

*Anodontophora* and some other Carnic Pelecypods  
from the Sakawa Basin, in Shikoku, Japan.

By

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(With Plate IV)

This paper describes the following species and varieties:

*Anodontophora kochigataniensis* KOBAYASHI and ICHIKAWA, new species.

*Anodontophora kochigataniensis* var. *hiratai* KOBAYASHI and ICHIKAWA, new variety.

*Anodontophora carinata* KOBAYASHI and ICHIKAWA, new species.

*Anodontophora* sp. nov. indet.

"*Megalodus*"  $\alpha$  sp.

"*Megalodus*" (?)  $\beta$  sp.

*Pleuromya forsbegi* (BÖHM) *nipponica* KOBAYASHI and ICHIKAWA, new subspecies.

"*Cultellus*" (?) *ellipsoidalis* KOBAYASHI and ICHIKAWA, new species.

"*Parallelodon*" *infrequens* KOBAYASHI and ICHIKAWA, new species.

Gen. et sp. nov. indet.  $\alpha$ .

Gen. et sp. nov. indet.  $\beta$ .

? Family Anthracosiidae AMALITZKY, 1892

Genus *Anodontophora* COSSMANN, 1897

*Anodontophora kochigataniensis* KOBAYASHI and  
ICHIKAWA, new species

Pl. IV, Figs. 1-4.

H MM5152-4-1  
D MM5153-4-2  
P MM5154-4-3  
D MM5155-4-4

*Description*.—Shell equivalve, inequilateral, transversely elongate-oval, wider than high and elongated posteriorly; its convexity moderate to fairly strong, the maximum breadth lying at about two-thirds the height below the umbo. Anterior margin rounded except the part in the front of the umbo where a shallow concavity is generally seen; postero-dorsal and ventral margins broadly arcuate, the two being connected by an abrupt curvature or forming an angle in between. Umbo broad, prominent and provided with a small but distinct concavity in front of it; beak prosogyre, located at a point one-sixth the width from the front; a weak umbonal carina running across the inside of the postero-ventral margin. Posterior ligament area distinct and deep. Surface ornamented by weak concentric lines of growth and obscure bands of folds.

Dimensions.	Height	Width	W/H	Thickness
Holotype from Nezukamiishi	22 mm.	32 mm.	1.45	7.5 mm.
Paratype from Nezukamiishi	21 mm.	32 mm.	1.53	7 mm.
Paratype from Umenokidani	23 mm.	33 mm.	1.44	8 mm.
Specimen from Kuromagari	23 mm.	30 mm.	1.31	9 mm.
Another Specimen from Kuromagari	17.5 mm.	ca 25 mm.	1.43	6 mm.
Specimen from Kanaidani-no-oku	17 mm.	25 mm.	1.48	6 mm.

*Observation and comparison*:—The outline and convexity of the shell, the strength of the carina and also the position of the umbo are fairly variable among the specimens, partly due to secondary deformation. The beak is broken in the holotype, but is seen to be prosogyre and curving inward and downward in the paratypes. In a paratype from Umenokidani a small anterior adductor impression is seen faintly. In a specimen from Umenokidani an obscure cardinal is present on the right. None of these, however, shows the hinge character clearly.

This species resembles *A. breviformis* SPATH, especially its elongate form (1935, pl. 22, fig. 4 only) from the Eo-Triassic bed of Greenland, but the umbo is located less anteriorly and is less protruded in *breviformis*.

*Occurrence*:—Common in the *Tosapecten* bed at Kuromagari (47 TK-23) and Nezukamiishi (47TK-18); uncommon in the *Myoconcha* bed at Umenokidani (47TK-26) and Kanaidani-1 (47TK-20), and the *Tosapecten* bed (?) at Kanaidani-no-oku (47TK-22).

*Anodontophora kochigataniensis* var. *hiratai* KOBAYASHI  
and ICHIKAWA, new variety

MM5156-4-5

Pl. IV, Fig. 5.

This variety differs from the preceding in being more rounded in outline, the umbonal carina running farther inside the posterior margin, and also in having a shallow mesial sinus in front of the carina. The type right valve is about 20 mm. high, 27 mm. wide and 6 mm. thick; the height-width proportion is 1:1.35.

*Occurrence*:—*Tosapecten* bed at Kanaidani-no-oku (47TK-22).

*Anodontophora carinata* KOBAYASHI and ICHIKAWA, new species

Pl. IV, Figs. 6a-b.

✓  
MM 5159-4-6

This is represented by but one complete shell, 20 mm. high, 34.5 mm. wide, and 7.5 mm. thick; width divided by height being 1.73. Thus the outline is too elongated for comparison with those described above. The vertical posterior margin is as long as about one-third the height and forms subangles with the long straight postero-dorsal as well as the ventral margins the last of which is regularly arcuate till it reaches to the frontal extremity at a little above the two-thirds the height from the venter; from this point the margin bents back abruptly, in describing a shallow but broad sinuation on the antero-dorsal side. The umbo is large, stout, projected forward, abruptly bent toward the hinge margin and on the posterior side defined by a carina which is gently convex upward and losing its prominence downward; behind the umbo a narrow ligament area is clearly separated from the posterior area by a deep groove.

In the search for a similar form, the authors failed to find any in references on the Triassic, but it is noted that *Grammysioidea princiana* WILLIAMS and BREGER (1916, p. 136, pl. 20, fig. 8) from the Lower Devonian Moose River Sandstone, apparently shows a great similarity with this species. The Japanese species is, however, much smaller, the shell is higher, its posterior outline is more or less distinctly truncated, and the umbo is somewhat more prominent in the Japanese one. As *G. princiana* is said to be no more than half as thick as it is high, it is thought to be a more flattened form than *A. carinata*.

*Occurrence* :—*Halobia* bed at Togo (47TK-27).

*Anodontophora* sp. nov. indet.

Pl. IV, Fig. 7.

✓  
MM 5158-4-7

A left valve, the umbonal part of which was not preserved, is about 33 mm. high and 38 mm. wide, the maximum width lying a little above the mid-height. It is somewhat equilateral, subquadrate, and moderately convex, but there is a shallow sinuation in the mesial part. The posterior margin is more broadly rounded than the anterior and merges with the postero-dorsal margin, while the dorsal margin appears somewhat concave in front of the umbo; the ventral margin is almost

straight. Though the umbo is broken, it is undoubtedly large and bent forward. The surface appears smooth except for very weak concentric growth lines.

Compared to *Anodontophora kochigataniensis*, this is much larger and higher, its posterior margin more rounded and the shell is widest above its mid-height. It looks somewhat similar to *A. griesbachi* BITTNER widely distributing in the Himalayas, Sumatra and Indo-China, but the mesial sinus above mentioned distinguishes this from that species (BITTNER, 1901, p. 60, pl. 8, figs. 14, 16; DIENER, 1908, pl. 23, fig. 9; MANSUY, 1908, p. 70, pl. 18, fig. 6; KRUMBECK, 1913, p. 50, pl. 3, figs. 21-23; REED, 1927, p. 193). With respect to the sinus, it may be compared to *Anodontophora subrecta* BITTNER (1901, p. 100, pl. 7, figs. 28-30), although BITTNER's is more elongate and inequilateral, its umbo being located more anteriorly. These distinctions apply also to *Anodontophora* cfr. *recta* GÜMBEL from Brazil (REED, 1929, p. 55, pl. 2, fig. 10).

*Occurrence* :—*Tosapecten* sandstone at Kuromagari (47TK-23).

#### Family Megalodontidae ZITTEL

#### Genus *Megalodus* GÜMBEL, 1862

#### "*Megalodus*" *a* sp.

Pl. IV, Figs. 10a-b.

Shell moderate in size and convexity, well rounded in outline, but a little wider than high; umbo protruded above and strongly incurved till it almost reaches the hinge margin; lunule small, deep, and ill-defined; surface apparently smooth.

This is less convex, somewhat broader, and its lunule less clearly outlined than is usual in the *Megalodus* group. The aspect of the umbo is more like *M. rotundatus* BÖHM from the Bear island (1903, p. 48, pl. 5, figs. 15, 16) than like *M. triqueter* WULF. (DIENER, 1925, p. 43, text-fig. 9) and its allies, though the umbo is more prominent and the outline more rounded in *rotundatus* than in the Japanese species. Of the hinge-teeth by which this family is classified, unfortunately nothing is known.

*Occurrence* :—*Halobia* bed at Nakajima (47TK-31).

*"Megalodus" (?)*  $\beta$  sp.

Pl. IV, Figs. 11a-b.

MM 5163-4-1

A left valve from Togo which is secondarily deformed to some extent has, like the preceding, a strongly incurved umbo and a deep depression in front of it, but the umbo is much broader and the break bent backward. In a lateral view, this species looks like *Schafhäutlia*. A form of *M. ? rostratiforme* KRUMBECK (1913, p. 64, pl. 4, fig. 18 only) which may be specifically distinct from *rostratiforme*, reveals some resemblance to this Japanese form.

Occurrence:—*Halobia* bet at Togo (47TK-27)

Family *Pleuromyacidae* ZITTELGenus *Pleuromya* AGASSIZ, 1842

As to the distinction between *Pleuromya* and *Homomya* in the German Muschelkalk, an elaborate study was made by BENDER in 1921, the results being summarized as follows:

<i>Pleuromya</i>	<i>Homomya</i>
1) hinten quer verlängert und klaffend, aber nicht stark. Vorder-seite gerundet oder steil abfallend, nicht oder nur sehr wenig klaffend.	hinten und vorn verlängert, vorn schwach klaffend, hinten stärker klaffend.
2) Schloss: jederseits mit einem dünnen horizontalen Vorsprung oder nur Verdickung.	zahnlos.
3) Wirbel weit vorn, zugespitzt und schwach opisthogyr.	Wirbel mehr oder weniger in der Mitte gelegen und entweder gerade oder nach hinten gebogen.

*Pleuromya forsbergi* (BÖHM) *nipponica* KOBAYASHI and  
 ICHIKAWA, new subspecies

Pl. IV, Figs. 8a-c.

MM 5159-4-8

Description:—Shell medium to large, almost equivalve, roundly subquadrate, very elongated, somewhat expanded posteriorly and flattened; anterior side rounded and about half as long as the posterior; ventral margin slightly arcuate; postero-dorsal margin long and a

little incurved near the umbo; posterior margin somewhat more broadly rounded below than above its middle point. Umbo small, somewhat convex, not prominent, and slightly projected above the hinge margin; a blunt carina extending below the umbo and becoming more or less distinct on the ventral side. Surface smooth except for fine concentric somewhat irregular lamellae.

Dimensions in mm.	Height	Width	Thickness
Nezukamiishi (type of the subspecies) (both valves)	17	28	4.5
Kuromagari (left valve)	9	15	
Otogo (right valve)	19	ca 33	5
First valley of Otogo (left valve)	19—	37	
Sandai (both valves)	20—	39	

*Observation*.—The outline of this variety differs somewhat among individuals. The type specimen and also the one from Sandai appear somewhat inequivalve because of secondary displacement between the two valves. The blunt posterior carina seen on the left valve of the type specimen is practically obscured in the others, and the ventral sinus present in most specimens is absent in the one from Sandai. The type is small. The largest is the Sandai specimen in which the postero-ventral margin is somewhat oblique, and accordingly the outline is gradually narrowing back. In the one from the first valley of Otogo, however, the outline is elongated and slightly expanded backward. The posterior elongation of the outline through growth appears to be a general tendency in this variety.

*Comparison*.—*Homomya forsbergi* BÖHM from Bear Island (1903, p. 49, pl. 5, fig. 3) is most like this form, but the shell is longer, and the ventral sinus frequently present in the Japanese form is absent in *forsbergi*.

Little is known of the hinge of either BÖHM's species or this subspecies. Both of these, however, are more like *Pleuromya* than *Homomya* in outline, notably in that the umbones are far anterior, and almost orthogyre, at least in this subspecies. This subspecies is diagnostic of *Pleuromya* rather than *Homomya* by BENDER and especially close to *P. elongatus* SCHLOTHEIM with a weak radial carina (BENDER, 1921,

p. 90, pl. 3, fig. 2 only), although the Japanese form is shorter; more precisely, W/H is less than 2, whereas it is 2.15-2.74 in *elongatus*. In *forsbergi* s. str., however, it is more than 2 and very close to the above cited form of *elongatus*, if not identical, or it may be said to be an *elongatus* without distinct radial carina.

*Occurrence*.—*Tosapecten* bed at Nezukamiishi (47TK-18), Kuromagari (47TK-23), Otogo, the first valley of Otogo (47TK-6) and Sandai (47TK-17).

### Family Solenidae LEACH

#### Genus *Cultellus* SCHUMACHER, 1817

"*Cultellus*" ? *ellipsoidalis* KOBAYASHI and ICHIKAWA,  
new species

Pl. IV, Figs. 9a-b.

M195/6/-4-9

*Description*.—Shell small, equivalve, transversely elongated in elliptical form, but very inequilateral, more strongly convex on the posterior than on the anterior side along the ventral margin, more convex in the anterior than in the posterior half; umbo located close to the anterior extremity, nearly orthogyre, rounded, not prominent and a little projected above the hinge-line; ligament external; surface smooth.

*Measurement and comparison*.—Two specimens are each represented by two valves attached, but the left one is not well preserved in either specimen. The shell is, however, thought to be equivalve.

Dimension	Height	Width	Thickness
Holotype	14 mm.	35 mm.	4 mm.
	15 mm.	36 mm.	?

Its nearly terminal umbo is a very distinct characteristic. In general outline it resembles some recent *Cultellus* SCHUMACHER (ex. *C. cultellus* LINNEUS in REEVE, 1874, pl. 6, fig. 23 a), although the anterior side is evidently more convex in this Triassic species. The hinge teeth are obscure and probably absent. The orthogyre umbo and absent lunule distinguish it from *Pleuropharus* and its allies. The

present species could not be classified as any of the Mesozoic and Palaeozoic genera which the authors examined. Here it is only provisionally placed in *Cultellus*.

*Occurrence* :—*Myoconcha* sandstone at Umenokidani (47TK-26).

### Family Parallelodontidae DALL

#### Genus *Parallelodon* MEEK and WORTHEN, 1866

Because *Macrodon* LYCETT, 1845, is preoccupied by *Macrodon* MÜLLER, 1842, a genus of Fish, *Parallelodon* MEEK and WORTHEN, 1866 is a substitute for it. *Parallelodon* is, however, thought to be congeneric with *Grammatodon* MEEK, 1860, by most authors. Therefore, the latter is a valid name as considered by WOODS (1899, p. 47), and this acts to change the family name.\* Even in the case that a subgeneric difference is recognized between the two, *Parallelodon* must be a subgenus of *Grammatodon* instead of the reverse, as treated by ARKELL (1930, p. 306). ARKELL (1930, p. 304) mentions, however, that "The type species, *Grammatodon inornatum*, is so little like other Jurassic *Parallelodons* that MEEK and HAYDEN first described it as a *Cucullaea*. It is in fact a *Cucullaea* externally, with the dentition of *Parallelodon*, but placed upon a hinge-plate much shorter than any true Jurassic *Parallelodon*." Because *Parallelodon*, s. str. is very elongate and its posterior wing well developed, it is thought better to differentiate the two genera.

\* After the present manuscript had been completed, the writers had access to the recent volumes of *Journal of Palaeontology*, lately sent to Japan, and found out that BRANSON, C. (1942, *Parallelodon*, *Grammatodon*, and *Beushausenia* (= *Cosmetodon*, new name). *Jour. Pal.*, vol. 16, no. 2) had proposed the Grammatodontidae regarding *Parallelodon* as a subgenus of *Grammatodon*, but the writers are inclined to treat them as distinct genera respectively as mentioned above. COX, L. R. (1940, The Jurassic Lammellibranch Fauna of Kachh. *Pal. Indica ser. 11*, vol. 3, pt. 3, p. 41) is also of the same opinion as the writers. BRANSON (op. cit.) pointed out further that *Beushausenia* COSSMANN is merely a substitute name for *Macrodon* "LYCETT" and accordingly synonymised with *Parallelodon* M. & W. But COSSMANN in the same paper (1897, *Rev. Crit. Paléozoologie*, p. 93) designated *Cucullaea hirsonensis* d'ARCH. as the type of his genus, and the question is then raised whether importance should be attached to the claim for the substitution or for the designation of the type. The present writers prefer to the latter alternative, since we read in COSSMANN's original description "... je propose *Beushausenia* pour le même type *Cucullaea hirsonensis* d'ARCH." Whatever COSSMANN's original concept may be, the genotype should be regarded as the true *hirsonensis* and not the *hirsonensis* auct. pars. = *rugosus* BUCKM.



In the outline the Japanese species described below is similar to *Beushausenia* of *Parallelodon* but is different from that subgenus in the absence of the radial markings, as in some species of Triassic *Macrodon*. The confusion demands a monographic study on *Parallelodon* and its allies to straight out the classification of this family.

*"Parallelodon" infrequens* KOBAYASHI and ICHIKAWA,  
new species

Pl. IV, Fig. 12.

✓

MM 5164

*Description*.—Shell small, inequilateral, broad, subquadrate, and convexity fairly strong with the maximum at about the mid-height below the umbo; anterior side short, about half as long as the posterior, and rounded; ventral margin arcuate more broadly toward the posterior than the anterior; postero-dorsal margin long and nearly straight; posterior end roundly truncated. Umbo well developed, prominent and nearly orthogyre, behind which there is a distinct concave area. Surface ornamented only by numerous, very fine and regular, concentric growth striae.

The holotype internal mould of a right valve from Shimoyama measures 7 mm. in height, 9.5 mm. in width, and 2.5 mm. in thickness.

*Observation and comparison*.—A trace of a transverse groove is seen inside of the postero-dorsal margin. A left valve from Horiake of Oowada, is quite similar to this species, though the shell is not as tall, and the umbo more acuminate in the Horiake specimen.

The subquadrate outline suggests that this species is more probably a member of the arcids rather than a pholadomiid, although the taxodont teeth cannot exactly be seen.

*"Cucullaea"* ex. aff. *seisiamai* BROILI by PHILIPP (1904, p. 196, pl. 6, fig. 20) from the Wengen stage of Latemar appears similar to this species, though the shell is more convex, the umbo more prominent, and the anterior outline probably less protruded in the Japanese. Incidentally PHILIPP's is different from BROILI's original (1904, p. 206, pl. 25, fig. 2) in the absence of the ventral sinus, and its generic position is uncertain, because its teeth have not been described.

*Occurrence*.—*Tosapekten* bed at Shimoyama (47TK-13) and (?) *Oxytoma-Mutilus* bed at Oowada Horiake (47TK-49).

Gen. et sp. nov. indet. *a*

M45166-4-13

Pl. IV, Figs. 13a-c.

*Description*.—Shell of moderate size, much higher than long, sub-equilateral and roundly ovate in outline; umbo subcentral, very prominent and convex; beak protruded and pointed forward; hinge-line of the left valve distinctly curved and provided with a trigonal groove just below and in front of the umbo; surface marked by numerous, very fine radial striae which are closely set and also by several strong concentric wrinkles with irregular intervals.

*Measurement and observation*.—This is a peculiar form represented by external and internal moulds of a left valve about 32 mm. in height and 23 mm. in width. An incomplete flat valve contained in the same sample is distinct from any species from Umenokidani, this fact suggesting that it may be the right valve of this species. In the left valve the hinge is undeveloped, but the small A-shaped "teeth" appear to be present on the lateral sides of the trigonal depression below the umbo. Therefore it is not improbable that this is an aberrant form of the Dimyidae or the isodont group with the curved hinge margin and fine radial ornamentation. If so, it is presumably inequivalve, having the flat right valve mentioned above. The left valve which is imperfect is, however, so strongly convex and its umbo so prominent that there is no difficulty in distinguishing it from *Dimya* as well as from *Dimyodon*.

One of WILCKEN's *Gonodon mellingi* HAUER (1927, p. 33, pl. 61, fig. 4 only) from the Triassic of New Zealand which is quite different from HAUER's in its prominent and pointed umbo and strong concentric wrinkles, looks similar to this, but the umbo is more rounded and the fine radial lines are absent in his form. The resemblance may be superficial, and at least the Japanese form is not a member of *Schafhäutlia* i. e. *Gonodon*, because there is no species with fine radial lines in that genus.

ALMA's gen et sp. indet. aff. *Schafhäutlia* from Wettersteinkalk (1926, p. 119, pl. 10, fig. 8) is another shell which resembles this Japanese one. His description and illustration do not perfectly agree with each other and, if the illustrated specimen is a left (?) valve with numerous fine radial lines as can be judged from the plate, it may be allied to the Japanese species. The umbo is, however, much

higher and the valve higher than wide in this species. These differences in addition to the strong concentric wrinkles and stronger radials readily distinguish it from ALMA's. The radial lines in his species may be, however, no stronger than those of *Glycimeris*. Incidentally, ALMA's specimen may be more properly compared with "*Mysidioptera*" *Marzari-Pencati* TORNQUIST (1898, p. 669, pl. 21, fig. 5) from the *subnodosus* Schichten of San Rocco. Although TORNQUIST mentions that radial striae are absent, his plate shows striae similar to those seen in ALMA's. Moreover his species is almost equilateral and has no concentric wrinkles as in ALMA's. Therefore the resemblances of TORNQUIST's as well as ALMA's with the present species may also be superficial. The latter is thought to represent an undescribed genus by itself.

*Occurrence*.—*Myoconcha* sandstone at Umenokidani (47TK-26).

Gen. et. sp. nov. indet.  $\beta$

Pl. IV, Fig. 14.

MM5767-4-14

*Description and measurement*.—Shell small, nearly semicircular, almost twice as wide as high, a little more strongly rounded on the posterior than on the anterior side along the ventral margin; antero-dorsal and postero-dorsal margins, both nearly straight, form an angle of about 150 degrees at the umbo; umbo located at a point only a little anterior to the middle, small and not prominent, but pointed and nearly orthogyre; surface smooth.

The holotype internal mould of a right valve is 7.5 mm. high and 13.5 mm. wide; and the paratype 8.5 mm. high and 15 mm. wide.

*Comparisons*.—By the reason that this specimen has neither a hinge plate nor lateral tooth, and probably no cardinal (although the cardinal area cannot be seen clearly), it is unrelated to Tellinids or the like, but belongs most probably to the Desmodonta.

It looks like "*Psammoconcha*" *servini* TOMMASI (1896, p. 61, pl. 4, fig. 1a) which is referred to "*Anatina*" in DIENER's Catalogue, although the umbo is more distinct and the outline more symmetrical in the Japanese shell.

"*Tancredia*" *marcignyana* MARTIN (1863, p. 80, pl. 3, figs. 10-12) from the Rhaeto-Liassic of France may be the closest form, although the outline is much longer in the Japanese; a radial elevation along

the anterior margin of the internal mould appears to outline a lunule which is by no means present in the French species. Because the thickened pointed projection noted by COX on the right valve (1929, p. 572) is not seen in either one of them, they may perhaps not belong to *Tancredia*. They are thought to be probably desmodont members.

*Occurrence*:—*Oxytoma-Mytilus* sandstone at Oowada Horiake (47 TK-49) and Kashiwai (47TK-50).

# References.

- ALMA, Fr. H. (1926): Eine Fauna des Wettersteinkalkes bei Innsbruck. *Ann. Naturhist. Mus. in Wien. Bd. XL.*
- ARKELL, W. J. (1930): The generic position and phylogeny of some Jurassic Arcidae. *Geol. Mag., Vol. 67.*
- BENDER, G. (1921): Die Homomyen und Pleuromyen des Muschelkalkes der Heidelberger Gegend. *Zeitschr. Deutsch. Geol. Ges., Bd. LXXIII.*
- BITTNER, A. v. (1901): Lamellibranchiaten aus der Trias des Bakonyerwaldes. *Resultate d. wissenschaftl. Erforsch. d. B. latonsees, 1/1. Palaeontol. Anhang.*
- BÖHM, J. (1903): Über die obertriadische Fauna der Bäreninsel. *K. Svenska Vetensk. Akad. Handl., XXXVII, No. 3.*
- BROILI, F. (1904): Die Fauna der Pachycardientuffe der Seiser Alp. *Palaeontographica, Bd. L.*
- COX, L. (1929): Note on the Mesozoic Family Tancrediidae. *Ann. Mag. Nat. Hist., Ser. X, Vol. 3.*
- DIENER, C. v. (1908): Ladinic, carnic and noric faunas of Spiti. *Pal. Ind. Ser. 15, Himalayan Fossils, Vol. V, Pt. 3.*
- DIENER, C. v. (1925): Leitfossilien der Trias in GÜRICH's *Leitfossilien, Lief. IV.*
- JAWORSKI, E. (1915): Die Fauna der obertriadischen *Nucula*-Mergel von Misol. *Palaeontol. v. Timor, 2 Lief., Abt. 5.*
- KRUMBECK, L. (1913): Obere Trias von Buru und Misol. *Beitr. z. Geol. v. Niederländ. Indien, II/1.*
- MANSUY, H. (1908): Contribution à la carte géologique de l'Indochine. *Paléontologie. Service des Mines, Hanoi-Haiphong, 1908.*
- MARTIN, J. (1863): Paléontologie stratigraphique de l'Infralias du dép de la Côte d'Or. *Mem. Soc. Geol. France, Ser. 2, T. VII.*
- PHILIPP, H. (1904): Palaeontologisch-Geologische Untersuchungen aus dem Gebiet von Predazzo. *Zeitschr. Deutsch. Geol. Ges., Bd. LV1.*
- REED, F. R. C. (1927): Palaeozoic and Mesozoic Fossils from Yunnan. *Palaeont. Indica. N. S., Vol. X, No. 1.*
- REED, F. R. C. (1929): Triassic Faunas from Brazil. *Monogr. Serv. Geol. Mineralog. Brazil., Vol. IX.*
- REEVE, L. V. (1874): Conchologia Iconica XII. Monograph of *Cutellus*.
- SPATH, L. F. (1935): Additions to the Eo-Triassic Invertebrate Fauna of East Greenland. *Medd. om Grønland, Bd. 98, No. 2.*
- TOMMASI, A. (1896): La fauna del Trias inferior nel versante meridionale delle Alpi. *Palaeontogr. Ital. I.*
- TORNQUIST, A. (1898): Neue Beiträge zur Geologie und Palaeontologie der Umgebung von Recoaro und Schio. *Zeitschr. Deutsch. Geol. Ges., Bd. L.*
- WILCKENS, O. (1927): Contributions to the Palaeontology of the New Zealand Trias. *New Zealand Geol. Surv. Palaeont. Bull., No. 12.*
- WILLIAMS H. S. & BREGER, C. L. (1916): The Fauna of the Chapman Sandstone of Maine. *U. S. Geol. Surv. Prof. Paper, 89.*
- WOODS, H. (1899): Note on the genus *Grammatodon*. *Ann. Mag. Nat. Hist., Ser. VII, Vol. 3.*

# Explanation of Plate IV.

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✓ Figs. 2a-b. ditto; paratype. (Reg. No. 5153) × 1. Loc. ditto.	
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(All specimens here illustrated are kept in the Geological Institute,  
University of Tokyo.)

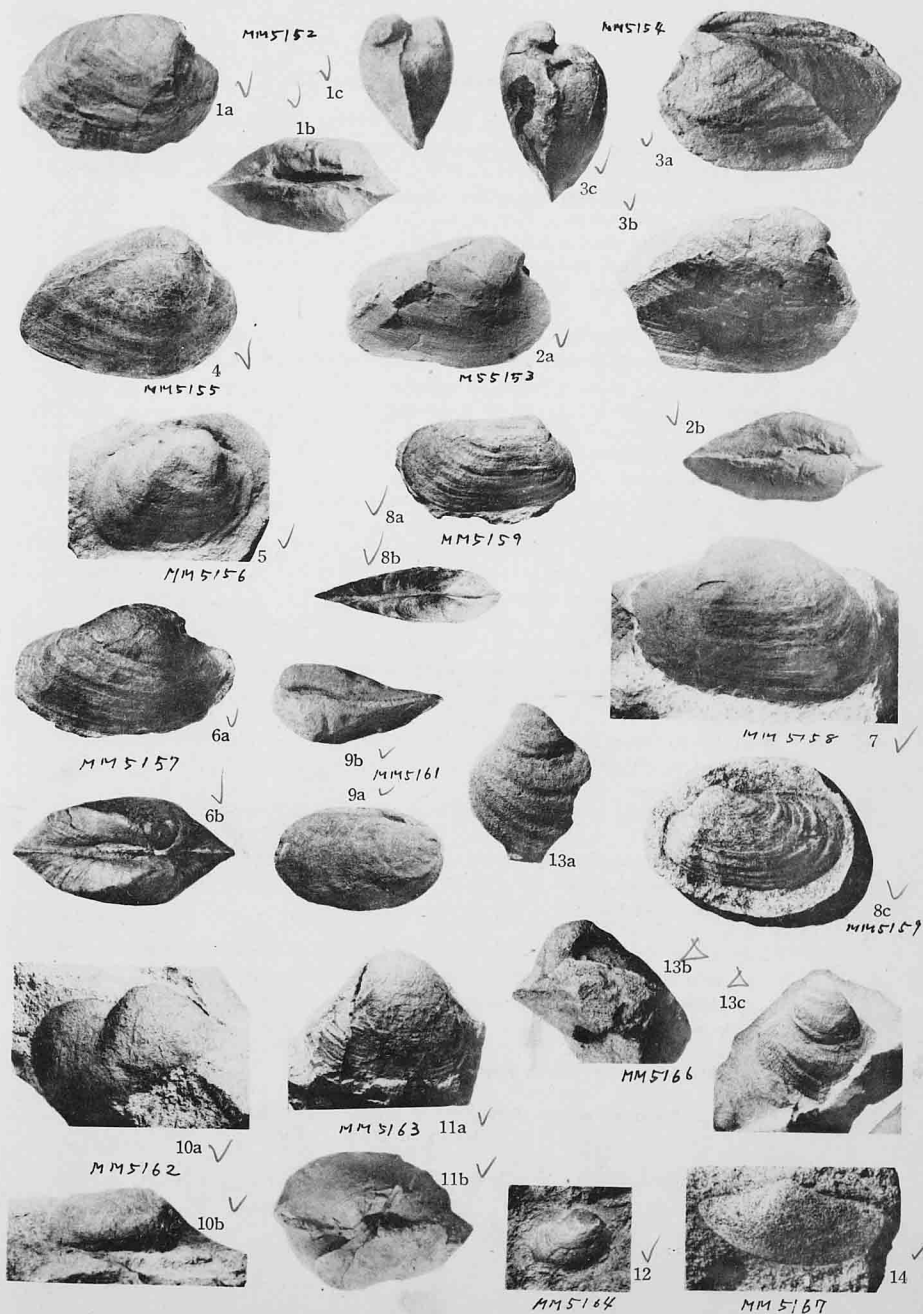


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