

***Sakawanella*, new genus, and some other Pelecypods
from the Upper Triassic Kochigatani Group in
the Sakawa Basin, Shikoku, Japan.**

By

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(With Plate V)

A new genus, *Sakawanella*, is established through this paper on the basis of the monotypic species, *Sakawanella triadica*, new species, and the family Tancrediidae to which it belongs is discussed to some length. Furthermore the descriptions are presented here of the following species:

- Myophoriopsis* (*Pseudocorbula*?) *orbicularis* ICHIKAWA, new species.
Schafhäutlia mellingi HAUER *japonica* ICHIKAWA, new subspecies.
Schafhäutlia (?) α sp.
Schafhäutlia (?) β sp.
Schafhäutlia (?) γ sp.
"*Cuspidaria*" sp. indet.

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Family **Tancrediidae** MEEK, 1864, em. COX, 1929

Genus ***Sakawanella*** ICHIKAWA, new genus

Genotype:—*Sakawanella triadica*, new genus and species.

Diagnosis:—Shell small, inequilateral, anterior side shorter than the posterior, elongate subquadrate, abruptly rounded in the anterior and obliquely truncated in the posterior where it is probably gaping; dorsal half including the umbo moderately convex, but the shell is flattened toward the ventral and lateral margins; umbo small, orthogyre and not prominent. Right valve with two cardinal teeth and one posterior lateral; anterior cardinal trigonal and ill-defined especially on the anterior side where it merges with the shell margin; posterior cardinal larger, distinct, trigonal and directed postero-ventrally; a groove in front of it distinct and as large as the posterior cardinal, another behind it small and oblique; posterior lateral elongated and

provided with a lateral groove on it. Left valve with a cardinal and a posterior lateral teeth; the cardinal strong, large, trigonal and directed downward and slightly backward; a cardinal groove behind it distinct whereas another in front of it is faintly marked; posterior lateral not strong; no anterior lateral. Adductor scars small but strongly impressed, nearly equal in size and suboval to orbicular in outline, each lying at upper one-fourth of the shell-height; pallial line fairly distant from the ventral margin, not extending behind the posterior one-fourth of the width, nearly vertical below the posterior scar and apparently simple, but slightly sinuated behind. Two weak and blunt radial lines marked near the umbo being grooves internally where the anterior one is very obscure.

Remarks.—The type species is so far monotypic, further observations and the generic comparison being included in its description.

Distribution.—Late Triassic in Shikoku, Japan.

Sakawanella triadica ICHIKAWA, new genus and species

Pl. V, Figs. 1-7.

Description.—Shell small, relatively thick, equivalve, somewhat inequilateral, transversely elongated and roundly subquadrate, a little convex on the umbonal side but flattened toward the ventral and lateral sides; anterior part shorter than the posterior, elongate semiparabolic, but the anterior end is located a little lower than the mid-height; ventral margin very gently arcuate, ascending more rapidly on the anterior side and abruptly bent up at the rear end; posterior margin oblique, slightly convex and probably gaping; postero-dorsal margin nearly straight and a little oblique; umbo located at the point a little anterior to the center, small, orthogyre, improminent and slightly convex. As a mention of the hinge character is given in the generic diagnosis, it is not reiterated here. Adductor scars small, but distinctly impressed, subequal to each other, both lying at about the umbonal one-fourth; anterior one stronger, obliquely suboval while the posterior one is orbicular in outline; pallial line relatively short, traversing along or above the ventral one-third of height, not extending any further back beyond the one-fourth the shell width and slightly sinuated in the rear part. Two blunt subvertical lines, the anterior one weaker than the posterior, extending from the umbo, but becoming

obsolete downward and do not extend beyond the distance of 5 mm. from the umbo. Only faint concentric lines of growth seen on the surface.

Measurement :—

	Height	Width	Thickness
Left valve, the holotype (Pl. V, Fig. 1)	8 mm.	15.5 mm.	1.5 mm.
Right valve, the paratype (Pl. V, Fig. 2)	8 mm.	16 mm.	1.5 mm.

Observation :—The lateral tooth which is obscure in the internal mould of the holotype left valve is clearly seen in other specimens. As seen in 6 right and 4 left valves the hinge character is uniform and constant insofar as the cardinal area is concerned, but lateral on the left valve can not well be seen. A groove is however seen in its juxta-position on the right valve.

The outline and convexity of the shell is fairly variable in this species.

Var. α (Pl. V, Figs. 6, 7.) has the umbo in a fairly anterior position and accordingly the anterior margin is short. Because this form is commonly met among small shells, at first it is thought to be a juvenile form, but it is not, because the same outline is found in a specimen 14 mm. wide.

Var. β (Pl. V, Fig. 5.) is characterized by its fairly elongated outline which is not clearly truncated behind and the shell is moderately convex and even the lateral sides not so flattened as usual.

Remarks :—The phylogenetical position of this interesting pelecypod had long puzzled the author until he read the diagnosis of the Tancrediidae MEEK, 1864, emended by COX, 1929 (p. 570), as follows:

"Shell smooth, equivalve, more or less compressed, elongate, ovate or subtrigonal, only occasionally very inequilateral. Ligament external; nymphs frequently prominent. Cardinal teeth essentially two in each valve; of these the left posterior frequently, and the right anterior occasionally, may be obscure or absent. A single posterior lateral present in the one valve (usually the left), fitting, below the margin of the other valve, into a socket which may be enclosed between two definite lateral teeth. Anterior laterals usually absent. Muscle-scars small. Pallial line simple or with a shallow sinus."

In addition to doubtful *Delia* de LORIO, 1891, *Tancredia* LYCETT, 1850, *Corbicellopsis* nom. nov., *Eodonax* gen. nov. and *Meekia* GABB, 1864 were referred to the family by COX where the last is a Cretaceous genus and doubtfully referred to Verticordiidae by STEWART (1930, p. 304).

Tancredia (= *Hettangia* TERQUEM, 1852; *Corburella* LYCETT, 1850; *Palaeomya* ZITTEL and GOUBERT, 1861; genotype: *T. donaciformis* LYCETT from Inferior Oolite) agrees with *Sakawanella* in the respects that (1) shell is usually fairly small, (2) posterior end usually obliquely truncated and (3) left posterior and right anterior cardinal teeth rarely distinct, one large triangular cardinal tooth normally not grooved being present in each valve. Furthermore (4) in the smaller species these lateral teeth are greatly reduced and the two in the right valve may merely be represented by the wall of a socket. No anterior lateral. Muscle scars small, orbicular, subequal and placed in a rather dorsal position. Pallial line remote from the ventral margin, usually not definitely sinuated, (5) thus evidencing a definite tendency towards a sinupalliate condition. But *Tancredia* is different from *Sakawanella* 1) in subtrigonal outline, abruptly narrowing forward, 2) being longer anteriorly when inequilateral, and 3) having a pointed projection on the antero-dorsal margin of the right valve, which fits in a depression on the counter margin. Further COX mentions that the right valve has two posterior lateral teeth, one of which however appears to be introduced merely by thickening of the dorsal margin. Therefore the difference in the number is not of high value.

In the absence of the pointed projection this genus may be closer to *Corbicellopsis* and *Eodonax*. *Corbicellopsis* COX, 1929 (*Corbicella* auct., non MORRIS and LYCETT; genotype: *Corbis laevis* SOWERBY from Corallian) is a substitute name the validity of which was later rejected by ARKELL (1934), and is not accepted by most authors. Putting aside the terminology problem, *Sakawanella* can be distinguished from *Corbicellopsis* by the total absence of the left posterior cardinal, subquadrate, rather than subovate outline, weaker umbo and a weak protuberance defined inside and below the umbo by two radial blunt grooves.

In the remarkable characteristic last mentioned this genus coincides with *Eodonax* COX, 1929 (genotype: *Sowerbya dukei* MORRIS and LYCETT from Portlandian). The genus is, however, more developed than this Late Triassic genus and Early and Medial Jurassic *Corbicellopsis* in having two cardinals on each valve, lateral teeth in tuberculiform and not elongated, and distinctly sinuate pallial line. Its outline is, like *Tancredia*, subtrigonal. Furthermore it has three radial blunt grooves, inside and below the umbo.

In conclusion it may be said that Late Triassic *Sakawanella* is intimately related to Early and Medial Jurassic *Corbicellopsis* and at

the same time it has certain features common with Late Jurassic *Eodonax*, but can be distinguished from them as a new genus of the Tancrediidae by the above cited characteristics.

Among seven species of *Tancredia* in DIENER's catalogue some are doubtful and others may be referred correctly. At any rate all of them are quite distinct from this species. As to MANSUY's two species from Eastern Asia (*T. garandi* (1912, p. 65, pl. 12, fig. 2) and *T. choboensis* (ibid, fig. 3)) both bear very strong concentric markings. Whether they are really related to *Tancredia* is very doubtful, but anyhow they have nothing to do with *Sakawanella*. *T. (?) triasina* (SCHAUROTH, 1857, p. 124, pl. 7, fig. 1) which is trigonal, almost equilateral, resembling a small *Tellina* and having a distinct posterior costa is also doubtful. *T. sinemuriensis* (MARTIN, 1863, p. 80, pl. 3, figs. 7-9) from the Rhaeto-Liassic of France on the other hand may be a *Tancredia* in trigonal outline and having a thickened projection as noted by COX. *T. marciguyana* (MARTIN, ibid., figs. 10-11) has a similar outline, but its generic position lies in question. Reference of *Beneckii* PHILIPPI and *Dittmarii* MARTIN are inaccessible of the author, but of the former COX (1929, p. 575) noted that it is the one most likely a *Tancredia* in astartiform with an entire pallial line. Thus none of Triassic "*Tancredia*" can safely be considered to be congeneric with this species.

Occurrence.—*Oxytoma-Mytilus* sandstone at Oowada Horiake (47TK-49), Kashiwai (47TK-50) and Okunomine-tani (47TK-4).

? Family Astartidae d'ORBIGNY

Genus *Myophoriopsis* WÖHRMANN, 1889

Subgenus *Pseudocorbula* PHILIPPI, 1898

Myophoriopsis (*Pseudocorbula*?) *orbicularis* ICHIKAWA, new species

Pl. V, Figs. 10-11.

Description.—Shell small, subequilateral, rounded and nearly as wide as high, fairly convex on the umbonal side, becoming most strong near the center of the valve; anterior and ventral margins well rounded and the posterior more strongly; umbo narrow, prominent, highly convex, slightly prosogyre and provided with a vertical umbonal

ridge in front of it; hinge margin abruptly rounded; cardinal tooth of left valve long, triangular and provided with a distinct socket on its each side, the anterior one of which is oblique whereas the posterior is nearly vertical; a short knob-like projection in front of the anterior socket separated from the hinge margin by a groove; surface marked only by fine regular concentric markings and growth striae. Right valve unknown.

Measurement :

	Height	Width	Thickness
Holotype (Usugatani) (Fig. 10)	11 mm.	11 mm.	3.5 mm.
Paratype (Umenokidani) (Fig. 11)	10 mm.	10 mm.	3.0 mm.

Comparison.—This species coincides with *Myophoriopsis* (*Pseudocorbula*) *incrassata* (MÜNST.) by SCHAUROTH (1857, p. 122, pl. 4, fig. 18) so well that it simply differs from *incrassata* in a little narrower umbo and slightly higher shell. These two species are, however, different from most others of the subgenus including *M. (Ps.) gregaria* (MÜNSTER), the type of the subgenus, which have the shell rather longer than high and the prominent radial costa. In addition strong concentric lamellae as seen in *Astarte* are found in the species from Brazil and Uruguay (REED, 1929, 1932, 1935; COX, 1934). Therefore it is a question whether or not, this species together with *incrassata* in SCHAUROTH belongs safely to the subgenus. Though it is uncertain whether this species has a lunule, the cardinal is typical of *Myophoriopsis* and the formula of the dentition as well as the shell outline exclude it from *Myophoria*. It has, however, a peculiar vertical clavicle as often met with in *Myophoria*. If the right valve will be found and the complete form can be figured out, it may reveal a distinct group.

Occurrence.—*Myoconcha* sandstone at Umenokidani (47TK-26); Usugatani in the Sakuradani area, Tokushima Pref.

Family *Lucinidae* FLEMING

Genus *Schafhäutlia* COSSMANN, 1897

(=*Gonodon* SCHAFHÄUTL, 1863; *Gonodus* WÖHRMANN, 1893)

Schafhäutlia mellingi HAUER *japonica* ICHIKAWA, new subspecies

Pl. V, Figs. 8a-b.

Description.—Shell of medium size, equivalve, subequilateral, nearly as long as high, rounded in outline and gradually extending

downward; shell convexity moderate; anterior and posterior margins gently arched upward, but become rounded downward and merge into the broadly curved ventral margin; umbo rounded, central, slightly prosogyre, moderate in size, fairly convex and ending at a beak which is incurved and pointed downward. Left valve provided with two small cardinals, but any lateral is not known. Surface smooth, ornamented only by fine concentric striae of growth.

Measurement:

	Height	Width	Thickness
Shimoyama (holotype)	17 mm.	18 mm.	5.5 mm.
Ditto (paratype)	ca. 13.5 mm.	ca. 13.5 mm.	3.5 mm.
Ditto	17 mm.	18 mm.	6 mm.

Observation and comparison:—Hinge area is not seen in the holotype, but the cardinals are shown in the incomplete paratype from the same locality. Although the details of the hinge is not well seen, this is certainly allied very closely to *Schafhäutlia mellingi* HAUER which is known to be distributed in the formations from Ladinic to Noric from the Alpine region to New Zealand through Sicily and Malaya (for synonymy see DIENER, 1923 and KUTASSY, 1931). *Japonica* is, however, different in the narrower and more rounded outline, broader and more rounded umbo, and less significant concentric striae. In these respects the form which FRECH illustrated from the Raibl equivalent in Bakony (1907, p. 57, pl. 8, fig. 10) and later reproduced by DIENER (1925, p. 46, pl. 9, fig. 2), is particularly close to this, although this is higher and its umbo larger and broader. This is fairly distant from Noric *mellingi* (JAWORSKI, 1915, p. 119, pl. 43, fig. 25; KUTASSY, 1927, p. 149, pl. 3, fig. 8) which bears distinct concentric lamellae on the surface.

According to DIENER and KUTASSY'S catalogues (1923, p. 219; 1931, p. 409) there are three varieties of *mellingi* among which var. *globosa* KUTASSY, (1928, p. 225) appears *nom. nud.* and the reference of var. *minima* TOULA (1909, p. 397, pl. 12, fig. 15) is inaccessible for the author. But it is found that var. *balatonica* FRECH (1907, p. 58, pl. 8, fig. 9) is more elongated laterally than this subspecies.

Lucina sphaeroides BOETTGER from Malaya (1880, p. 37, pl. 1, figs. 16-17) which is partly synonymized with *mellingi*, looks quite similar to this subspecies, though the concentric markings are distinct and the umbo is located somewhat more anteriorly in the former. If KRUMBECK'S mention (1914, p. 254, pl. 16, figs. 19a-b) that in *mellingi*

it is broadest at about one-third the height below the umbo, while it is so at the center and less flattened in *sphaeroides*, is accepted, *japonica* is rather closer to *sphaeroides*, though the anterior position of the umbo distinguishes *sphaeroides* illustrated by KRUMBECK (1914, op. cit.) from *japonica* as well as *mellingi*, and further the umbo is narrower in *sphaeroides* than in *japonica*. It is certain that *sphaeroides* as well as *japonica* are intimately related if not subspecies of *mellingi*.

Occurrence:—*Tosapecten* Bed at Bamboo jangle of Shimoyama (47TK-14); Sandai (47TK-17).

Schafhäutlia ? *a* sp.

Pl. V, Figs. 12a-b.

Shell of medium size, inequilateral, rounded, lucinoid in outline, nearly as wide as high and somewhat compressed; antero-dorsal curve highly convex; anterior and ventral curvatures moderate and merge more or less abruptly into the gently rounded posterior margin at the postero-ventral end; umbo prominent, projected forward, the beak being located at about anterior one-fourth of the total width, incurved and pointed downward, ending in the hinge margin; lunule and escutcheon deep and distinct. Surface ornamented by weak concentric lines of growth.

	Height	Width	Thickness
Nezukamiishi (Typical specimen)	22 mm.	23 mm.	5.5 mm.
ditto	—	ca 25 mm.	5 mm.
Kuromagari	ca 25 mm.	25 mm.	6 mm.

The anterior margin is protruded to various degrees and in the Kuromagari specimen somewhat weaker than as usual. Because the hinge nature is unknown, its generic reference is made only by the external aspects. Himalayan *Gonodon* sp. indt. by DIENER (1908, p. 63, pl. 8, fig. 4 only) is fairly close to it, though the anterior outline is more highly shouldered, the umbo more distinctly directed forward and the shell more compressed in the Japanese form. If the interior can be examined, this species may turn out to be an *Anodontophora*.

Occurrence:—*Tosapecten* bed at Nezukamiishi (47TK-18) and Kuromagari (47TK-23).

Schafhäutlia ? β sp.

Pl. V, Figs. 9a-c.

Shell of medium size, equivalve, orbicular in outline, just as wide as high and moderately convex, becoming thickest at the point about one-third the height below the umbo; umbo more or less prominent, subcentral, moderately convex and prosogyre; lunule small. Two very blunt carinae running from the umbo to the postero-ventral and antero-ventral margins; surface ornamented only by weak lines of growth.

An internal mould of two valves is 22 mm. high, 22 mm. wide and 5 mm. thick. Though the umbones are broken, they are presumably prominent and pointed forward. In the presence of anterior and posterior blunt carinae, this form as well as the preceding are abnormal for *Schafhäutlia*. Together with several similar forms from Kanaidani, Nezukamiishi and Shimoyama their proper position in taxonomy is a question.

Occurrence:—*Anodontophora* sandstone of the *Tosapecten* beds at Kanaidani-no-oku (47TK-22).

Schafhäutlia ? γ sp.

Pl. V, Fig. 14.

Shell small, rounded, a little longer than high, somewhat flattened except for the umbonal part; antero-dorsal margin strongly convex, anterior vertical and slightly arched, ventral convex gradually and posterior margin moderately; umbo located a little anterior to the center, small, improminent and curving inward and slightly forward; surface marked by concentric coarse striae, and fine growth lines.

A right valve represented by an internal mould and an incomplete external measures 11 mm. in height, 13 mm. in width and 1.5 mm. in thickness. This is quite similar to *Lucina stoppaniana* DITTMAR (BORCHI, 1938, p. 26, pl. 3, fig. 13), but has a little larger umbo and coarser concentric lines. The generic reference of this lucinoid is uncertain.

Occurrence:—*Tosapecten* bed at Shimoyama (47TK-13).

Family *Cuspidariidae* DALLGenus *Cuspidaria* NARDO, 1840“*Cuspidaria*” ? sp. indet.

Pl. V, Fig. 13.

Right valve small, thin, flattened, inequilateral and transversely elongated; anterior margin moderately rounded, ventral broadly arcuate; postero-dorsal oblique and nearly straight; umbo small, improminent and located anteriorly; postero-dorsal area separated from the disk by a weak posterior carina and provided with two radial lines; surface ornamented by weak lines of growth and regular coarse concentric lines.

An incomplete right valve at hand is 9.5 mm. high. Its generic reference is made simply by the apparent resemblance with BITTNER's four species (*Cuspidaria alpis civicae* BITTNER, *gladius* LAUBE, *siliqua* BITTNER, *semiradiata* STOPPANI, all in BITTNER, 1895, p. 3, pl. 1). Although the rear part is broken off, it seems to be produced to some extent, but it is by no means rostrate as in BITTNER's. Relatively distinct two radial lines on the area present additional differences. The hinge nature is unknown, and it is not improbable to be an Solenomorphid, but it may also equally be a Nuculanid such as *Leda deffneri* OPPEL (OSSWALD, 1930, p. 745, pl. 53, fig. 15). Since the hinge nature of this Japanese specimen is unknown, the present generic alliance is no more tentative.

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

References.

- ARKELL, W. J. (1934): The Genera *Corbicella* and *Quenstedtia* MORRIS and LYCETT etc. *Ann. Mag. Nat. Hist., Ser. X, Vol. 14.*
- BITTNER, A. v. (1895): Lamellibranchiaten der alpinen Trias. I. Revision der Lamellibranchiaten von St. Cassian. *Abhandl. Geol. R. A., Bd. XVIII/1.*
- BOETTGER, O. (1880): Die Tertiärformation von Sumatra und ihre Tierreste III. *Paläontograph. Suppl. III, Liefs. 8, 9.*
- BORGHI, P. (1938): Su alcune nuove localita fossilifere del Trias superiore lombardo. *Atti Soc. Ital. Sci. natur. Mus. Civico storia nat. Milano, 77, 1.*
- COX, L. R. (1929): Note on the Mesozoic Family Tancrediidae with Descriptions of several British Upper Jurassic Species, and a new Genus, *Eodonax*. *Ann. Mag. Nat. Hist., Ser. X, Vol. 3.*
- COX, L. R. (1934) Triassic Lamellibranchia from Uruguay. *Ann. Mag. Nat. Hist., Ser. X, Vol. 13.*
- DIENER, C. (1908): Ladinic, carnic and noric faunae of Spiti. *Pal. Indica, Ser. 15, Himalayan Fossils, Vol. V, Pt. 3.*
- DIENER, C. (1923): Lamellibranchiata Triadica. *Fossilium Catalogus, Animalia pars. 19.*
- DIENER, C. (1925): Leitfossilien der Trias in GÜRICH's *Leitfossilien Lief. IV.*
- FRECH, F. (1907): Die Leitfossilien der Werfener Schichten und Nachträge zur Fauna des Muschelkalkes, der Cassianer und Raibler Schichten, sowie des Rhaet und des Dachsteinkalkes (Hauptdolomit). *Resultate d. wissenschaftl. Erforschg. d. Balatonsees, Palaeont. Anhang z. I, Teil, d. I Bandes, 1907.*
- JAWORSKI, E. (1915): Die Fauna der obertriadischen *Nucula*-Mergel von Misol. *Palaeontol. v. Timor, 2. Lief., Abt. V.*
- KRUMBECK, L. (1914): Obere Trias von Sumatra. Die Padang Schichten von Westsumatra. *Beitr. z. Geol. v. Niederländ. Indien II/3. Palaeontograph. Suppl. IV.*
- KUTASSY, A. (1927): Beiträge zur Stratigraphie und Paläontologie der alpinen Triasschichten in der Umgebung von Budapest. *Jahrb. d. Königl. ung. Geol. R. A., Bd. XXVII.*
- KUTASSY, A. (1928): Die Triassschichten der Béler und Bihargebirges usw. *Verhandl. d. Geol. Bundanst. Wien, No. 11.*
- KUTASSY, A. (1931): Lamellibranchiata Triadica. *Fossilium Catalogus, Animalia pars. 51.*
- MANSUY, H. (1912): Contribution à la géologie du Tonkin. Paléontologie. *Mém. Serv. géol. de l'Indochine, Vol. 1, fasc. 4/2.*
- MARTIN, M. T. (1863): Paléontologie Stratigraphique de l'Infra-Lias d. 1. Côte-d'Or. *Mém. Soc. Geol. France, ser. 2, tom. VII.*
- MORRIS, J. & LYCETT, J. (1850): A Monograph of the Mollusca from the Great Oolite etc. *Palaeontographical Society.*
- OSSWALD, K. (1930): Über einige Rätffossilien aus dem Risserkogelgebiet. *Jahrb. k. preuss. Geol. Landanstalt, f. 1929.*
- REED, F. R. Cowper (1929): Triassic Faunas from Brazil. *Monogr. Serv. Geol. Mineralog. Brazil, Vol. IX.*
- REED, F. R. Cowper (1932): Some new Triassic Fossils from Brazil. *Ann. Mag. Nat. Hist., Ser. X, Vol. 10.*
- REED, F. R. Cowper (1935): Some Triassic Lamellibranchs from Brazil and Paraguay.

- Geol. Mag., Vol. LXXII.*
- SCHAUROTH, K. v. (1857): Die Schaltierreste d. Lettenkohlenformation des Heizogtums Coburg. *Zeitschr. Deutsch. Geol. Gesell., Bd. IX.*
- STEWART, R. B. (1930): GABB's California Cretaceous and Tertiary Type Larrellibranchs. *Acad. Nat. Sci. Philadelphia, Spec. Publ. No. 3.*
- TOULA, F. (1909): Schichten mit *Gervilleia Bouei* HAU. am Gaumannmüllerkogel an der Weissenbacher Strasse im Randgebirge der Wiener Bucht. *Jahrb. Geol. R. A., Bd. LIX.*
- WÖHRMANN, S. v. (1889): Die Fauna der sogenannten Cardita- und Raibler Schichten in den Nordtiroler und bayerischen Alpen. *Jahrb. Geol. R. A., Bd. XXXIX.*
- WÖHRMANN, S. v. (1893): Die Raibler Schichten nebst Kritischer Zusammenstellung ihrer Fauna. *Jahrb. Geol. R. A., Bd. XLIII.*

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Sakawanella, new genus and some other Pelecypods from
the Upper Triassic Kochigatani Group in the
Sakawa Basin in Shikoku, Japan.

Plate V

Explanation of Plate V.

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Figs. 12a-b. Internal mould of a bivalved specimen, but the left valve is fragmentary. (Reg. No. 5182) ×1.5. Loc. <i>Tosapecten</i> bed at Nezukamiishi (47TK-18).	
" <i>Cuspidaria</i> " sp. indet.	254
Fig. 13. Internal mould of a right valve, to which an incomplete left valve is attached. (Reg. No. 5186) ×1. Loc. <i>Tosapecten</i> bed at Kuromagari (47TK-23).	
<i>Schafhäutlia</i> ? γ sp.	253
Fig. 14. Internal mould of a right valve. (Reg. No. 5185) ×1.5. <i>Tosapecten</i> bed at Shimoyama (47TK-13).	

(All specimens here illustrated are kept in the Geological Institute,
University of Tokyo.)



1a



1b



2



5



6



3



7



4



8a



8b



9a



10



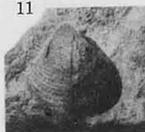
12b



9b



9c



11



12a



13



14