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MOLLUSCAN FAUNA OF THE SO-CALLED "MOMIJİYAMA TRANSITIONAL FORMATION"

By

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(With 2 Plates and 1 Text-Figure)

Contribution from the Department of Geology and Mineralogy,
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As to the lower stratigraphical limit of the Oligocene Poronai fauna the writers quite agree to what was suggested by MINATO in one of his recent papers⁽¹⁾. Namely, the said fauna appeared, for the first time, in the lowest part of the Urahoro group which is underlain by the formation containing the remains of *Woodwardia*, as seen in the Kushiro coal-field in the eastern part of Hokkaidō.

On the other hand, much has been disputed by geologists as to the period of disappearance of the Poronai fauna in the Tertiary sequence of Hokkaidō. The opinion seems to have prevailed, however, that the pyroclastic formation below the Miocene Kawabata formation separates the former from the Poronai fauna which is characterized by the so-called Asagai-Poronai fauna: in other words, there is an independent formation between the Poronai and the Kawabata formations. To this intermediate formation, the Magaribuchi formation of Teshio Province, the Haranosawa formation of the Haboro coal-field and the Momijiyama formation of the Ishikari coal-field are considered to belong. This intermediate formation has been considered to be correlative with the so-called "Transitional formation"^{(2),(3)} in the Tertiary succession of Japan, in regard both to the lithological nature and the stratigraphical position.

These formations that develop along the western slope of the backbone range of Hokkaidō underlies the coal-bearing series of beds with plant fossils which gradually merge into a marine formation, being contemporaneous with the bed yielded *Desmostylus mirabilis* NAGAO. On the other hand these formations rest on the Cretaceous formation or

the formations containing the elements of the Poronai fauna, and at the same time, they are associated with abundant volcanic materials.

Consequently, the diastrophism including the phenomena of marine transgressions and regressions as well as volcanism, taken into consideration together, these formations are regarded to have followed the same way of deposition as OTUKA's "Transitional formation" between the Asagai-Poronai and the Kadonosawa formations. These formations have been held by many geologists to represent the same horizon, and as a whole the name "Momijiyama stage" has been in use among geologists.

However, the so-called Momijiyama stage of different regions has not been studied in detail paleontologically and stratigraphically, and consequently the precise stratigraphic correlation is yet to be done based on the further paleontological and geological evidences available.

In this short article the writers venture a discussion on the problem of the geological age of the Momijiyama formation as defined above, as well as the so-called "Transitional formation" in general of Hokkaidô.

The opinions concerning the Momijiyama formation in the Ishikari coal-field in central Hokkaidô, as the representative of the so-called transitional formation between the Poronai shale formation and the Kawabata Miocene formation were diversified in the following way.

1) This formation is transitional between the Poronai formation and the Kawabata formation.....H. IMAI (1921),⁽⁴⁾ S. MURATA (1923, 1930),⁽⁵⁾⁽⁶⁾

2) This formation is an independent stratigraphical unit between the Poronai formation and Kawabata formation with characteristics of its own.....Y. SASA (1943, 1951),⁽⁷⁾⁽⁸⁾ M. MATSUI (1950),⁽⁹⁾ S. TAKAO (1951)⁽¹⁰⁾.

3) This formation is to be included in the Kawabata formation.....S. TASHIRO (1951)⁽¹¹⁾.

4) This formation is a part of the Poronai formation the lithic characters being gradually changed from the latter.....K. HUIOKA (1941)⁽¹²⁾.

On examining the fossils from the Momijiyama formation and observing the stratigraphical evidence in the vicinity of Momijiyama and Hobetsu, Ishikari coal-field, the writers are led to agree to K. HUIOKA's view that this formation is a local, specialized facies of the upper-most part of the Poronai shale formation, and consequently of the same geological age as the Poronai formation. Moreover, this formation is not to be regarded as contemporaneous with the Magaribuchi

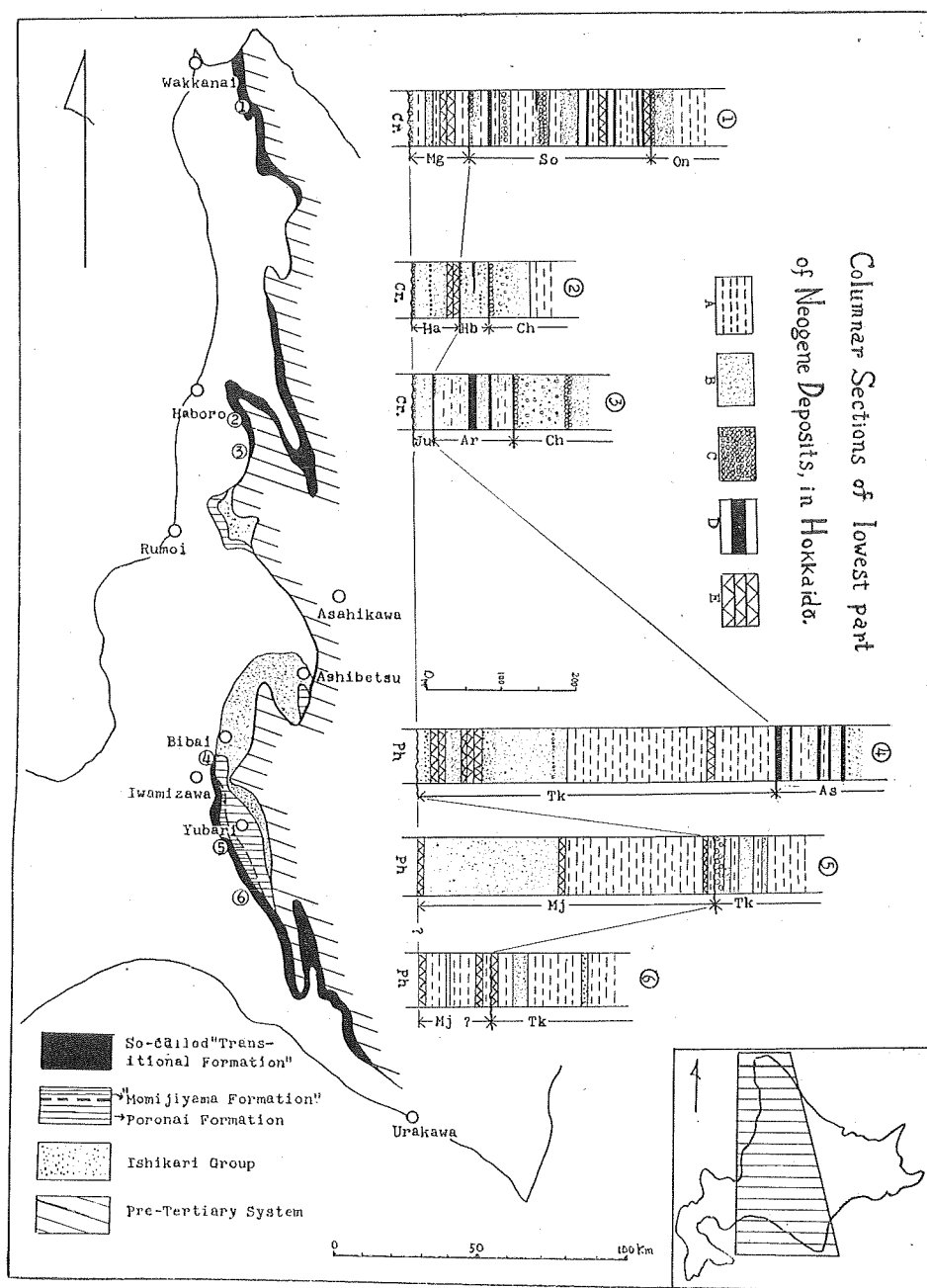
and the Haranosawa formations, but in all probability be older.

Namely, among the fossils collected the writers have recognized the following species of molluscan species.

- Portlandia* (P.) *watasei* (KANEHARA)
- Portlandia* (P.) *ovata* (TAKEDA)
- Yoldia* (s.s.) *sobrina* TAKEDA
- Malletia* *poronai* (YOKOYAMA)
- Acila* (s.s.) *elongata* NAGAO et HUJIOKA
- Venericardia* (C.) *tokudai* TAKEDA
- Venericardia* (C.) *ezoensis* TAKEDA
- Venericardia* (C.) *laxata* MAKIYAMA
- Venericardia* (C.) *hobetsuensis* n. sp.
- Venericardia* (C.) *inflata* n. sp.
- Venericardia* (C.) sp. (nov.?)
- Thyasira* *bisecta* (CONRAD)
- Macoma* sp.
- Periploma* *besshoensis* (YOKOYAMA)
- Trochocerithium* *uadanum* (YOKOYAMA)
- Natica* sp.
- Ancistrolepis* *ishikariensis* HAYASAKA et MATSUI
- Ancistrolepis* *hokkaidoensis* n. sp.
- Neptunea* *umbelliformis* n. sp.
- Fulgoraria* (P.) sp.
- Callianassa* *muratai* NAGAO et HUJIOKA

This fauna is rather small in the number of species, but fairly rich in number of individuals. Of this fauna, *Yoldia* (s.s.) *sobrina*, *Venericardia* *laxata*, *V. ezoensis*, *Ancistrolepis* *hokkaidoensis*, *Neptunea* *hobetsuensis* and *Callianassa* *muratai*, a very common crab species of this fauna, are the species characteristic of the Poronai fauna. Moreover most of the other species are members of the Poronai fauna which are obtained from the Poronai or the Onbetsu group in the Kushiro coal-field.

Stratigraphically, this formation is composed of yellowish green sandstone and grey sandy shale in the lower part, and of mudstone with beds of volcanic ash in the upper part as observed in the Momijiyama district: it is shown in the columnar section (5) of the text-figure. Thus, this formation is lithologically distinct from the Poronai formation proper (mudstone and shale). But no tract of this sandstone facies characteristic of this formation, is recognized in the region north



and south of the Ishikari coal-field, excepting this area of Momijiyama.

Judging from the distribution and paleontological evidences of the Momijiyama formation, the writers believe that this formation represents a heteropic facies of the Poronai formation and developed in the region around Momijiyama only, as a particular phase of the upper Poronai shale formation.

On other hand, the Magaribuchi and the Haranosawa formations which have been considered contemporaneous with the Momijiyama formation does not yield so many fossils as to prove the its contemporaneity with the Poronai. Among the fossils hitherto collected are *Acila* sp. *Venericardia magaributiensis*, *V. abeshinaiensis*, *Spisula ezodensata* and *S. onnechiuria*: these species are forms common in the Kawabata Miocene formation. Some others like, *Trochocerithium wadanum* and *Portlandia watasei*, are species having a wide vertical range from the Poronai formation to the Kawabata formation.

Consequently, the writers are disposed to expect that these formations will prove in the future to be correlative rather with the lowest part of the Kawabata (the Takinoue formation), and probably to be Miocene in age.

From these considerations, the writers feel assured of the following conclusions concerning the general aspects of the Momijiyama formation and the formations hitherto considered to represent the same horizon.

Text-Figure: Map showing the Distribution and Columnar Sections of the Lowest part of the Neogene Deposits, in Hokkaidô.

Columnar sections were taken at the following points:

- 1: Magaributi, Teshio Prov. (by S. UOZUMI and M. SARAKI 1952).
- 2: Upper stream of the Haboro-gawa, Haboro coal-field. (by S. UOZUMI and S. TAKAHASHI 1949).
- 3: The Jugosennosawa, Uryû coal-field. (by K. HUIJI 1952).
- 4: The Poromui-gawa, and Asahi-Kotakinosawa, Ikushunbetsu coal-field. (by S. SATÔ 1952).
- 5: The Yûbari-gawa, Momijiyama, Ishikari coal-field. (by S. UOZUMI 1952).
- 6: Upper course of the Mukawa, Hobetsu, coal-field (by S. UOZUMI 1953).

Cr: Cretaceous deposits;	Ph: Poronai formation;
Mg: Magaribuchi formation;	Ha: Haranosawa formation;
Ju: Jugosennosawa formation;	Tk: Takinoue formation;
Mj: Momijiyama formation;	So: Soya coal-bearing beds;
Hb: Haboro coal-bearing beds;	Ar: Arakisawa coal-bearing beds;
As: Asahi coal-bearing beds;	On: Onishibetsu formation;
Ch: Chikubetsu formation;	A: Shale and Mudstone;
B: Sandstone;	C: Conglomerate;
D: Coal;	E: Tuff and Volcanic ash.

I) Momijiyama fauna contains a part of the elements of the Poronai fauna.

II) This fauna is quite different from the Miocene Kawabata fauna.

III) In the Tertiary deposits of Hokkaidô, the pyroclastic formations between the formations yielding *Desmostylus* on the one hand, and the shale formation containing the Poronai fauna on the other hand, must be subdivided into two groups: namely, the younger group, represented by the Magaribuchi and the Haranosawa formations, may be included in the Kawabata series, and the older is likely to be nothing but what has been called the Poronai series.

IV) It may be said, though somewhat venturesome, the Momijiyama formation and equivalent formations do not seem to overlap upon any other formation than the Poronai formation: the pyroclastic formation underlain by the Cretaceous or other pre-Tertiary deposits and seemingly older igneous rocks, may be of the younger age mentioned above, and the one underlain by Poronai formations should be subdivided two parts as stated above.

V) The writers employ the term "Momijiyama formation" to signify the local specialized facies of the uppermost part of the Poronai shale formation, but not to represent one independent geological horizon: it only represents the name of rock facies.

VI) The boundary between the Oligocene and the Miocene deposits in Hokkaidô seems to be drawn between the pyroclastic marine formation above and the so-called Momijiyama beds below.

If this is really the case, we should expect an evidence of stratigraphical boundary of some kind or other between two formations. This problem will make a thesis for another paper to follow.

It is quite sure that certain stratigraphical evidences have been obtained in the regions around Momijiyama and Hobetsu.

Description of Some Species

Family *NUCULANIDAE*

Genus *Portlandia* MÖRCH 1857

Portlandia (*Portlandella*) *watasei* (KANEHARA)

1937. *Yoldia* (Y.) *watasei* KAN.: Jap. Jour. Geol. Geogr., vol. 14, nos. 3-4, pp. 158-159, pl. 15, figs. 5-9.

Specimens obtained from Momijiyama formation have higher beak than the topotype from Poronai shale formation, but this can not be

a specific difference.

This species was considered by K. KANEHARA to belong to *Yoldia*, but it has a shallow condrophore which is slightly extended downward from the hinge plate, and is similar to that of *Portlandella japonica*.

From the nature of the hinge and the outline of the shell, this species might belong to the subgenus *Portlandella*, and is closely related to *P. (P.) japonica*.

Occurrence:—Momijiyama, Yûbari city, Ishikari Prov. U. H. Loc. Reg. No. 5007. (U. H. = Dept. Geol. Min. Fac. Sci. Hokkaido, Univ. Sapporo.)

Repository:—U. H. Reg. No. 11289

Portlandia (Portlandella) ovata (TAKEDA) (MS.)

Pl. 25 Fig. 9.

In the type specimen (U. H. Reg. No. 11165) designated by H. TAKEDA, the posterior end looks fairly rostrate, but the specimens is more or less deformed. Our specimens are well preserved and the posterior end is not so rostrate but rather subtruncate.

This species is distinguished by its higher shell from *P. (P.) mikasaensis*⁽¹³⁾ which is obtained from Poronai formation.

Occurrence:—The Koizuminosawa, a branch of the Azuma-gawa, Azuma-mura, Iburi Prov. U. H. Loc. Reg. No. 5008

Repository:—U. H. Reg. No. 11276

Genus *Yoldia* MÖLLER 1842

Yoldia (s.s.) sobrina TAKEDA (MS.)

Pl. 25 Fig. 6.

This species somewhat resembles Recent species, *Y. limatula*⁽¹⁴⁾ and *Y. naganumana*,⁽¹⁵⁾ but distinguished from them by the attenuate posterior and the posterior-dorsal margin which bend upwards at its end.

Occurrence:—The Koizuminosawa, a branch of the Azuma-gawa, Azuma-mura, Iburi Prov. U. H. Loc. Reg. No. 5008

Repository:—U. H. Reg. No. 11272

Family *NUCULIDAE*Genus *Acila* H. et A. ADAMS 1858*Acila* (s. s.) *elongata* NAGAO et HUJIOKA

Pl. 25 Fig. 7.

1941. *Acila vigilia* var. *elongata* NAGAO et HUJIOKA: Jour. Fac. Sci. Hokkaido Univ. Ser. 4, vol. 5, pp. 133-135, pl. 31, figs. 1-4.

This species has been considered as an index fossil of the lowest part of the Neogene Tertiary in Hokkaidô, but it seems that this species ranges from the Poronai formation to the Kawabata according to the knowledge of the writers, although its acmaic period is recorded in the lowest part of the Kawabata formation.

Occurrence:— Momijiyama, Yûbari City, Ishikari Prov. U. H. Loc. Reg. No. 5007

Repository:—U. H. Reg. No. 11283

Family *CARDITIDAE*Genus *Venericardia* LAMARCK 1801*Venericardia* (*Cyclocardia*) sp. nov.?

Pl. 25 Fig. 2

Shell rather thin, globose, slightly higher than long; circular outline of shell is broken by the beak which is moderately high and situated almost centrally, thus the outline assumes a pear-shape; posterior dorsal margin rather straight, anterior one slightly concave; ventral margin regularly rounded, both ends joining smoothly. Lunule well defined, which is circumscribed by lateral groove; surface ornamented with growth lines and about twenty-two radial ribs which are well rounded near the middle of shell and obsolete near the margin, owing to the increasing density of growth lines. Ligament rather short; crenulation of inner margin very short and rather obsolete. Hinge unknown.

Dimensions:—	Length	Height	Thickness
	25.5	29.6	18.5 mm.

Occurrence:— Momijiyama, Yûbari City, Ishikari Prov. U. H. Loc. Reg. No. 5007

Repository:—U. H. Reg. No. 11274

This species resembles *V. tokudai* in point of the high shell, but the latter is higher than the former, and inner crenels of the latter as a whole are longer than those of the former. Besides, this species is very similar to *V. honnai* TEGLAND,⁽¹⁶⁾ from the Blakeley formation, but may be distinguished from it in having less prominent ribs which are not noded.

At our hands there are only two, specimens with ill preserved surface ornamentation. It may possibly be a new species, but the writers hesitate to propose a new name to it until we could get some better material of this species.

Venericardia (Cyclocardia) hobetsuensis n. sp.

Pl. 25 Figs. 1a, 1b.

Shell very thick, subtriangular in outline; beak not at all prominent, with anteriorly recurved umbones; lunule rather large, elongate-cordate in form, deeply impressed, and is circumscribed by a blunt ridge; escutcheon not well defined; ligament very long, stretching over 2/3 of the posterior dorsal margin; anterior dorsal margin very short and feebly concave, posterior one gently convex; anterior end broadly rounded, posterior one rather subtruncate, with a tendency to give a trapezoidal ovate outline. Shell is ornamented with 23–25 ribs, which are broadly rounded and separated into three groups; the ribs between fourth and ninth from posterior end are much narrower and closer than others.

Dimensions:—	Length	Height	Thickness	
	33.0	29.1	22.6	(Both valve)
	31.0	26.6	10.5	(Right valve)
	30.7	28.8	11.0 mm.	(Right valve)

Occurrence:—The Pankeopiraruka-sawa, a branch of the Hobetsu-gawa, Hobetsu-mura, Iburi Prov. U. H. Loc. Reg. No. 5009

Repository:—U. H. Reg. No. 11262 (Holotype)

This species differs from *V. tokunagai* YOKOYAMA,⁽¹⁷⁾ from Jô-ban coal-field, in its more impressed lunule which is separated from the disc by a blunt ridge, longer ligament, and more angulated anterior adductor. *V. abesinaiensis*,⁽¹⁸⁾ reported from Teshio Prov., Hokkaidô by Y.

OTUKA, is distinguished in the proportionately greater height. Besides, this species seems to have a close relation with *V. yokatagaensis* CLARK,⁽¹⁹⁾ but it differs from the latter in the lower beak and the more inflated shell.

Venericardia (Cyclocardia) inflata n. sp.

Pl. 25 Figs. 5a, 5b.

Shell moderate in size, very strongly ventricose and equal in length and height; circular outline not disturbed by umbo which is middle in position and very low; anterior dorsal margin short and very slightly concave, posterior one regularly rounded and passing gradually into ventral margin; anterior and posterior ends regularly rounded, but the anterior one slightly produced. Lunule rather broad, heart-shape; surface with about 24 radial ribs, not distinct.

Dimensions:—	Length	Height	Thickness
	26.6	26.6	21.8 mm.

Occurrence:—Momijiyama, Yûbari City, Ishikari Prov. U. H. Loc. Reg. No. 5007

Repository:—U. H. Reg. No. 11275 (Holotype)

This species, which is characterized by its being nearly equal in length and height with strong convexity, is distinguishable from all the species of *Venericardia* from the Japanese Tertiary deposits previously reported with the characteristics just mentioned.

This species resembles *V. ventricosa*⁽²⁰⁾ in point of convexity but its umbo is much lower and the shell form has a more regularly rounded outline.

Venericardia (Cyclocardia?) tokudai TAKEDA (MS.)

Pl. 25 Fig. 4.

This species is characterized by the very high shell and the steeply inclined posterior dorsal margin.

Occurrence:—Momijiyama, Yûbari City, Ishikari Prov. U. H. Loc. Reg. No. 5007

Repository:—U. H. Reg. No. 11269

Venericardia (Cyclocardia) laxata YOKOYAMA

Pl. 25 Fig. 3.

1924. *Venericardia laxata* YOK: Jour. Coll. Sci. Imp. Univ. Tōkyō. vol. 5, art. 3, p. 19, pl. 3, figs. 16-18.1925. *Venericardia laxata* YOK: Jour. Coll. Sci. Imp. Univ. Tōkyō. vol. 45, art. 7, p. 7, pl. 1, fig. 11.

This species which is approximate to *V. compressa* YOKOYAMA,⁽²¹⁾ from the Poronai shale formation, may be distinguished from it by many radial ribs and a more trigonal forms. And it is interesting that this species is commonly found in the uppermost Poronai formation while *V. compressa* is popular in the middle and the lower part of the Poronai shale formation.

Occurrence:—Momijiyama, Yūbari City, Ishikari Prov. U. H. Loc. Reg. No. 5007

Repository:—U. H. Reg. No. 11271

Family *BUCCINIDAE*Genus *Ancistrolepis* DALL 1895*Ancistrolepis ishikariensis* HAYASAKA et MATSUI

Pl. 26 Fig. 2.

1951. *Ancistrolepis yudaensis* var. *ishikariensis* HAY. et MAT. (pars.): Jour. Fac. Sci. Hokkaidō Univ. Ser. 4, vol. 7, no. 4, pp. 334-335, pl. 1, figs. 4a, 4b. (non fig. 3).

Shell moderately large in size; spire rather low, shorter than length of aperture; number of whorls six or seven; body whorl fairly biangular; only upper angle shown on spire; each whorl broadly subtabulate posteriorly between angle and suture, the subtabulate area being fairly concave, and ornamented with three or four feeble spiral lines; whorl surface of spire below this area, almost flat and extends down to suture, and ornamented with two spiral lines stronger than those on subtabulate area; body whorl ornamented with two well develed the posterior one being stronger and more prominent than the anterior one; the surface below the anterior keel, slopes down rather rapidly to canal, and is covered by eight spiral lines. Incremental lines present, but not pronounced. Aperture subrectangular; pillar straight.

Dimensions:—Altitude of shell, 79 mm.; spiral whorls being broken, it probably was at least 88 mm.; altitude of body whorl 46.5 mm; maxi-

mum diameter 52 mm., apical angle 55°–60°.

Occurrence:—The Sakasa-sawa, Hobetsu-mura, Iburi Prov. U. H. Loc. Reg. No. 5010

Repository:—U. H. Reg. No. 11278 (Paratype) (Holotype: the specimen illustrated by pl. 1, fig. 4, by HAYASAKA and MATSUI, 1951, excepting fig. 3).

The type specimens of HAYASAKA and MATSUI lack the surface ornamentation. The specimens here figured show the fairly wide canal and a well developed keel near the middle of each whorl.

The present species somewhat resembles *A. yudaensis* OTUKA,⁽²²⁾ a species found in the Kadonosawa formation, in point of having spiral ribs formed on the shoulder, and the rather angulated whorls. But the latter is distinguished from the former in that the shoulder keel is feebler, and spiral lines on the area between the upper suture and the shoulder keel are more numerous.

Ancistrolepis hokkaidoensis n. sp.

Pl. 25 Fig. 8; Pl. 26 Fig. 5.

1951. *Ancistrolepis yudaensis* var. *ishikariensis* HAYASAKA et MATSUI (pars):
Jour. Fac. Sci. Hokkaido Univ. Ser. 4, vol. 7, pl. 1, fig. 3? (non fig. 4).

Shell of moderate size, spire rather high; number of whorls seven or eight; body whorl fairly large, biangulate; only upper angle is seen anteriorly on whorls of spire; each whorl with a slightly convex area between angle and suture, its area slopes up obliquely to suture, ornamented with two or three feeble spiral lines which crowd centrally; whorls of spire below the convex area straight, and ornamented with one spiral line which is more or less stronger than one on the convex area above. Body whorl is ornamented with two spiral keels, the posterior one being more conspicuous and a little more produced than the anterior one; the surface between them has one spiral line; below the whorl the surface slopes very rapidly down to the canal and is covered by seven spiral ribs that are feebler than the keels on the shoulder and stronger than the spiral lines on the convex area; pillar faintly twisted.

Dimensions:—Altitude of shell, 80 mm.; altitude of body whorl, 41mm.; maximum diameter, 45 mm.; apical angle 50°.

Occurrence:—The Ōmatsurinosawa, a branch of the Azuma-gawa, Azuma-mura, Iburi Prov. U. H. Loc. Reg. No. 5011

Repository:—U. H. Reg. No. 11277 (Holotype)

This species is distinguished from *A. ishikariensis*, by a higher spire, a narrower apical angle and by having a convex area between upper suture and shoulder keel, in contrast of the fairly concave one in *A. ishikariensis*. However, those two species are very closely allied to each other, and it seems that the present species has the same relation to *A. ishikariensis* as to Recent species, *A. polygramma* does to *A. dommon*, and *A. magnus* to *A. uritai*.

Genus *Neptunea* RÖDING 1798

Neptunea umbelliformis n. sp.

Pl. 25 Fig. 1, Pl. 25 Fig. 10.

1951. *Melongena angasiana* HAYASAKA and MATSUI: Jour. Fac. Sci. Hokkaidō Univ. Ser. 4, vol. 7, no. 4, p. 336, pl. 1, figs. 5a, 5b. (non YOKOYAMA 1932).

Shell rather large in size, number of whorls more than four, (probably five—six); body whorl fairly large; whorls of spire rather low; each whorl has an angulation due to well developed keel at or just a little below the median portion of the whorl; four and two spiral lines respectively on the surface above and below the keel on spiral whorls; on body whorl, the surface below the keel is ornamented with about seven spiral ribs which are more or less prominent, with interspaces about twice as wide as ribs that gradually weaken toward base; dense, faint growth lines over the entire surface. Aperture wide and canal moderately long, slightly recurved.

Dimensions:—Altitude of shell, 79 mm., spiral whorls broken, would probably have been at least 85 mm.; altitude of body whorl 66 mm.; maximum diameter, about 45 mm.

Occurrence:—The Sekiyusawa, Hobetsu-mura, Iburi Prov. U. H. Loc. Reg. No. 5012

Repository:—U. H. Reg. No. 11267 (Holotype)

The writers think that *Melongena angasiana* YOKOYAMA, described by HAYASAKA and MATSUI is identical with the specimens in the recent collection of the junior writer: at the same time the identification of the former with the Sachalin species of YOKOYAMA⁽²³⁾ is somewhat inaccurate, because the specimens were incomplete, deformed ones.

The present species is closely related to the Recent species, *Neptunea soluta* living in the waters around north Japan, and it is likely to be regarded as precursory to the latter. It differs from the Recent

species, however, in having seven spiral ribs, ornamenting the whorl surface between the shoulder keel and the base on the body whorl, in contrast to the rather smooth surface of *N. soluta*.

This species is quite common in the uppermost Poronai formation in the Hobetsu coal-field in the southern part of the Ishikari coal-field, but usually the specimens are deformed and poorly preserved. The present specimen (pl. 25 fig. 10,) and that figured under the name *M. angasiana* by HAYASAKA and MATSUI are so depressed that the keels of the body whorl appears much more strongly prominent as they really are.

Neptunea hobetsuensis MATSUI

Pl. 26 Fig. 4.

1950. *Neptunea hobetsuensis* MATSUI: Shinseidai no Kenkyu, no. 2, p. 6, fig. 4 (in Japanese).

1951. *Neptunea hobetsuensis* HAYASAKA and MATSUI: Jour. Fac. Sci. Hokkaidō Univ. Ser. 4, vol. 7, no. 4, p. 332-333. pl. 1, fig. 1.

This species is characterized by a relatively high spire and numerous, strong, wide spiral ribs which are slightly wider than interspaces; body whorl with 10 stronger and 4-5 weaker ribs, of which the latter are in the anterior side and crowded; the penultimate whorl with 4 stronger and 2 weaker ribs; the third whorl with 3 stronger and 2 weaker, the fourth whorl with 4-5 ribs, indiscriminate and hardly visible; the fifth and the sixth whorls unknown.

Occurrence:—The Hobetsu-gawa, Hobetsu-mura, Iburi Prov. U. H. Loc. Reg. No. 5013

Repository:—U. H. Reg. No. 11265

This species is distinguished from *N. uwasoensis* OTUKA,⁽²⁴⁾ *N. eos* KURODA⁽²⁵⁾ and *N. omurai* OTUKA⁽²⁶⁾ by a relatively longer spire and the absence of any auxiliary ribs between the main ribs.

Family VOLUTIDAE

Genus *Fulgoraria* SCHUMACHER 1817

Fulgoraria (Psephaea) sp.

Pl. 26 Fig. 3.

Three imperfectly preserved specimens at hand. In point of size, outline and certain sculptural features, the specimens are similar to

Psephaea antiquior, which was created by H. TAKEDA⁽²⁷⁾ from Poronai formation: it is characterized by having one collumellar fold near the canal.

Occurrence:—The Hobetsu-gawa, Hobetsu-mura, Iburi Prov. U. H. Loc. Reg. No. 5013

Repository:—U. H. Reg. No. 11259

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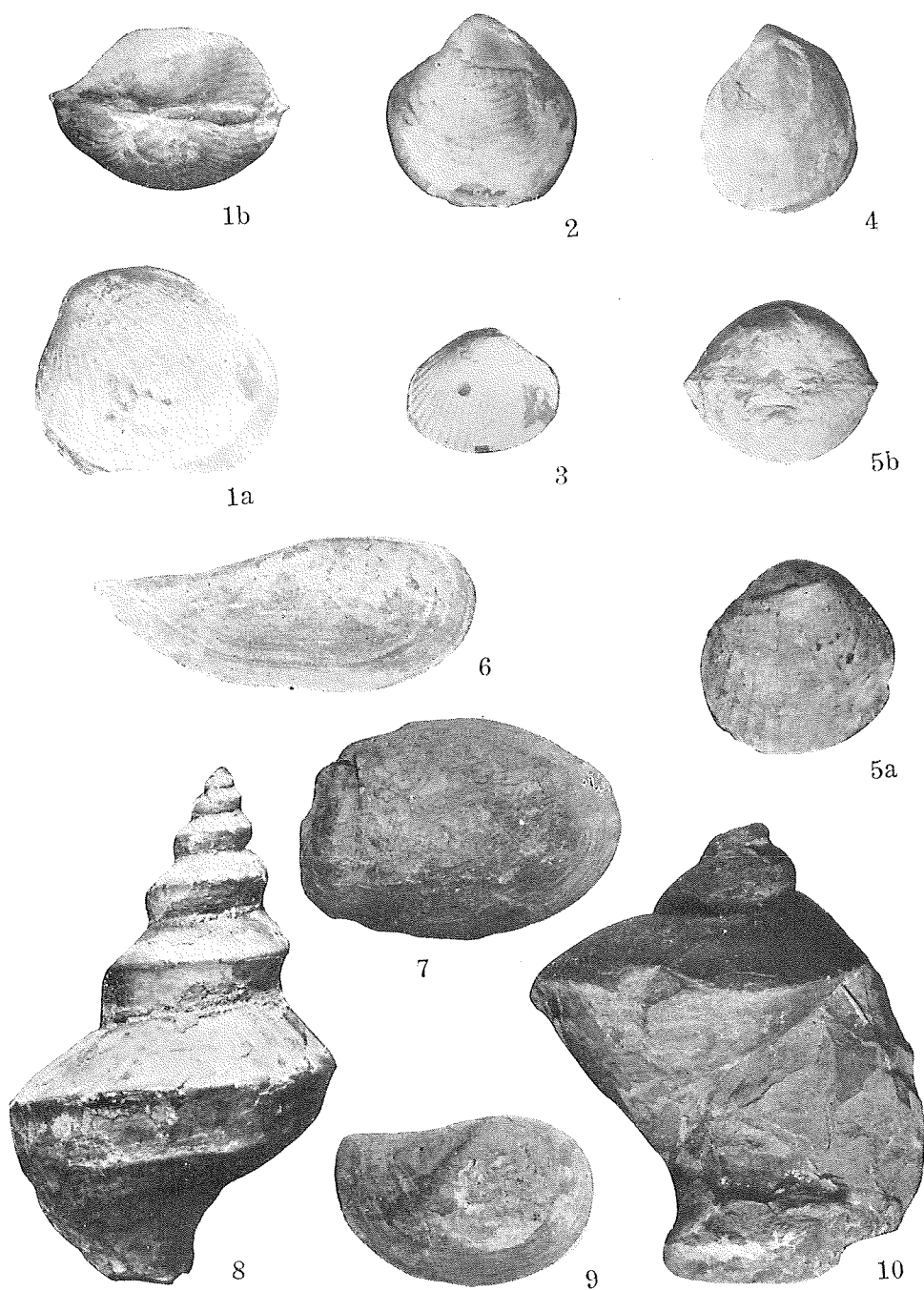
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**Explanation
of
Plate 25**

Plate 25

- Figs. 1a, 1b. *Venericardia (Cyclocardia) hobetsuensis* HAYASAKA and UOZUMI.
Fig. 2. *Venericardia (Cyclocardia)* sp.
Fig. 3. *Venericardia (Cyclocardia) laxata* YOKOYAMA.
Fig. 4. *Venericardia (Cyclocardia?) tokudai* TAKEDA (MS.).
Figs. 5a, 5b. *Venericardia (Cyclocardia) inflata* HAYASAKA and UOZUMI.
Fig. 6. *Yoldia (s. s.) sobrina* TAKEDA (MS.).
Fig. 7. *Acila (s. s.) elongata* NAGAO and HUJIOKA.
Fig. 8. *Ancistrolepis hokkaidoensis* HAYASAKA and UOZUMI.
Fig. 9. *Portlandia (Portlandella) ovata* (TAKEDA) (MS.).
Fig. 10. *Neptunea umbelliformis* HAYASAKA and UOZUMI.

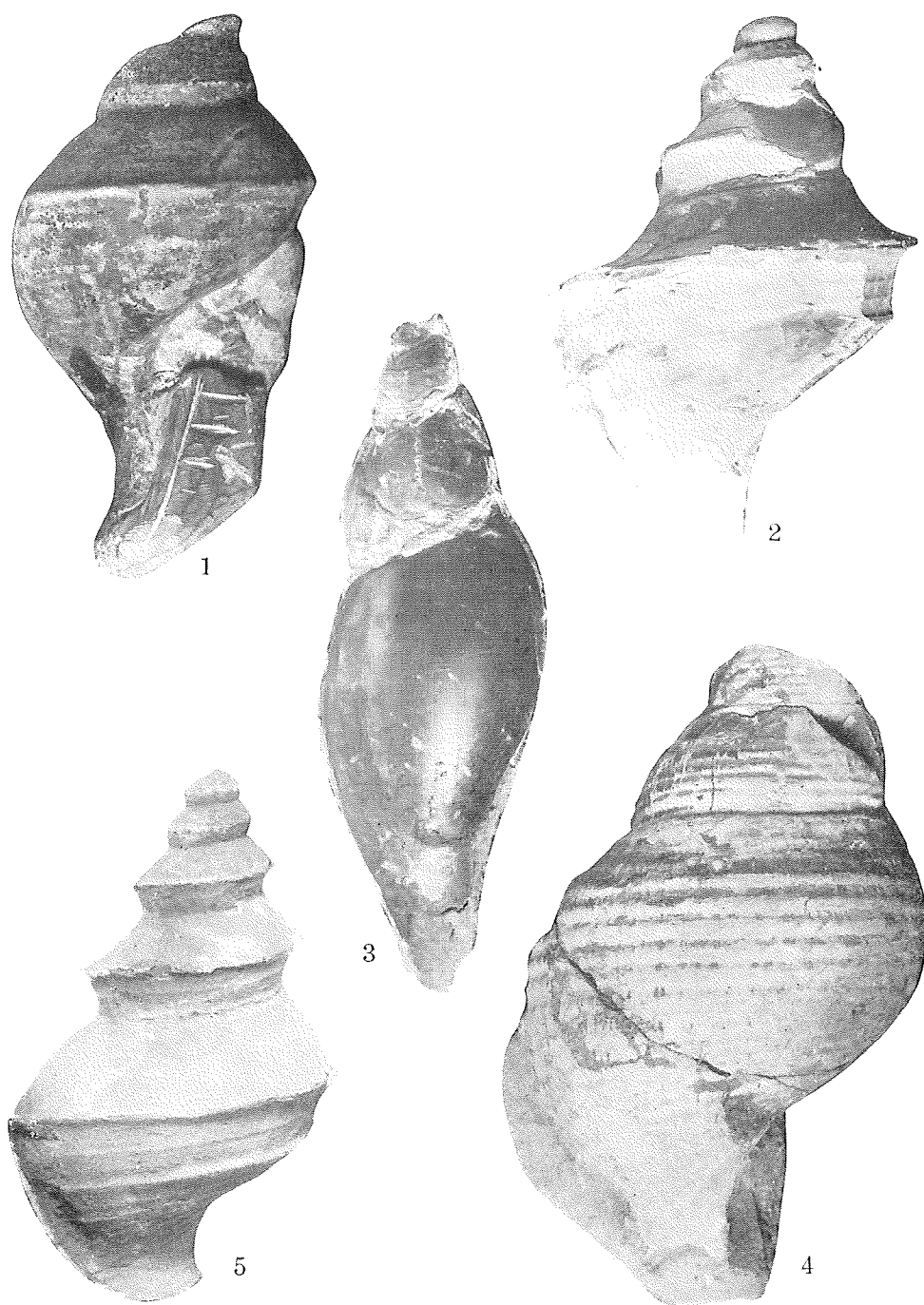


I. HAYASAKA and S. UOZUMI: Molluscan fauna of from Momijiyama Formation.

**Explanation
of
Plate 26**

Plate 26

- Fig. 1. *Neptunea umbelliformis* HAYASAKA and UOZUMI.
Fig. 2. *Ancistrolepis ishikariensis* HAYASAKA and MATSUI.
Fig. 3. *Fulgoraria* (*Phsephia*) sp.
Fig. 4. *Neptunea hobetsuensis* MATSUI.
Fig. 5. *Ancistrolepis hokkaidoensis* HAYASAKA and UOZUMI.



I. HAYASAKA and S. UOZUMI: Molluscan fauna of Momijiyama Formation.