

Fossil Algae from the Kanô-san Limestone in the Kanto Mountains

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The Kanô-san limestone which is situated in the eastern part of the Kanto Mountains, extends north-west to southeast for a length of 4.1 km and has width of 0.8 km at the most extensive part, and it forms the peak with 1,106 m in height.

In 1961, the members of the Chichibu Research Group carried out geological and paleontological studies for the limestone, and they reported that the limestone was divided into the following three fusulinid zones; *Pseudofusulina* zone, *Pseudoschwagerina* zone and *Neoschwagerina* zone (1961).

The limestone is referred to the Early to Middle Permian in age on the basis of fusulinids.

During in the last year, the writer has studied calcareous algae in the limestone. Many paleozoic fossils such as bryozans, gastropods, corals, fusulinids and calcareous algae are observed in the limestone. In this paper, four genera and three species of calcareous algae collected from the limestone are described and illustrated.

The writer is deeply indebted to Prof. Mankichi HORIGUCHI of the Saitama University for his helpful suggestions and critical reading of the manuscript.

Systematic Description

The symbols used for the measurements in the following description are listed below.

D-Outer diameter of calcareous body.

d-Inner diameter of calcareous body.

p-Diameter of pores.

s-Thickness of calcareous wall.

CHLOROPHYTA

Order Dasycladales

Family Dasycladaceae

Genus *Anthracoporella* PIA, 1920

Anthracoporella spectabilis PIA

Plate I, figs. 1, 2.

- Measurements : D d p s
- No. 50306 A 5.530 mm 4.877 mm 0.063 mm 0.319mm
- No. 50306 B 2.686 mm 2.001 mm 0.062 mm 0.340mm
- No. 50413 3.532 mm 2.281 mm 0.062 mm 0.329mm
1920. *Anthracoporella spectabilis* PIA, *Zool.-Botan. Gesell. Wien Band 11, Heft 2*, pp. 15—18, pl. 1, figs 7—11.
1952. *Anthracoporella spectabilis* ENDO, *Trans. Proc. Palaeont. Soc. Japan, N. S., No. 5*, pp. 135—140, pl. 12, figs. 6—7.

Description : Thalli relatively thick, winding, pinching and swelling.

One of the present specimens, is measured as much as 1.4 cm in length. The thallus branches dichotomously. The branches are represented by "pores" in fossils. In the present specimens, pores are quite numerous and closely packed with 0.062 to 0.083 mm in diameter between pores. Pores are nearly perpendicular to both of inner and outer surfaces of the wall and usually opened to the exterior, but some specimens

show an outer thin calcareous wall. The characteristic features and measurements of present specimens are identical with *Anthracoporella spectabilis* described by PIA (1920) and with that reported by ENDO (1952).

Remarks : Observed specimens are found in associated with *Gymnocodium japonicum*.

Occurrence : *Pseudofusulina* zone.

Illustrated specimens : Tokyo Kasei Univ. Slide Nos. 50306, 50413.

Genus *Pseudoepimastopora* ENDO, 1960

Pseudoepimastopora japonica (ENDO)

Plate 1, fig. 5.

1951. *Epimastopora japonica* ENDO, *Trans. proc. paleont. Soc. Japan, N. S. No. 4*, pp. 124, 125, Pl. 11, figs. 1—2.

1960. *Pseudoepimastopora japonica* ENDO, *Sci. Rep. Saitama Univ., Ser. B, Vol. 3, No. 3*, pp. 269—270, Pl. 44, fig. 1.

Measurements : Dimensin of crust p Diameter
between pores

No. 50305 1.938×0.219 mm 0.093 mm 0.082 mm

Description : The thellus is relatively narrow and somewhat undulating.

Some of the pores are rather elongate spindle shapes, and other pores open to both sides of the wall with expansion.

The characteristic feauters of pores and measurements of specimen suggest that it is identical with *Psedoepimastopora japonica* (ENDO).

Remarks : In 1979, ROUX erected the new genera *Epimastoporella* and *Paraepimastopora* as a result of the revision of the genus *Epimastopora* (1979).

In his paper, *Epimastoporella* is proposed to include the species cogenetic with *Pseudoepimastopora japonica* (ENDO). However, the present specimen, as shown in Plate I fig. 5, differs from the illustrated morphology of *Epimastoporella* in the point that some of the pores open to both sides of the calcareous wall with expansion.

Occurrence : *Pseudofusulina* zone.

Illustrated specimens : Tokyo Kasei Univ. Slide No. 50407.

Vermiporella sp.

Plate I, fig. 4.

Measurements : D d p
No. 50414 0.515 mm 0.258 mm 0.052—0.062mm

Description : The cylindrical thallus is branched at a large angle nearly 90 degrees. Pores are regularly arranged in a whorl and are perpendicular to the inner surface of the calcareous wall. Pores short, gradually expand toward exterior and usually open to the exterior. The characteristic features of this specimen agree with those of *Vermiporella*.

Remarks : The present specimen differs from *Vermiporella nipponica* in having larger diameter of pores.

Occurrence : *Pseudofusulina* zone.

Illustrated specimen : Tokyo Kasei Univ. Slide No. 50414.

RHODOPHYCOPHYTA

Family Gymnodiaceae ELLIOTT, 1955

Genus *Gymnocodium* PIA, 1920 (emend.)

Gymnocodium japonicum KONISHI

Plate II, figs. 1—5.

1952. *Gymnocodium japonicum*, KONISHI, *Trans. Proc. Paleont. Soc. Japan, N. S.*, 7, 217—220, Pl. 20.

1953. *Gymnocodium japonicum*, ENDO, *Japanese, Jour. Geol. Geogr.*, 23, 122—123 Pl. 12, figs. 1—4.

1956. *Gymnocodium japonicum*, ENDO, *Sci. Rep. Saitama Univ., B*, 2, 2, p. 239, Pl. 29, fig. 5.

1957. *Gymnocodium japonicum*, ENDO'S, *ibid.*, 3, 293—294, Pl. 44, figs. 4—7.

1961. *Gymnocodium japonicum*, ENDO, *ibid.*, ENDO'S *Commem. Vol.*, pp. 107—108, Pl. 14, fig. 1 ; pp. 132—133, Pl. 2, fig. 3.

1968. *Gymnocodium japonicum*, ENDO, *Geo. Palaeont. Southeast Asia.*, 4, 211—219, Pl. 3.

Measurements : D d p
No. 50302 1.030 mm 0.535 mm 0.052 mm
No. 50306 1.219 mm 0.625 mm 0.042 mm

No. 50307 A 1.219 mm 0.438 mm 0.042 mm
 No. 50307 B 1.439 mm 0.879 mm 0.052 mm
 No. 50307 C 1.188 mm 0.501 mm 0.052 mm

Description: The cylindrical thallus, presence of a pith-like central cavity, outwardly curving and rather slightly expanding branches bifurcated at irregular intervals and open to the exterior, and measurements of the present specimens indicate that the present specimens are identical with the type species of *Gymnocodium japonicum* KONISHI.

Occurrence: *Pseudofusulina* zone.

Illustrated specimens: Tokyo Kasi Univ. Slide Nos. 50302, 50307.

References

- Chichibu Research Group (1961). On the Palaeozoic formation and geologic structure of the Kanna-gawa district. *Jour. Earth Science* 57, 1—11. (in Japanese with English abstract).
- ENDO, R. (1961). Endo's Commemorative volume: *Sci. Rep. Saitama Univ., Ser. B*, 1—194, 75 Pls.
- (1968). Fossil Algae Mindoro Oriental Province, Mindoro Island, the Philippines. *Geol. Paleon. Southeast ASIA*. 4. 211—219. 3 Pls.
- (1969). Fossil Algae from the Khao Phlong Phrab District in Thailand. *Ibid.* 7. 33—86. 38 Pls.
- HORIGUCHI, M. (1958). Some Calcareous Algae in the Central Part of the Kitakami Mountains, Iwate Prefecture, Northeastern Japan. *Saitama Univ., Ser. B*, 3. 1. 131—139. 2 Pls.

JOHNSON, J. H. (1963). Pennsylvanian and Permian Algae. *Quart. Colorado Sch. Mines.*, 58, 1—211. 31 Pls.

KONISHI, K. (1952). Occurrence of *Gymnocodium*, a Permian Alga, in Japan. *Trans. Proc. Palaeont. Soc. Japan. N. S.*, 7, 215—221. 1 Pl.

ROUX, A. (1979). Revision of the Genus *Epimastopora* "PIA", 1922 (Dasycladaceae). *Bull. Cent. Rech. Expor.-Prod. Elf.-Aquitaine*, 3. 2, 803—810. 1 fig., 1 tab.

Explanation of Plates

Plate I

figs. 1—3. *Anthracoporella spectabilis* PIA.

1. A cross section (left) and a slightly oblique section. X 10. (S. N. 50306)
2. Alongitudinal section. X 10. (S. N. 50413)
3. Enlarged view, showing the dichotomous branching pores. X 20. (S. N. 50413)

fig. 4. *Vermiporea* sp. X 25.

A tangential section. (S. N. 50414)

fig. 5. *Pseudoepimastopora japonica* (ENDO). X 30.

A longitudinal section of fragmental thallus. (S. N. 50307)

Plate II

fig. 1—5. *Gymnocodium japonicum* KONISHI. X 30.

1. A longitudinal section. (S. N. 50302)
2. A oblique section. (S. N. 50306)
3. A tangential section, showing a funnel-like expansion of pores.
- 4, 5. Cross sections.

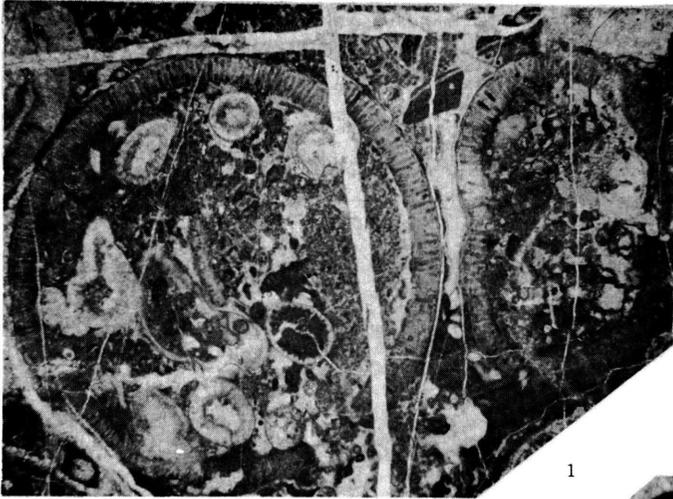
関東山地叶山石灰岩の化石藻類

森 隆 二

(昭和55年9月30日受理)

関東山地東部に位置する叶山石灰岩には多くの種類の化石が含まれていることが知られている。1961年、秩父団研グループは地質調査・研究の結果、フズリナ化石により叶山石灰岩の地質時代は二疊紀早期および中期であることを明らかにし、三つのフズリナ化石帯に分けた。しかし叶山石灰岩の藻類化石の分類は今までおこなわれていなかった。筆者は叶山石灰岩の石灰藻化石を研究し、今までに四属、三種が明らかになったのでそれらを記載し報告する。

Plate I



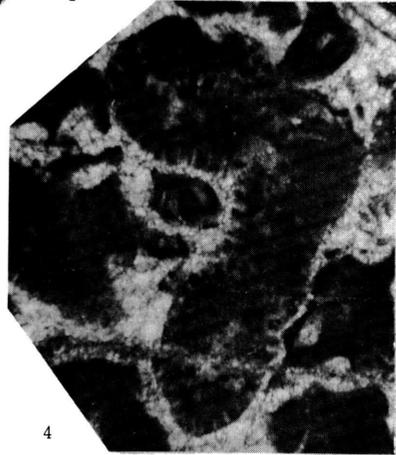
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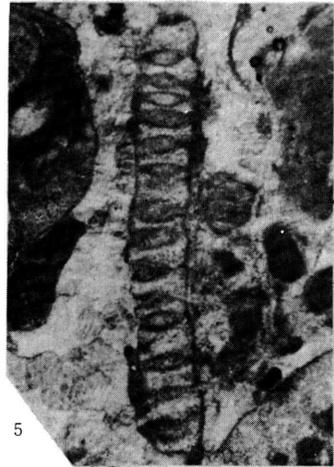
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Plate II



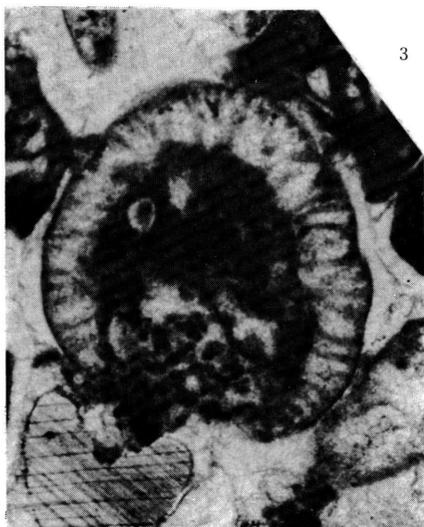
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