Chem. P. 127

Fig. 2. Circe scripta (L.) P. 127

Fig. 3. Semele sinensis A. Adams. P. 125

Fig. 4. Arca decurvata Lke. P. 128



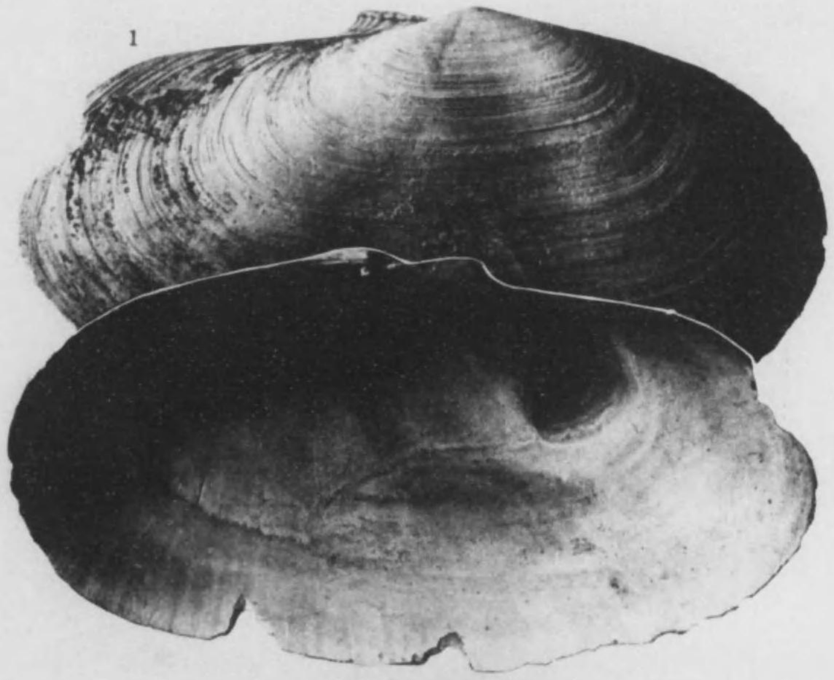
Semi-Fossil Shells from Noto

PLATE XXI.

Plate XXI

Soletellina adamsii Desh. found at Saginuma near the town of Funabashi, Shimōsa, about three feet below the surface of the ground in a bed of sand. P. 121

1



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Semi-Fossil Shells from Noto

昭和三年十一月二十八日印刷
昭和三年十一月三十日發行

著作權所有

商工省

定價金四圓貳拾五錢

印刷者　東京市深川區東大工町四十八番地　小林武之助
印刷所　東京市深川區東大工町四十八番地　東京印刷株式會社
發賣所　東京市深川區東大工町四十八番地　東京印刷株式會社
　振替口座東京七九六三番
發賣所　東京市日本橋區通二丁目　丸善株式會社
　振替口座東京五番

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