371. ON TWO SPECIES OF *POLYMESODA* FROM THE TETORI GROUP IN THE HIDA MOUNTAINLAND, CENTRAL JAPAN

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It has already been reported by T. KAMEI and S. OHOTA (1949) that the Tetori group of the Kamitakara district, Hida mountainland, Gifu Pref., central Japan, contains a non-marine molluscan fauna with some plants. In 1957 the writer collected newly such fossils as *Polymesoda* (Paracorbicula) *sanchesensis* (YABE and NAGAO), *P. (Isodomella) kobayashii* MAEDA n. sp., "Melanoides" sp., "Pila" sp. and so forth.

The stratigraphical succession of the Tetori group in the central part of the Hida mountainland is tabulated below:

- **Akaia** subgroup
  - Tochio alternation of sandstone and shale (about 600 m. thick)

- **Itoshiro** subgroup
  - Taio alternation of sandstone and shale (200-500 m. thick)
  - Sugizaki sandstone (150-200 m. thick)

- **Kuzuryu** subgroup
  - Numamachi alternation of sandstone and shale (150-350 m. thick)
  - Tanemura conglomerate (250-500 m. thick)

In the Kamitakara district the group developed along the upper reaches of the Takahara River consists only of the Tochio alternation, being inserted by faults into the metamorphic and non-metamorphic Palaeozoic basement complexes.

The Tochio alternation is provided with a remarkable reddish or greenish tuffaceous rock facies as is widely known from the Cretaceous deposits in and around Japan. Moreover, the fauna now discovered resembles closely to those of the Ryoseki and Yoshimo formations which are ascertained to be Eo-Cretaceous in age. Judging from these facts, it may be better to assign the alternation to the Eo-Cretaceous rather than to the upper Jurassic as generally considered. From the palaeogeographical point of view, the discovery of the Ryoseki element from the Hida mountainland is extraordinarily important, because the so-called Ryoseki fauna was hitherto unknown from the inner zone of southwest Japan except the Yoshimo area in Yamaguchi Pref.

Among the non-marine shells obtained from the Tochio formation the two forms of *Polymesoda* which are specifically determined will be described in the following pages.

Before going to describe, however, the writer desires to acknowledge his indebtedness to Prof. T. KOBAYASHI of University of Tokyo and Dr. K. SUZUKI of the Research Institute for Natural Resources for their constant guidance in the course of this study. He is also

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indebted to Mr. T. HAMADA, a postgraduate student of University of Tokyo, for his kind advice in the field survey.

Description of Species
Family Corbiculidae
Genus Polymesoda Rafinesque, 1820
Subgenus Isodomella Kobayashi and Suzuki, 1939
Polymesoda (Isodomella) kobayashii MAEDA, n. sp.
Plate 17. Figures 1-11.

Description:—Shell large in size, triangular in outline, somewhat longer than high, inequilaterally, moderately short and well round in front, obliquely produced behind, fairly inflated but more or less impressed in the median portion of the disc; test thick. Postero-dorsal margin scarcely curved near the beak. fairly long, straightly sloping into the posterior; posterior margin very short, rapidly bent forward into the ventral at an acute angle; ventral margin fairly long, arched, gradually going over into the well rounded anterior; antero-dorsal margin concave, gently arcuated. Umbo comparatively large, located at a point about one-fourth across from the anterior extremity, incurved and directed forward, somewhat elevated above the hinge-margin. Posterior ridge prominent; posterior area impressed, lanceolate. Surface ornamented with concentric growth lines and sometimes with slightly elevated wrinkles. Hinge-plate rather large; cardinal teeth three on each valve, middle and anterior cardinal teeth strong; lateral teeth two. smooth: posterior one slightly curved inward, long, lamellar, parallel with the postero-dorsal margin; anterior short.

Adductor scars situated close to the extremities of the laterals and faintly impressed. Pallial line simple. Inner side of the shell smooth.

Measurements:—4 type specimens scarcely deformed measure in mm as listed below

<table>
<thead>
<tr>
<th>Number</th>
<th>Length</th>
<th>Height</th>
<th>Width</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 (Left, holotype)</td>
<td>60</td>
<td>44</td>
<td>10 x 2</td>
</tr>
<tr>
<td>2 (Right)</td>
<td>60</td>
<td>46</td>
<td>19 x 2</td>
</tr>
<tr>
<td>3 (Left)</td>
<td>45</td>
<td>37</td>
<td>7 x 2</td>
</tr>
<tr>
<td>4 (Left)</td>
<td>34</td>
<td>30</td>
<td>5 x 2</td>
</tr>
</tbody>
</table>

Locality and formation:—The bed of the Kashiwate River, a tributary of the Takahara River, in Kamitakara-mura, Yoshiki-gun, Gifu Pref.; Tochio alternation of sandstone and shale in the Aka-iwa subgroup, the upper division of the Tetori group.

Remarks:—The specimens at hand resemble the figures of Polymesoda (Isodomella) shiroiensis (YABE and NAGAO) given by H. YABE, T. NAGAO and S. SHIMIZU in 1926 from the Cretaceous deposits in the Sanchu graben of the Kwanto massif, central Japan. but they are easily distinguishable therefrom by having the beak situated more anteriorly and by being much larger in size.

This species is also related to P. (I.) naumanii (NEUMAYR) figured by E. NAU-MANN and M. NEUMAYR in 1890 and by H. YABE, T. NAGAO and S. SHIMIZU in 1926. but they differ from each other in features of the posterior ridge and outline of the shell. Though P. (I.) kueichonensis (GRABAU) described in 1923 by A.W. GRABAU from the Cretaceous...
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deposits of China shows some resemblances to this new species in general characters, the two species do not coincide in ratio of height to length.

The specific name is dedicated to Prof. Teiichi Kobayashi who kindly advised the writer through the study of the historical geology of the Jurasso-Cretaceous Tetori group.

Subgenus Paracorbicula Kobayashi and Suzuki, 1939

Polymesoda (Paracorbicula) sanchuensis

(Yabe and Nagao)

Plate 17, Figures 12-16.

1926. Corbiculo (Veloritina?) sanchuensis Yabe and Nagao, Sci. Rep., Tohoku Imp. Univ., 2d Ser., Vol. 9, pp. 53-54, pl. 12, figs. 8, 8a, pl. 13, figs. 8-10, 17, 17a.


Description:—Shell medium in size, subcircular in outline, nearly as high as long, inequilateral, well rounded in front, fairly long and well rounded behind, with the maximum convexity located close to the umbo; test thick. Postero-dorsal margin more or less straight, sloping into the posterior without making any angle: posterior margin fairly long, feebly truncated, bent forward with an obtuse angle; ventral margin long, very broadly arched, gradually going over into the anterior margin, which is gently curved: antero-dorsal margin well rounded. Umbo large, located anteriorly, slightly inflated, incurved, directed forward, some-

what projected above the hinge-margin. Surface ornamented with concentric growth lines. Hinge well developed; cardinal teeth three on each valve, two of them usually strong; lateral teeth curved, crenated; posterior one longer than the anterior. Adductor scar lanceolated ovate; posterior one subovate in outline, distinctly impressed especially on its inner margin; posterior one broader than the anterior. Pallial line deeply sinuated. Inner side of the shell smooth.

Measurements:—More or less broken two specimens selected from the collection measure in mm. as follows:

<table>
<thead>
<tr>
<th>Number</th>
<th>Length</th>
<th>Height</th>
<th>Width</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 (Left)</td>
<td>31</td>
<td>32</td>
<td>10x2</td>
</tr>
<tr>
<td>2 (Right)</td>
<td>16</td>
<td>—</td>
<td>4x2</td>
</tr>
</tbody>
</table>

Locality and formation:—The bed of the Kashiwate River, a tributary of the Takahara River, Gifu Pref.: Tochio alternation of sandstone and shale.

Remarks:—Several imperfect specimens were found in the collection. With regard to the convexity and outline of this species, T. Kobayashi and K. Suzuki (1939) had stated that minor points of these features are not the same in every specimens, though the change from one to another is gradual.

The specimens at hand resemble most closely to Yabe and Nagao's form illustrated in fig. 8 on Pl. 12 of their report, but they slightly differ from the form shown by Yabe and Nagao as fig. 9 on Pl. 13 in outline of the shell. The present specimens are also allied to Kobayashi and Suzuki's specimens, but the former are generally thicker than the latter in width. Nevertheless, none of these minor differences seems to have a value for specific distinction.
References


Explanation of Plate 17

All the illustrated specimens are kept in the Institute of Geology, College of Arts and Sciences, Chiba University, Chiba. (Loc: Tochio alternation of sandstone and shale in the Akaiwa subgroup, the upper division of the Tetori group, developed in Kamitakama-ura, Yoshiki-gun, Gifu Pref.)

Polymesoda (Isodomella) kobayashii MAEDA, new species.
Fig. 1. Left valve, holotype. ×1.0.
Fig. 2. Umbonal view of holotype. ×1.0.
Fig. 3. Right valve, paratype. ×1.0.
Fig. 4. Lateral view of the specimen shown in Fig. 3. ×1.0.
Fig. 5. Internal mould of left valve, paratype. ×0.9.
Fig. 6. Character of lateral teeth of a paratype. ×1.5.
Fig. 7. Umbonal view of the specimen shown in Fig. 8. ×1.0.
Fig. 8. Left valve, paratype. ×1.0.
Fig. 9. Right valve, paratype. ×1.0.
Fig. 10. Lateral view of the specimen shown in Fig. 9. ×1.0.
Fig. 11. Left valve, paratype. ×1.0.

Polymesoda (Paracorbicula) sanchuensis (YABE and NAGAO)
Fig. 12. Lateral view of the specimen shown in Fig. 13. ×1.6.
Fig. 13. Internal mould of left valve. ×2.0.
Fig. 14. Internal mould of right valve. ×1.2.
Fig. 15. Lateral view of the specimen shown in Fig. 14. ×1.2.
Fig. 16. Character of sinus. ×1.6.