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26. *Molluscan Fossils from the Pleistocene Deposit of Sisinaï in Tôbetu-mura Isikari-gun, Hokkaidô.*

By

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In the summer of 1936, I have made a large collection of fossil shells from the Pleistocene deposit of Sisinaï (about 20 km NNE of Sapporo). Cross-bedded brown sand containing numerous fossil is exposed on a cliff near Sisinaï, and the Sisinaï fauna comprises Mollusca, Foraminifera, Cirripedia, Brachiopoda and Bryozoa, and among them Mollusca and Foraminifera are dominant. Recently Prof. NAGAO¹⁾ reported the Pleistocene fossiliferous deposits in Hokkaidô and mentioned 39 species of Molluscan fossil of Sisinaï. The distinguishable species in my collection is attained to 71 in total, of which 36 belong to Pelecypoda, 34 to Gastropoda and 1 to Brachiopoda. Among the 70 species of Mollusca, 54 have been specifically identified, while 16 remain undetermined. The latter include mostly very small forms and most of them are probably new to science.

The fossil shells of Sisinaï are as follows:

Pelecypoda

1. <i>Nucula (Acila) insignis</i> GOULD	Common
2. <i>Arca boucardi</i> JOUSSEAME	Common
3. <i>Glycymeris yessoensis</i> (SOWERBY)	Abundant
4. <i>Crenella yokoyamai</i> NOMURA	Abundant

1) NAGAO: Post-Setana Fossiliferous Beds in Hokkaidô, Jour. Geol. Soc. Tokyo, Vol. 41, No. 487, pp. 205-207, 1934.

5. <i>Mytillus grayanus</i> DUNKER	Abundant
6. <i>Chlamys</i> (<i>Chlamys</i>) <i>swiftii</i> (BERNARDI)	Rare
7. <i>Chlamys</i> (<i>Chlamys</i>) <i>jarreri akazara</i> KURODA	Rare
8. <i>Pecten</i> (<i>Patinopecten</i>) <i>yessoensis</i> JAY	Abundant
9. <i>Limatula subauriculata</i> (MONTAGU)	Common
10. <i>Cardita</i> (<i>Mio loutiscus</i>) <i>prolongata</i> (CARPENTER) (= <i>Venericardia nakamurai</i> YOKOYAMA)	Rare
11. <i>Venericardia</i> (<i>Cyclocardia</i>) <i>ferruginea</i> (A. ADAMS) CLESSIN	Common
12. <i>Corbicula</i> sp. (Immature of <i>C. nipponensis</i> ?)	Rare
13. <i>Diplodonta</i> (<i>Felaniella</i>) <i>usta</i> (GOULD)	Common
14. <i>Codalia</i> (<i>Pillucina</i>) <i>pisi um</i> (DUNKER)	Rare
15. <i>Mysella oblongata</i> (YOKOYAMA)	Common
16. <i>Mysella japonica</i> (YOKOYAMA)	Common
17. <i>Cardium</i> (<i>Cerastoderma</i>) <i>californiense</i> DESHAYES	Rare
18. <i>Callista brevisiphonata</i> (CARPENTER)	Rare
19. <i>Saxidomus purpuratus</i> (SOWERBY)	Rare
20. <i>Protothaca staminea</i> (CONRAD)	Rare
21. <i>Venerupis</i> (<i>Amygdala</i>) <i>variegata</i> (SOWERBY)	Common
22. <i>Mactra</i> sp. (Immature of <i>M. carneopicta</i> ?)	Rare
23. <i>Mactra</i> (<i>Mactromeris</i>) <i>polynyma voyi</i> (GABB)	Common
24. <i>Sanguinolaria</i> (<i>Nuttallia</i>) <i>olivacea</i> (JAY)	Rare
25. <i>Gari</i> (<i>Psammocola</i>) <i>californica</i> (CONRAD)	Rare
26. <i>Macoma incongrua</i> (v. MARTENS)	Rare
27. <i>Macoma nipponica</i> (TOKUNAGA)	Rare
28. <i>Tellina</i> (<i>Fabulina</i> ?) <i>nitidula</i> DUNKER	Rare
29. <i>Tellina</i> (<i>Peronidia</i>) <i>salmonia</i> (CARPENTER)	Common
30. <i>Aloidis venusta</i> (GOULD)	Rare
31. <i>Hiatella orientalis</i> (YOKOYAMA)	Rare
32. <i>Mya truncata</i> LINNÉ	Rare
33. <i>Mya arenaria japonica</i> JAY	Rare
34. <i>Cryptomya</i> sp.	Rare
35. <i>Lyonsis</i> (<i>Entodesma</i>) <i>truncatissima</i> (PILSBRY)	Rare
36. <i>Myadora fluctuosa</i> GOULD	Common

Gastropoda

37. <i>Puncturella</i> (<i>Puncturella</i>) <i>nobilis</i> (A. ADAMS)	Rare
38. <i>Patelloida schrenckii</i> (LISCHKE)	Common
39. <i>Patelloida pygmaea</i> (DUNKER)	Common
40. <i>Patelloida</i> sp.	Rare
41. <i>Patelloida</i> (<i>Tectura</i>) <i>pallida</i> (GOULD)	Rare
42. <i>Margarites</i> (<i>Lirularia</i>) <i>pygmaea</i> (YOKOYAMA)	Rare
43. <i>Margarites</i> sp.	Common

44. <i>Solariella</i> sp.	Common
45. <i>Calliostoma multiliratum</i> (SOWERBY)	Common
46. <i>Ganesa (Leptogyra)</i> sp.	Rare
47. <i>Homalopoma amussitata</i> (GOULD)	Abundant
48. <i>Lacuna inornata</i> (YOKOYAMA)	Common
49. <i>Cingula</i> sp. No. 1.	Common
50. <i>Cingula</i> sp. No. 2.	Rare
51. <i>Alvania concinna</i> A. ADAMS (= <i>Rissoa sadoensis</i> YOKOYAMA)	Common
52. <i>Alvania maya</i> (YOKOYAMA)	Common
53. <i>Caecum</i> sp.	Common
54. <i>Cerithiopsis</i> sp.	Rare
55. <i>Seila crassicincta</i> (YOKOYAMA)	Common
56. <i>Triphora</i> sp.	Rare
57. <i>Leucotina diana</i> (A. ADAMS)	Rare
58. <i>Menestho (Menestho) exauratissima</i> (DALL et BARTSCH)	Rare
59. <i>Menestho (Odetta)</i> sp.	Rare
60. <i>Polinices (Lunatina) pallida</i> BRODERIP et SOWERBY	Rare
61. <i>Natica (Tectonatica) clausa</i> BRODERIP et SOWERBY	Rare
62. <i>Trophon (Boreotrophon)</i> sp.	Rare
63. <i>Ocenebra (Ocinebrellus) adunca</i> (SOWERBY)	Rare
64. <i>Mitrella burchardi</i> (DUNKER)	Abundant
65. <i>Searlesia fuscolabiata</i> (SMITH)	Rare
66. <i>Nassarius (Tritonella) dominulus</i> (TAPPARONE-CANEFRI)	Rare
67. <i>Haedropleura fukuchiana</i> (YOKOYAMA)	Rare
68. <i>Cythara (Mangelia) deshayesii</i> (DUNKER)	Rare
69. <i>Ringicula</i> sp.	Rare
70. <i>Retusa</i> sp.	Rare

Brachiopoda

71. <i>Terebratalia coreanica</i> (ADAMS et REEVE)	Rare

Among the 39 species of Mollusca reported by Prof. NAGAO, the 17 species are not represented in my collection and they are as follows: *Pseudogrammatodon obliquata* (YOKOYAMA), *Anadara inflata* (REEVE), *Mytilus edulis* (LINNÉ), *Ostrea gigas* THUNBERG, *Ostrea rosacea* DESHAYES, *Joanisiella cumingi* (HANLEY), *Lucina acutilineata* (CONRAD), *Cardium muticum* REEVE, *Callista pacifica* (DILLWYN), *Cyclina sinensis* (GMELIN), *Schizothaerus nuttalli* (CONRAD), *Macoma tokyoensis* MAKIYAMA, *Panope japonica* A. ADAMS, *Calliostoma shinagawensis* TOKUNAGA, *Natica janthostoma* DESHAYES, *Neptunea arthritica* (BERMARDI), *Nassarius japonicus* (A. ADAMS). The two species, *Calliostoma shinagawensis* TOKU-

NAGA and *Nassarius japonicus* (A. ADAMS), should be identified as *Calliostoma multiliratum* (SOWERBY) and *Nassarius dominulus* (TAPPARONE-CANEFRI), both are represented in my collection. Hence all of the known species of the Sisinai fossil Mollusca up to the present time indicates 69 in number, viz. 54 of my identified forms together with 15 of NAGAO's collection.

MESSRS. KINOSITA and ISAHAYA¹⁾ have reported 109 species of the recent shells from Hokkaidô, of which the following species are found in the Sisinai fauna: *Arca boucardi* JOUSSEAME, *Glycymeris yessoensis* (SOWERBY), *Mytilus grayanus* DUNKER, *Mytilus edulis* LINNÉ, *Chlamys swiftii* (BERNARDI), *Chlamys akazara* KURODA, *Pecten yessoensis* JAY, *Ostrea gigas* THUNBERG, *Cardium californiense* DESHAYES, *Callista brevisiphonata* (CARPENTER), *Saxidomus purpuratus* (SOWERBY), *Venerupis variegata* (SOWERBY), *Mactra voyi* (GABB), *Sanguinolaria olevacea* (JAY), *Macoma incongrua* (V. MARTENS), *Tellina salmonea* (CARPENTER), *Hiatella orientalis* (YOKOYAMA), *Panope japonica* A. ADAMS, *Mya japonica* JAY, *Patelloida pallida* (GOULD), *Homalopoma amussitata* (GOULD), *Natica janthostoma* DESHAYES, *Tritonalia adunca* (SOWERBY), *Mitrella burchardi* (DUNKER), *Neptunea arthritica* (BERNARDI), *Searlesia fuscolabiata* (SMITH), *Nassarius dominulus* (TAPPARONE-CANEFRI).

Dr. SASAKI²⁾ listed 87 living species of Pelecypoda found in Hokkaidô and Saghalin, and among them the following pelecypods are also known in the shell bed of Sisinai: *Nucula insignis* GOULD, *Pseudogrammatodon obliquata* (YOKOYAMA), *Arca boucardi* JOUSSEAME, *Anadara inflata* (REEVE), *Glycymeris yessoensis* (SOWERBY), *Mytilus grayanus* DUNKER, *Chlamys swiftii* (BERNARDI), *Diplodonta usta* (GOULD), *Lucina acutilineata* (CONRAD), *Codakia pisidium* (DUNKER), *Cardium muticum* REEVE, *Venerupis variegata* (SOWERBY), *Mactra voyi* (GABB), *Schizothaerus nuttalli* (CONRAD), *Gari californica* (CONRAD), *Macoma nipponica* (TOKUNAGA), *Aloidis venusta* (GOULD), *Mya truncata* LINNÉ, *Mya japnica* JAY.

There are 31 species of mollusks, which were not reported by SASAKI, KINOSITA and ISAHAYA. But are indicated in my pre-

1) KINOSITA and ISAHAYA: Catalogue of the Mollusca of Hokkaidô, Rep. Fish. Exp. Stat. Hokkaidô, No. 33, 1934.

2) SASAKI: A List of Lamellibranchs from Hokkaidô and Saghalin, Bull. Sch. Fish. Hokkaidô Imp. Univ., Vol. 3, 1933.

sent paper, and they are already known in northern Japan except the following 7 species: *Crenella yokoyamai* NOMURA, *Ostrea rosacea* DESHAYES, *Mysella oblongata* (YOKOYAMA), *Lacuna inornata* (YOKOYAMA), *Leucotina diana*e (A. ADAMS), *Haedropleura fukuchiana* (YOKOYAMA), *Cythara deshayesii* (DUNKER). Of the above mentioned species, *Mysella oblongata* YOKOYAMA and *Lacuna inornata* (YOKOYAMA) are not found in living state, and distribution of these 7 species in fossil and living state is as follows:

Crenella yokoyamai NOMURA

Fossil: Pleistocene and Post-Pleistocene of Kwantô region.

Living: Central Japan.

Ostrea (Lopha) rosacea DESHAYES

Fossil: Miocene of Akita-ken and Hukusima-ken. Pliocene of Taiwan (Formosa). Pliocene, Pleistocene and Post-Pleistocene of Kwantô region.

Living: Central and Western Japan. China. Lord Hood's Island.

Mysella oblongata (YOKOYAMA)

Fossil: Pleistocene of Kwantô region and Noto Peninsula.

Lacuna inornata (YOKOYAMA)

Fossil: Pliocene of Akita-ken.

*Leucotina diana*e (A. ADAMS)

Fossil: Pliocene of Isikawa-ken and Niigata-ken.

Living: Central and Western Japan.

Haedropleura fukuchiana (YOKOYAMA)

Fossil: Pleistocene of Kwantô region.

Living: Central Japan.

Cythara (Mangelia) deshayesii (DUNKER)

Fossil: Pliocene of Akita-ken and Sado island. Pliocene, Pleistocene and Post-Pleistocene of Kwantô region.

Living: Central and Western Japan.

The Sisinaï fauna are mostly living in northern Japan, and a few species which are not found yet in this region are known among the Oyasio-type fossils of several localities. From the evidence obtained by the Sisinaï fossil fauna, it seems to be reasonable to conclude that during the deposition of the shell bed, the

water temperature in Sisinaï region was approximately similar with that of the present time.

北海道石狩郡當別村獅子内産洪積世貝化石 (摘要)

大 炊 御 門 經 輝

嘗て長尾教授に依つて報告せられた北海道石狩郡當別村獅子内の貝化石に就いて述べてある。

採集數 71 種, 内斧足類 36, 腹足類 34, 腕足類 1。斧足類及び腹足類 70 種の中同定し得たものは 54 種で, 他の 16 種は微小な貝で恐らく新種と思はれるものも含まれてゐるが, 是等に就いては目下調査中であるから將來更に報告することにしたい。

長尾教授の報告せられたものと合すると獅子内の貝化石は 69 種になり, その大部分は現在北日本に棲息してゐる。従つて本貝層の堆積當時の水溫は今日の北海道のそれと大差なかつたと思はれる。