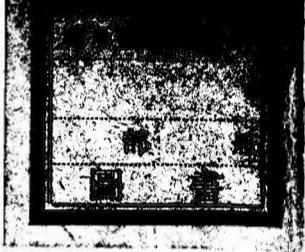


地質學



地質調查所報告



第百十一號

資料室

地質調査所報告 第百十一號

昭和六年^七十一月

目次

南樺太ノ新第三紀化石

南樺太ノ新第三紀化石

商工省囑託
理學博士

横山 又次郎

昭和五年中、商工技師村山賢一氏樺太廳ノ囑託ヲ受ケ、同廳管下ニ於ケル石油地ノ疑アル諸地方ノ地質ヲ調査シ、旁ラ化石ヲ採集スルコト多シ、而シテ此ノ化石ハ其ノ後予ニ寄セテ、之カ鑑識ヲ依囑セラレタルヲ以テ、予ハ久シク之ニ從事シ、頃者之ヲ終了スルヲ得タリ、本書ハ乃チ之カ結果ヲ載スルモノナリ

地質調査區域四アリ、名稱位置左ノ如シ

一、小田寒區域 榮濱郡白縫村ニ在リ

二、豊榮區域 留多加郡留多加村ニ在リ

三、登富津區域 野田郡小能登呂村ニ在リ

四、泥川菱取區域 留多加郡能登呂村ニ在リ

一、小田寒區域

此ノ區域ヲ構成スル地層ハ左ノ如シ(下ヨリ數フ)

- (一) 礫岩ヲ主トシテ其ノ間ニ砂岩ト頁岩トノ層ヲ挟ム、化石アリ
- (二) 砂岩 化石アリ
- (三) 硬質頁岩 罕ニ砂岩層を挟ム、化石アリ
- (四) 灰色頁岩 砂質頁岩、砂岩、礫岩、石炭等ノ層ヲ挟ム、化石アリ
- (五) 砂岩 化石アリ

一、豐榮區域

地層ノ順序左ノ如シ(下ヨリ數フ)

- (一) 頁岩、砂岩ノ交迭層 化石ヲ産セス
- (二) 硬質頁岩 化石ヲ産セス
- (三) 暗灰色頁岩 化石ヲ産セス

(四) 灰色頁岩 化石ヲ産ス

三、登富津區域

區域構造ノ地層ハ左ノ如シ

(一) 黑色頁岩 此ノ層ノ下部ハ之ヲ下部夾炭層ト稱ス、化石ヲ産セス

(二) 砂岩ト頁岩トノ交迭層 化石アリ、上中下ノ三段ニ配列ス

(三) 灰色頁岩 化石ヲ産セス

四、泥川菱取區域

此ノ區域ニ於テハ白堊層上左ノ六層アリ、而シテ最下ノ二層ハ其ノ西側ニ在リテ、他ノ四層ハ其ノ東側ニ在リ

(一) 砂岩 少許ノ頁岩アリ、化石ヲ産ス

(二) 頁岩砂岩 頁岩及砂岩ノ交互ニ相重ルモノニシテ、化石ヲ産セス

(三) 綠色砂岩ニシテ時ニ頁岩ヲ挾ム、化石ヲ産ス

(四) 硬質頁岩ニシテ時ニ砂岩ヲ挾ム、化石アリ

(五) 灰色頁岩 化石アリ

(六) 砂質頁岩 化石アリ

甲、小田寒區域ノ化石

種數多カラス、保存亦不良ナリ

第一層産

1. *Ostrea gigas* Thunb.

第二層産

1. *Turritella kienensis* Yok.

2. *Crepidula grandis* Midd.

3. *Mya crassa* Grew.

4. *Mactra sulcataria* Desh.

5. *Tellina alternata* Say var. *chibana* Yok.

6. *Thyasira bisecta* (Coar.)
7. *Venericardia pacifera* Yok.
8. *Glycimeris* cf. *yessoensis* Sow.
9. *Yoldia* cf. *laudabilis* Yok.
10. *Yoldia* cf. *johanni* Dall.

第三層産

1. *Arca* sp.
2. *Leda inermis* Yok. (?)
3. *Yoldia sagittaria* Yok.

第四層産

1. *Buccinum undatum* L.
2. *Natica janthostoma* Desh.
3. *Mya crassa* Grew.
4. *Macoma dissimilis* (Mart.)

5. *Cardium tristiculum* Yok.
6. *Pecten subyessoensis* Yok.
7. *Yoldia scapha* Yok.
8. *Acila insignis* (Gld.)

第五層産

1. *Chrysodomus despectus* (L.)
2. *Mya crassa* Grew.
3. *Macoma dissimilis* (Mart.)
4. *Cardium tristiculum* Yok.
5. *Cardium* sp.
6. *Thyasira bisecta* (Conr.)

以上列記ノ化石ニ因テ之ヲ産スル五地層ノ地質時代ヲ考察スルニ、孰モ皆其ノ新第三紀(中新及ヒ鮮新)ナルコトハ毫モ疑フヘクモアラス、然レトモ其ノ鮮新ナルカ將中新ナルカニ至テハ、今之ヲ斷言スルコト難シ

乙、豊榮區域ノ化石

化石ヲ産スルハ第四層ノミニシテ且其ノ種ハ僅ニ二アルノミ、左ノ如シ

1. *Natica janhostoma* Desh.

2. *Yoldia scapha* Yok.

是レ亦鮮新若クハ中新ナルヘシ

丙、登富津區域ノ化石

化石ハ都テ十種ニシテ、左ノ三層ヨリ出ツ

第一層産

1. *Corbula konctoroensis* n. sp.

2. *Leda inermis* Yok. (?)

第二層産

1. *Crepidula grandis* Midd.

2. *Thyasira bisecta* (Conr.)

3. *Mytilus* sp.

第三層産

1. *Macoma dissimilis* (Mart.)

2. *Thyasira bisecta* (Conr.)

3. *Phacoides borealis* (L.)

4. *Yoldia* cf. *laudabilis* Yok.

5. *Acila* cf. *mirabilis* (Ad. et Rve.)

6. *Solemya* cf. *tokunagai* Yok.

以上三層モ亦鮮新若クハ中新ナリ

丁、泥川菱取區域ノ化石

此ノ區域ニ在テハ、第二ヲ除キ、他ノ四層ハ皆化石ヲ産シ、且其ノ種數前ノ二區域ヨリ多シ

第一層產

1. *Beringius hanzoganensis* Yok.
2. *Turritella* sp.
3. *Natica janthostoma* Desh. (?)
4. *Dentalium* sp.
5. *Maetra sulcataria* Desh.
6. *Macoma dissimilis* (Mart.)
7. *Tellina alternata* Say var. *chibana* Yok.
8. *Cardium tristiculum* Yok.
9. *Thyasira bisecta* (Contr.)
10. *Venericardia tokunagai* Yok.
11. *Yoldia* cf. *johanni* Dall.

第二層產

1. *Pleurotoma* sp.

2. *Chrysodomus despectus* (L.)
3. *Turritella* sp.
4. *Natica janthostoma* Desh.
5. *Dentalium* sp.
6. *Mya crassa* Grew.
7. *Macoma dissimilis* (Mart.)
8. *Mercenaria stimpsoni* Gld.
9. *Cardium tristiculum* Yok.
10. *Papyridea* cf. *nipponica* Yok.
11. *Venericardia tokunagai* Yok.
12. *Pedalion murayamai* n. sp.
13. *Arca* sp.
14. *Leda* cf. *confusa* Hanl.
15. *Yoldia* cf. *laudabilis* Yok.

16. *Yoldia cf. johanni* Dall.

第四層産

1. *Turritella* sp.

第五層産

1. *Thyasira bisecta* (Conr.)

2. *Yoldia cf. laudabilis* Yok.

第六層産

1. *Buccinum undatum* L.

2. *Macoma dissimilis* (Mart.)

3. *Thyasira bisecta* (Conr.)

以上ノ層モ亦前ノ諸層ト同シク鮮新若クハ中新ニ屬スルモノナリ

村山技師採集ノ化石ノ外、尙本報告中記述シタルニ化石アリ、メロンギナ屬ノ新種ニシテ、名好郡恩内川ノ産ナリ、今其ノ採集者ト時代トヲ詳ニセス、然レトモ時代ハ恐ラク第三紀ナラン、茲ニ之ヲ載セタルハ其ノ形ノ珍奇ニシテ未タ曾テ我邦ノ

化石中ニ見タルコトナキモノナレハナリ

昭和七年三月廿四日印刷
昭和七年三月廿七日發行

定價金六拾四錢
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印刷者

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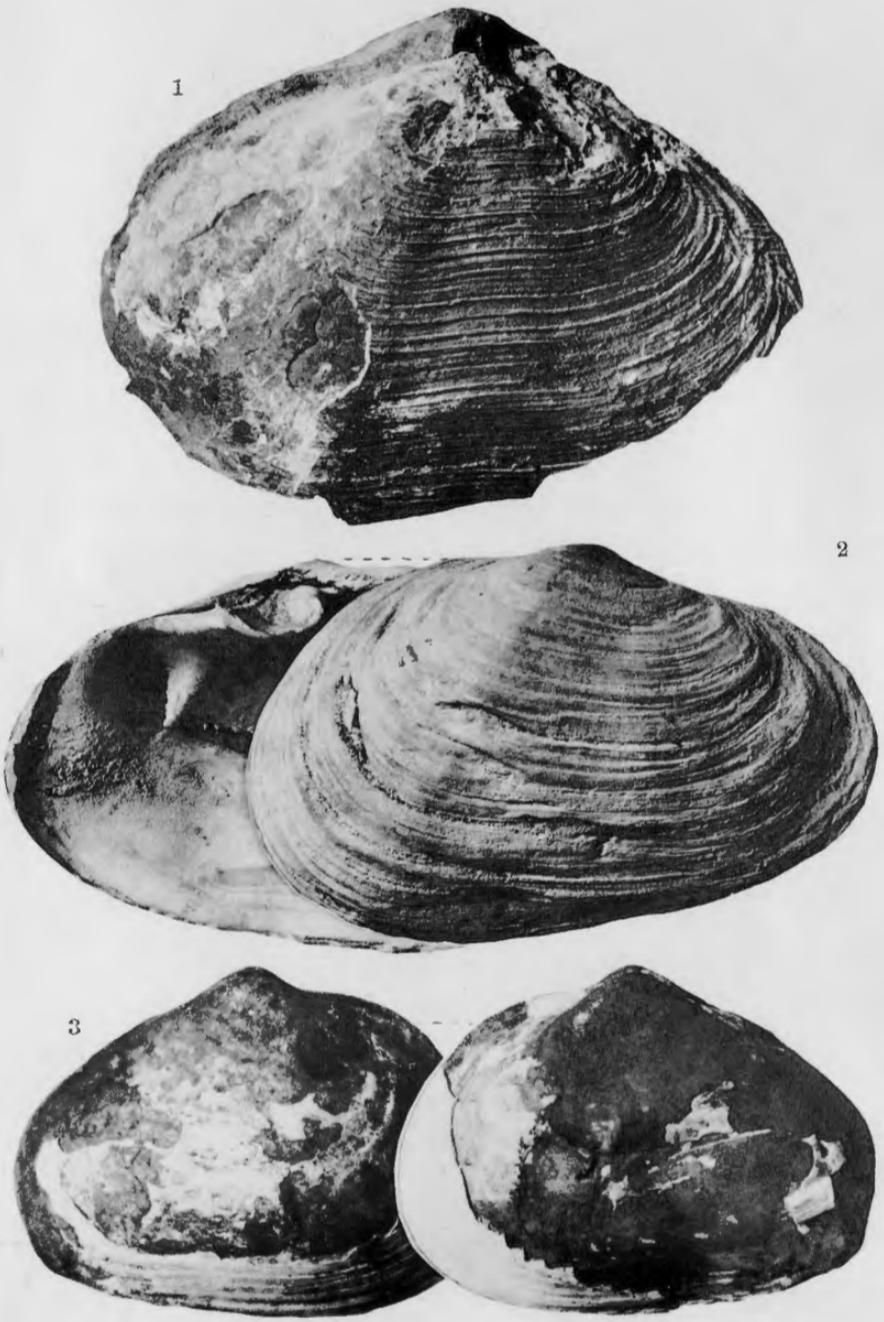
發行所

東京市麴町區下二番町四十八番地

東京地學協會

Plate I

- Fig. 1. *Mya crassa* Grew. The third tributary of the Hishitori on its north side.
P. 12.
- Fig. 2. *Mya arenaria* L. var. *japonica* Jay. Left valve. Living specimen from Kushun-
nai in South Karafto, figured for comparison. P. 12.
- Fig. 3. *Mya crassa* Grew. The Koganesawa, Shiranui. P. 12.



Neogene Shells from South Karafto

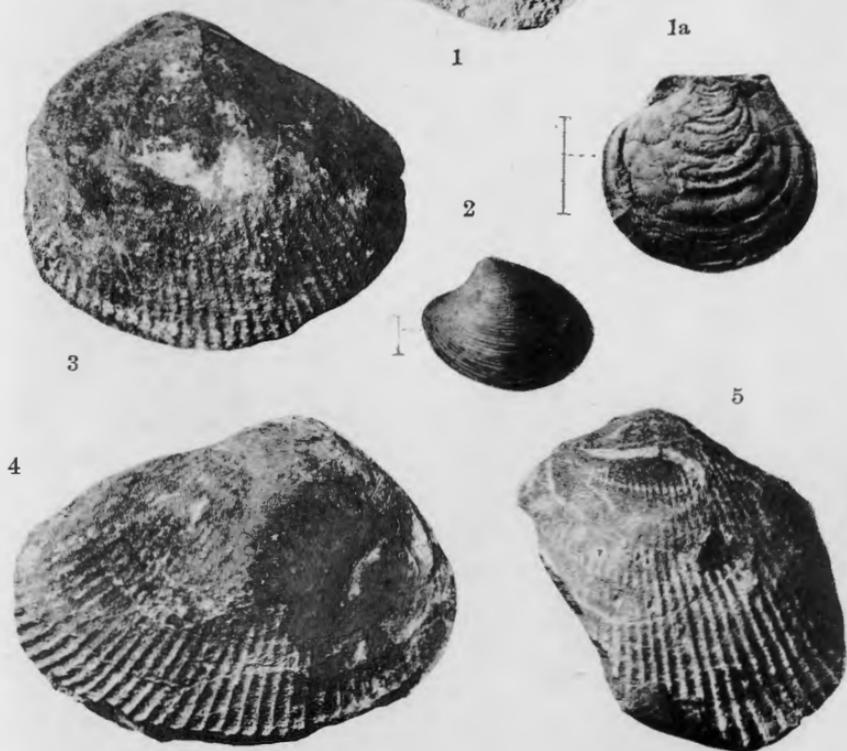
Plate II

Figs. 1, 1a. *Pecten* (*Pseudamusium*) *peckhami* Galb. Kushunnai, Karafto.

1, a. Left valve with the anterior ear broken. Enlarged. P. 14.

Fig. 2. *Corbula konotoroensis* n. sp. Left valve. Enlarged. Tofutsugawa. P. 12.

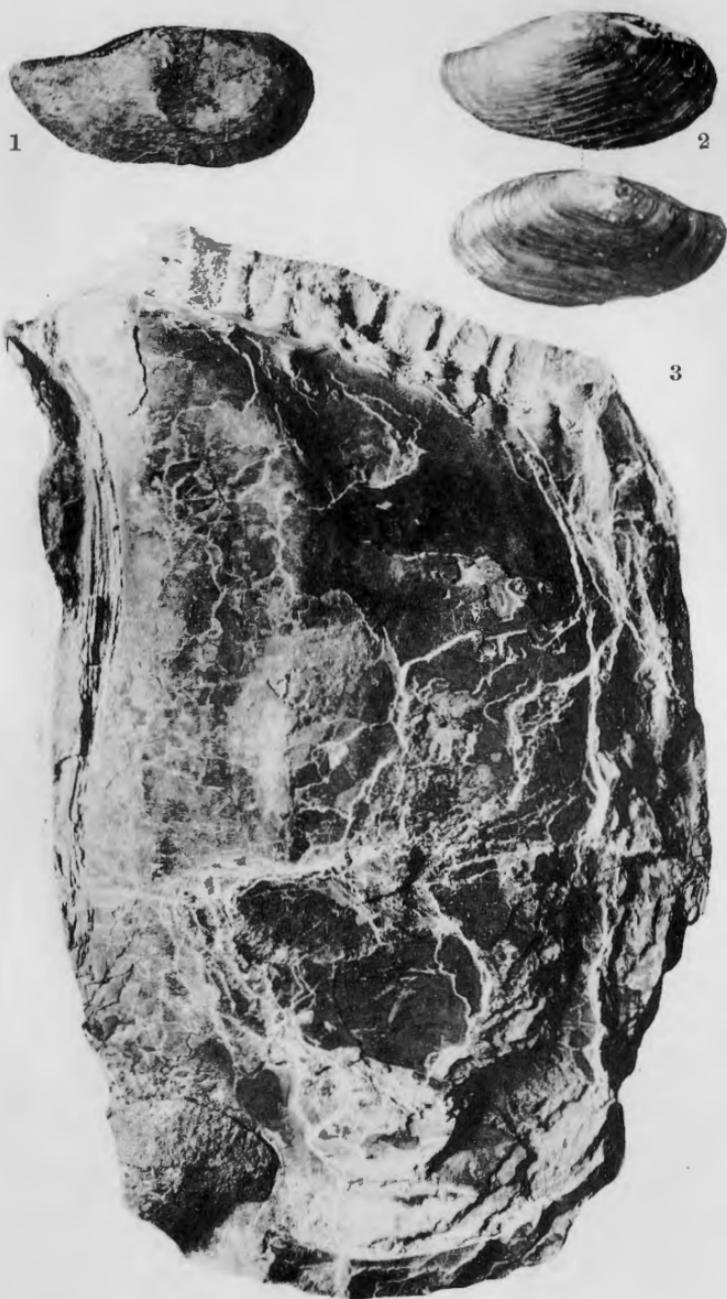
Figs. 3, 4, 5. *Papyridea* cf. *nipponica* Yok. A tributary of the west branch of the
Hachikonai. P. 13.



Neogene Shells from South Karafto

Plate III

- Fig. 1. *Yoldia cf. johanni* Dall. Cast. Minami-Pekere, Shiranui-mura, P. 15.
- Fig. 2. *Yoldia johanni* Dall. Living specimen for comparison. Karafto, P. 15.
- Fig. 3. *Pedalion murayamai* n. sp. Cast. A tributary of the Hishitorigawa, P. 14.



Neogene Shells from South Karafto

Plate IV

Fig. 1. *Melongena onnaica* n. sp. River Onnai. P. 11.

Fig. 2. *Melongena angasiana* n. sp. River Onnai. P. 10.



Neogene Shells from South Karafuto

IMPERIAL GEOLOGICAL SURVEY OF JAPAN

REPORT No. 111



Neogene Shells from South Karafto

By

MATAJIRO YOKOYAMA, *Rigakuhakushi*

In the year 1930 Mr. K. Murayama of our Imperial Geological Survey at the request of the Colonial Government of Karafto made a geological investigation of the four regions in South Karafto suspected to hold rock oil underneath. The names of these regions are Odasam, Toyosakaé, Tofutsu and Dorogawa Hishitori, in all of which Tertiary fossils have been collected. These fossils were lately entrusted to me for examination, the results of which as well as the description of three other fossils collected elsewhere form the subject of the present paper.

A. The Odasam Region, Shiranui, Sakaéhama-gun

Mr. Murayama enumerates the following six beds as constituting the Tertiary Formation of the region counted from below.

I. *Conglomerate* intercalating the layers of *sandstone* and *shale*. This overlies the Cretaceous Formation with a line of unconformability between. Contains some fossils. Thickness estimated at about 70 metres.

II. *Sandstone*. Fossiliferous. Thickness about 60 metres.

III. *Hard Shale* rarely with the layers of *sandstone* between.

Fossiliferous. Thickness varying between 500 metres and 700 metres.

IV. *Grey Shale* intercalating *sandy shale, sandstone, conglomerate* and *coal*. Fossils present. Thickness varying between 250 metres and 500 metres.

V. *Sandy Shale* with intercalated layers of *sandstone* and *calcareous sandstone*. Fossiliferous. Thickness varying between 500 metres and 800 metres.

VI. *Sandstone*. Fossils absent. Thickness about 300 metres.

B. The Toyosakaé Region, Rūtaka, Rūtaka-gun

Overlying a formation consisting of a hard shale which is presumably Cretaceous in age, there are following beds counted from below:

I. *Shale and Sandstone* alternating with each other. Fossils absent. Thickness about 400 metres.

II. *Hard Shale*. Fossils absent. Thickness about 130 metres.

III. *Dark Grey Shale*. No fossils. Thickness about 150 metres.

IV. *Grey Shale*. Fossils present. Thickness about 430 metres.

C. The Tofutsu Region, Konotoro, Noda-gun

Above the Black Shale Formation which is about 400 metres in thickness and whose lower portion is generally known as the *Lower Coal-bearing Series*, there is a thick complex of alternating layers of *sandstone* and *shale* about 1,000 metres in thickness. The fossils are found in three zones which I provisionally call *I* or *Lower Zone*, *II* or *Middle Zone* and *III* or *Upper Zone*. The Middle Zone is easily recognized by the presence of a *black con-*

glomerate accompanied by andesite agglomerates. The fossils are found in the conglomerate.

The complex is overlaid by a *grey shale*, about 200 metres in thickness.

D. The Dorogawa-Hishitori Region, Notoro, Rūtaka-gun

Upon the Cretaceous Formation forming the backbone of the region there are six beds, of which the lowest two which are generally known as the *Lower Coal-bearing Series* are on its west side, while the remaining ones are on its east side.

I. *Sandstone* with some *shale* layers. Fossils present. Thickness about 750 metres.

II. *Alternations of Shale, Sandy Shale and Sandstone*. Fossils absent. Thickness about 1000 metres.

III. *Green Sandstone* intercalating *shale* layers. Fossils present. Thickness about 340 metres.

IV. *Hard Shale* intercalating *sandstone* layers. Fossils present. Thickness about 500 metres.

V. *Grey Shale*. Fossils present. Thickness about 350 metres.

VI. *Sandy Shale*. Fossils present. Thickness about 250 metres.

Overlying the beds VI, there is a *loose sandstone* about 200 metres in thickness without any fossils.

All the fossil species obtained in the four regions above stated as well as a few from an unknown bed or beds are given in the following table:

20. <i>Papyridea cf nipponica</i> Yok.						+			Neogene
21. <i>Thyasira bisecta</i> (Conr.)	+		+		+	+		+	Recent-Miocene
22. <i>Phacoides borealis</i> (L.)						+			Recent-Miocene
23. <i>Venericardia pacifera</i> Yok.	+								Neogene
24. <i>Venericardia tokunagai</i> Yok.								+	Neogene
25. <i>Mytilus</i> sp.						+			
26. <i>Pecten subyessoensis</i> Yok.			+						Neogene
27. <i>Pecten</i> (<i>Pseudamysium</i>) <i>peckhami</i> Gabb.								+	Miocene and Oligocene in America
28. <i>Ostrea gigas</i> Thunb.	+								Recent-Miocene ?
29. <i>Pedalion murayamai</i> n. sp.								+	
30. <i>Arca</i> sp.			+						
31. <i>Arca</i> sp.								+	
32. <i>Glycimeris cf. yessoensis</i> (Sow.)	+								<i>G. yessoensis</i> is Recent-Pliocene
33. <i>Leda inermis</i> Yok. (?)		+		+					<i>L. inermis</i> is Miocene
34. <i>Leda cf. confusa</i> Hanl.								+	<i>L. confusa</i> is Recent-Pliocene
35. <i>Yoldia cf. laudabilis</i> Yok.	+					+	+	+	<i>L. laudabilis</i> is Neogene, Miocene
36. <i>Yoldia sagittaria</i> Yok.		+							Neogene, Miocene
37. <i>Yoldia scapha</i> Yok.				+					Neogene
38. <i>Yoldia cf. johanni</i> Dall.	+							+	<i>Y. johanni</i> is Recent
39. <i>Acila insignis</i> (Gld.)			+						Recent-Miocene
40. <i>Acila cf. mirabilis</i> (Ad. et Rve.)								+	Recent-Miocene
41. <i>Solemya cf. tokunagai</i> Yok.								+	Neogene

A. The Fossils of the Odasam Region

The number of species is not many ; besides, the preservation is not always good.

Beds I.

1. *Ostrea gigas* Thunb.

Beds II.

1. *Turritella kiiensis* Yok.
2. *Crepidula grandis* Midd.
3. *Mya crassa* Grew.
4. *Macra sulcataria* Desh.
5. *Tellina alternata* Say var. *chibana* Yok.
6. *Thyasira bisecta* (Conr.)
7. *Venericardia pacifera* Yok.
8. *Glycimeris* cf. *yessoensis* Sow.
9. *Yoldia* cf. *laudabilis* Yok.
10. *Yoldia* cf. *johanni* Dall.

Beds III.

1. *Arca* sp.
2. *Leda inermis* Yok. (?)
3. *Yoldia sagittaria* Yok.

Beds IV.

1. *Buccinium undatum* L.
2. *Natica janthostoma* Desh.
3. *Mya crassa* Grew.
4. *Macoma dissimilis* (Mart.)
5. *Cardium tristiculum* Yok.
6. *Pecten subyessoensis* Yok.

7. *Yoldia scapha* Yok. (?)
8. *Acila insignis* (Gld.)

Beds V.

1. *Chrysodomus despectus* (L.)
2. *Mya crassa* Grew.
3. *Macoma disimilis* (Mart.)
4. *Cardium tristiculum* Yok.
5. *Cardium* sp.
6. *Thyasira bisecta* (Conr.)

That all these five beds are *Neogene* (Upper Tertiary) there is no doubt, but whether they are *Pliocene* or *Miocene*, or *partly Pliocene* and *partly Miocene*, I can not say with any degree of certainty.

B. The Fossils of the Toyosakaé Region

The fossils are only from Beds IV and consist of two species *Natica janthostoma* Desh. and *Yoldia scapha* Yok. which may be *Pliocene* or *Miocene*.

C. The Fossils of the Tofutsu Region

There are only ten species which are distributed into three beds as follows:

Beds I.

1. *Corbula konotroensis* n. sp.
2. *Leda inermis* Yok. (?)

Beds II.

1. *Crepidula grandis* Midd.
2. *Thyasira bisecta* (Conr.)

3. *Mytilus* sp.

Beds III.

1. *Macoma dissimilis* (Mart.)
2. *Thyasira bisecta* (Conr.)
3. *Phacoides borealis* (L.)
4. *Yoldia* cf. *laudabilis* Yok.
5. *Acila* cf. *mirabilis* (Ad. et Rve.)
6. *Solemya* cf. *tokunagai* Yok.

These beds are also *Neogene*.

D. The Fossils of the Dorogawa-Hishitori Region

In this region the fossils occur in all the beds before enumerated but one which is II. The number of species is almost as many as in the Odasam Region. They are distributed as follows:

Beds I.

1. *Beringius hanzoganensis* Yok.
2. *Turritella* sp.
3. *Natica janthostoma* Desh. (?)
4. *Dentalium* sp.
5. *Mactra sulcataria* Desh.
6. *Macoma dissimilis* (Mart.)
7. *Tellina alternata* Say var. *chibana* Yok.
8. *Cardium tristiculum* Yok.
9. *Thyasira bisecta* (Conr.)
10. *Venericardia tokunagai* Yok.
11. *Yoldia* cf. *johanni* Dall.

Beds III.

1. *Pleurotoma* sp.

2. *Chrysodomus despectus* (L.)
3. *Turritella* sp.
4. *Natica janthostoma* Desh.
5. *Dentalium* sp.
6. *Mya crassa* Grew.
7. *Macoma dissimilis* (Mart.)
8. *Mercenaria stimpsoni* Gld.
9. *Cardium tristiculum* Yok.
10. *Papyridea* cf. *nipponica* Yok.
11. *Venericardia tokunagai* Yok.
12. *Pedalion murayamai* n. sp.
13. *Arca* sp.
14. *Leda* cf. *confusa* Hanl.
15. *Yoldia* cf. *laudabilis* Yok.
16. *Yoldia* cf. *johanni* Dall.

Beds IV.

1. *Turritella* sp.

Beds V.

1. *Thyasira bisecta* Conr.
2. *Yoldia* cf. *laudabilis* Yok.

Beds VI.

1. *Buccinum undatum* L.
2. *Macoma dissimilis* (Mart.)
3. *Thyasira bisecta* (Conr.)

All these beds are like those of the preceding region *Neogene*.

E. The Fossils of the Unknown Beds.

There are three species, two univalves and one bivalve. The

univalves which I named *Melongena angasiana* and *Melongena onnaica* are apparently from the same bed, having been found in marly nodules of a river-bed. They may be *Cretaceous* or *Tertiary* and if *Tertiary*, probably *Neogene* as *Palaeogene* has not yet been proved to occur in Karafra.

The bivalve is a small *Pecten* which is to be identified with *Pecten peckhami* Gabb occurring in America in Miocene and Oligocene beds. The specimens seem to have been collected by the late Professor K. Jimbo and they suggest the occurrence of *Miocene* beds at places where they have been found.

Description

2. *Melongena angasiana* n. sp.

Pl. IV. Fig. 2

A large pear-shaped shell, to a greater part decorticated and broken at its apertural end. However, its shape is so peculiar that it is quite worth describing.

The shell is very thin, tapering both above and below and with the last three whorls intact, the lost ones being presumably three or four. These whorls are sharply keeled a little above the lower suture, with the surface above the keel flatly convex in general and gently inclined, ornamented in the middle with a spiral cord below which the surface is slightly excavated, especially on the body-whorl. The surface below the keel is somewhat receding and also somewhat concave. Besides the spiral cord just mentioned, there are fine spiral striations on the whole surface. Growth-lines conspicuous. The base is convex, the aperture rhomboidal and the canal which is lacking seems to have been more or less long. The

diameter of the shell measures 65 millim. The height, if perfect, would be not less than 90 millim.

This univalve reminds us strongly of *Thatcheria*, a genus founded by Angas in 1877 on a unique specimen collected somewhere near our coast (Yokoyama, "On a Univalve called *Cochlioconus gradatus*," p. 406, Jour. Fac. Sci., Imp. Univ. Tokyo, Sec. II, Vol. II). But the latter possesses a deep sutural indentation which is lacking in ours, on which account I treat it provisionally under the genus *Melongena* Schum.

The only specimen I possess was picked up together with that of the following species in the river Onnai near its junction with the seventh tributary (counted from the river-mouth). Nayoshigun, west coast of South Karafto.

3. ***Melongena onnaica*, n. sp.**

Pl. IV. Fig. 1

Resembling the preceding in general form as well as in the thin state of the shell. This species which is also present as a cast has the spire more elevated, consisting of about ten whorls which are keeled in the middle with the surface above the keel gently sloping and flatly convex, below flat and much receding. Two spiral cords ornament these surfaces, those of the upper surface being equally distributed, while those of the latter are not, the one being close to the lower suture and the other between this lower cord and the keel. The base is somewhat more convex than in the foregoing form to which the aperture and canal seem to resemble, although not quite certain, these parts being not preserved. Growth-lines coarse and conspicuous.

The diameter is 57 millim. The height, if perfect, would be

more than 100 millim.

As stated above, the specimen was picked up in the Onnagawa together with that of the preceding species.

12. *Corbula konotoroensis*, n. sp.

Pl. II. Fig. 2

A small form resembling *Corbula succincta* Yok. (Tertiary Fossils from Kii. p. 56, pl. VII, figs. 3—7) but somewhat differing in sculpture and also in having a smaller and more pointed beak.

A left valve which is comparatively well preserved is markedly triangular, gibbose, slightly longer than high, rounded in front and behind and more sharply in the latter. The antero-dorsal border is almost straight, while the postero-dorsal is somewhat excavated. The beak is bluntly pointed. The surface shows coarse unequal lines of growth, not being actually concentrically grooved as in *Corbula succincta*. Length 5.5 millim. Height 4.5 millim. Depth about 1.8 millim. Not rare, but the preservation is not good.

Fossil occurrence. — *Beds I* of the Tofutsu Region: Tofutsugawa.

20. *Mya crassa*, GREWINCK

Pl. I. Figs. 1, 3

Mya crassa, Yokoyama Moll. Rem. Lowest Part Joban Coalf., p. 12, Pl. I, fig. 11—16.

A short form of *Mya* occurring fossil in several parts of Japan and hitherto identified with *Mya crassa* Grew. first found fossil in Alaska is present in many specimens. In examining these specimens I find that their distinction from those of *Mya arenaria* L. var. *japonica* Jay is often very difficult, especially when their preservation is ill. Besides, I possess a living specimen of *Mya* from Karafto

which I take for a short form of *Mya arenaria* hardly distinguishable from *Mya crassa*, if not for the steeper inclination of the postero-dorsal margin of the latter. This living specimen I purposely figured (Pl. III, fig. 2) for comparison. It is an old story that *Mya arenaria* L. and *Mya truncata* L. are often impossible to distinguish by the form of the shell, and Howorth says in the Proceedings of the Zoological Society of London, 1909, p. 745, that the only sure distinction between the two lies in the characters of the hinge. Some such distinction may possibly be found also between *Mya arenaria* and *Mya crassa*. However, this distinction, even when present, must be said to be generally unavailable, as the hinge is usually not exposed in fossil specimens. On this account, I fear that there may be cases in which the two species are quite difficult to distinguish from each other, as the form is a character which is very variable in the genus *Mya*. On this question I intend to come back once more hereafter, as I now feel if not *Mya crassa* is only a variety of *Mya arenaria*.

Fossil occurrence. — *Beds II* of the Odasam Region: Higashi-Shiraura, Shiranui. *Beds IV* Do: Koganezawa, Shiranui, *Beds V* Do: Koganezawa, Shiranui. *Beds III* of the Dorogawa-Hishitori Region: the upper course of the Hishitori-gawa, the eighth tributary of the Hishitori on the east side, the third tributary of the same on the north side, the first tributary of the west branch of the Hachikonai. Miocene of America and Japan.

20. **Papyridea (Fulvia) cf. nipponica** YOKOYAMA

Pl. II. Figs. 3—5

Many specimens which, however, are all ill preserved. They resemble those of *Papyridea nipponica* which I described from the

Asagai Beds of Iwaki (Moll. Rem. Lowest Part Jōban Coalf., p. 17, pl. III, figs. 3, 4) as well as of *Papyridea harrimani* Dall (Geol. a. Palaeont., Harriman's Alaska Exped., p. 114, pl. X, fig. 15) of the Alaskan Miocene, to the former of which the resemblance seems to be greater, on account of the number of ribs which is less in the latter.

Fossil occurrence. — *Beds III* of the Dorogawa-Hishitori Region: the first tributary of the west branch of the Hachikonai. Asagai Beds (Miocene).

27. **Pecten (Pseudamusium) peckhami**, GABB

Pl. II. Fig. 1, 1a.

Pecten (Pseudamusium) peckhami. Arnold, Tert. a. Quatern. Pectens of California, p. 56, pl. III, figs. 6-8.

A small form of a flat *Pecten* with irregular concentric undulations. Quite frequent as casts. *Pecten tairanus*, a species which I described from the Kamenoo Beds of Iwaki (Moll, Rem. Mid. Part Joban Coalfield, p. 8, pl. I, figs. 8, 9), is probably identic with *Pecten peckhami*. *Pecten watanabei* Yok. (Moll. Foss. from Karafto, pl. I, LXXV, fig. 1) from one of the oilfields of North Karafto seems also to resemble the present species, though its identity is still uncertain.

Fossil occurrence.—Near Kushunnai, Naïoro, Ussu and Pirevo, the last place being a little north of the 50th parallel, north latitude on the west coast of Russian Karafto. *Oligocene* and *Miocene* of the west coast of America.

29. **Pedalion murayamai**, n. sp.

Pl. III. Fig. 3

A cast of the left valve of a large shell, subquadrate in form

and with several elongated ligamental pits along its dorsal margin is readily recognized as a species of *Pedalion*. It is compressed and nearly flat, higher than long, with the dorsal margin straight, the anterior slightly excavated towards the beak, the ventral rounded and the posterior very weakly convex. The height is 220 millim., while the length is 150 millim. The number of cartilage pits is about ten.

Pedalion soldanii (Desh.) of the European Tertiary (Hoernes, Foss. Moll. Tertiärbecken v. Wien, pl. 53, fig. 1) resembles the present species, although shorter in form.

Fossil occurrence.—*Beds III* of the Dorogawa-Hishitori Region: the third tributary of the Hishitori.

38. ***Yoldia cf. johanni***, Dall

Pl. III. Fig. 1

We have many casts of a *Yoldia* which is not distinguishable in form from *Yoldia johanni* Dall (Illustr. Unfig. Types of Shells in the Coll. of U. S. National Museum, p. 32, pl. 29, fig. 7) living near Karafto whose example I have figured for comparison (pl. III Fig. 2). Dall's figure shows the posterior end a trifle more pointed.

Fossil occurrence.—*Beds III* of the Odasam Region: Minami-Pékéré, Shiranui. *Beds I* of the Dorogawa-Hishitori Region: the upper course of the second tributary of the Dorogawa. *Beds III* Do: a tributary of the west branch of the Hachikonai and also the third tributary of the Hishitori.

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