

Additional Notes on Hexacorals from the Upper Jurassic  
to Lower Cretaceous Yura Group at Cailloma,  
Arequipa Department, Southern Peru

By

**Nobuo YAMAGIWA**

Department of Earth Science, Osaka Kyoiku University, Osaka 543

**César RANGEL ZAVALA**

Instituto de Geologico, Minero y Metalurgico, Jesus Maria, Lima, Peru

and

**Eva VILLAVICENCIO DE DÁVILA**

Instituto de Geologico, Minero y Metalurgico, Jesus Maria, Lima, Peru

(Communicated by Ikuwo OBATA)

**Introduction**

Recently, some interesting hexacorals collected by Ing. David DÁVILA from limestone in the Upper Jurassic to Lower Cretaceous Yura Group outcropping at 22 km west of Cailloma, Arequipa Department, Southern Peru. In 1981, YAMAGIWA, RANGEL, VILLAVICENCIO & KAWABE reported a hexacoral species, *Actinastrea caillomensis* from this locality. In this article, two hexacoral ones, *Rhipidogyra* sp. indet. and *Stylina* ? sp. indet. are newly described.

**Systematic description**

Genus *Rhipidogyra* M. EDW.-H., 1848

*Rhipidogyra* sp. indet.

Plate 1, Figs. 1-2

Corallum simple, composed of flabellate and compressed corallite; the microstructure of the skeleton can not be known due to the recrystallization.

*Transverse section*:— Corallite small and oval form in immature stage; 9.0 mm in longest diameter and 6.0 mm in shortest diameter. Corallite large in mature stage. It shows long and curved cylindrical form; 40.0 mm in longest diameter and 15.0 mm in shortest diameter. No epitheca is seen. Distinct 22 costae present in immature stage. Distinct costae also present in mature stage. However, some of them not preserved for the lack of a part of the corallite. Wall thick. Endothecal dissepiments

thin and sparse. Septa arranged in five cycles in immature stage. 12 septa of the first two cycles long and thick; those mostly very thick at the axial end. Those of the third one slightly shorter than the first two ones'. Those of the fourth one about two-thirds to three-fourths as long as the third one's. Those of the fifth one very short and rudimentary. Those of the third to fifth ones thin. Septa arranged in six cycles in mature stage. Those of the first three cycles thick club-like form, numbering 7 per 20 mm. Those of the fourth thin; those slightly shorter than the first three ones'. Those of the fifth one about a half to two-thirds as long as the fourth one's. Those of the sixth one about one-third to two-thirds as long as the fifth one's. Those of the fifth and sixth ones more slender than the fourth one's. The lateral surfaces of the septa are granulated. Columella (immature stage) ---- ?. However, thin and rudimental columella is seen in the middle of the corallite in mature stage.

There is no longitudinal section.

*Remarks:* The microstructure of the corallite can not be known. Besides, a part of the corallite missing. The present form is very similar to *Rhipidobyra crispa* Koby (1904, p. 16, pl. 1, fig. 21, pl. 2, figs. 1, 1a, 2, 2a, 3, 3a) from the Upper Jurassic in Portugal in its size and form of corallite, distinct costae, rudimental lamellar type of columella. However, the septa of the first three cycles of the former show club-like form in mature stage; those arrange more tightly than the latter's. It resembles *Rhipidogyra elegans* Koby (1888, p. 453, pl. CXIX, figs. 2, 2a; 1904, p. 15, pl. 1, figs. 18, 18a, 19, 19a, 20) from the Upper Jurassic in Switzerland and Portugal in many respects, but differs from the latter in having club-like septa of the first three cycles in mature stage and more loosely arranged septa of the first three ones in mature stage. It is distinguished from *Rennensimilia complanata* (GOLDFUSS, 1826, p. 53, pl. 15, fig. 10; REUSS, 1854, p. 85, pl. 2, figs. 3-4; FELIX, 1903, p. 328; TURNŠEK, 1978, p. 49, pls. 7-8) from the Cretaceous in Europe in the following respects. 1) The latter has more numerous endothecal dissepiments, but the former's endothecal ones are sparse. 2) The lateral surfaces of the former's septa are always dentate, but the lateral ones of the latter's commonly smooth. 3) The former has rudimental lamellar type of columella, but the latter's columella absent. It differs from *Conicosmilotrochus stranicensis* TURNŠEK (1978, p. 51, pls. 11-12) from the Cretaceous in NW Yugoslavia in having larger corallite, long septa in the first three cycles in mature stage, long and curved cylindrical form in transverse section in mature stage, rudimental lamellar type of columella in transverse section in mature stage. From the above mentioned data, if better preserved material is obtained in future, the present form will be able to be proposed as a new species of *Rhipidogyra*.

*Occurrence:* Limestone in the Upper Jurassic to Lower Cretaceous Yura Group at 22 km west of Cailloma, Arequipa Department, Southern Peru.

*Collector:* David DÁVILA.

*Repository:* Reg. no. NSM-PA 12198 (National Science Museum, Tokyo).

Genus *Stylina* LAMARK, 1816*Stylina* ? sp. indet.

Plate 1, Figs. 3-5

Corallum massive and plocoid. Corallites small, circular or oval in transverse section; 1.0 to 1.2 mm in inside diameter in mature stage. Central distances 1.2 to 2.0 mm. Corallites united by costae. Most of exothecal part not preserved due to the recrystallization. Septa thick and straight; their microstructure is recrystallized. Those are granulated on their lateral surfaces. Twelve septa of the first two cycles reach almost to the middle of the corallite, but not touching columella in mature stage. Those of the third one very short and rudimentary. Columella small and styliform, but not always present.

Longitudinal section absent.

Specimens	Inside diameter	Number of septa of the first two cycles
1	0.9 mm	10
2	0.9 mm	10
3	0.9 mm	10
4	1.0 mm	8
5	1.0 mm	12
6	1.1 mm	12
7	1.2 mm	12
8	1.2 mm	12

*Remarks:* The present specimens are similar to the original one described as *Stylina fallax* BECKER (BECKER & MILASSCHWITCH, 1875, p. 142, 36, fig. 12) from the Nattheimer Formation in having small polygonal corallites, 24 septa and costae. However, the latter is distinguishable from the former in having no columella. Besides, the latter's septa of the second cycle are slightly shorter than the first's ones. The columella is not always preserved in the present specimens. This feature is almost identical with *Stylina decipiens* ÉTALLON from the Upper Jurassic in Southern Slovenia described by TURNŠEK (1972, p. 22, 84, pl. 7, figs. 1-3). However, *Stylina decipiens* is characteristic by having octamerall septa. Moreover, it has larger corallites and columella. It somewhat resembles *Convexastraea weaveri* Gerth (1928, p. 8, pl. 2, fig. 5) from the Collovian in Argentina, but differs from the latter in having smaller corallites and 12 septa of the first two cycles.

*Occurrence:* Limestone in the Upper Jurassic to Lower Cretaceous Yura Group at 22 km west of Cailloma, Arequipa Department, Southern Peru.

*Collector:* David DÁVILA.

*Repository:* Reg. nos. NSM-PA 12199, 12200, 12201 (National Science Museum, Tokyo).

### Acknowledgements

The writers wish to express their hearty thanks to the following gentlemen, Ing. David DÁVILA (Instituto de Geológico, Minero y Metalúrgico, Lima) who permitted them to study the present interesting fossils, Prof. Emertis Shiro MAEDA (Chiba University), Director Francisco SOTILLO P. (Instituto de Geológico, Minero y Metalúrgico, Lima) and Dr. Ienori FUJIYAMA (National Science Museum, Tokyo) for their kind advices and suggestions. Acknowledgements are also due to Dr. Tomoki KASE (National Science Museum, Tokyo) and Dr. Tetsuya KAWABE (Chiba University) for their valuable advices.

### References

- BECKER, E. & C. MILASCHEWITSCH 1875–76. Die Korallen der Nattheimer Schichten. *Palaeontographica*, **21**: 121–204, pls. 34–45 (1875); 205–244, pls. 45–51 (1876).
- FELIX, J., 1903. Die Anthozoen der Gosauschichten in den Ostalpen. *Palaeontographica*, **49**: 163–360, pls. 17–25.
- GERTH, H., 1928. Beiträge zur Kenntnis der Mesozoischen Korallenfaunen von Sudamerika. *Leidsche Geol. Meded.*, **3**: 1–15, pls. 1–2.
- GOLDFUSS, A., 1826–29. Petrefacta Germaniae. 1: 1–168, Düsseldorf.
- KOBY, F., 1881–1889. Monographie des Polypiers Jurassiques de la Suisse. Part 1–9. *Mem. Soc. Paléont. Suisse*, **7–16**: 1–582, pls. 2–27.
- KOBY, F., 1904–05. Description de la Faune jurassique du Portugal. Polypiers du Jurassique supérieur. *Comm. Serv. géol. Portugal*: 1–167, pls. 1–30, Lisbon.
- REUSS, A. E., 1854. Beiträge zur Charakteristik der Kreideschichten in den Ostalpen, besonders im Gosauthale und am Wolfgangsee. Anthozoen. *Denkschr. Akad. Wiss. Nat.*, **7**: 1–156, pls. 1–31.
- TURNŠEK, D., 1972. Upper Jurassic Corals of Southern Slovenia. *Razprave IV. razreda SAZU*, **15** (6): 1–121, pls. 1–37.
- TURNŠEK, D., 1978. Solitary Senonian Corals from Stranice and Mt Medvednica (NW Yugoslavia). *Razprave IV. razreda SAZU*, **20** (3): pls. 1–31.
- YAMAGIWA, N., RANGEL, C. Z., VILLAVICENCIO, E. D. & T. KAWABE, 1981. A New Hexacoral Species from the Upper Jurassic to Lower Cretaceous Yura Group at Cailloma, Arequipa Department, Southern Peru. *Palaeontological Study on the Andes (II)* (Geol. Lab. Chiba Univ, Chiba): 41–46, pl. 1.

### Explanation of Plate

#### Plate 1

Figs. 1–2. *Rhipidogyra* sp. indet.

1. Transverse section of mature stage. . . . . × 3 (NSM-PA 12198a)
2. Transverse section of immature stage. . . . . × 3 (NSM-PA 121986)

Figs. 3–5. *Stylina* ? sp. indet.

3. Transverse section. . . . . × 3 (NSM-PA 12199)
4. Transverse section. . . . . × 3 (NSM-PA 12200)
5. Transverse section. . . . . × 3 (NSM-PA 12201)



