

## *Chusenella* from Taishaku Limestone

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帝釈石灰岩産の *Chusenella*

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This paper treats with the description of *Chusenella taishakuensis* Sada, sp. nov., new to science, from Taishaku Limestone in northeastern part of Hiroshima Prefecture, Japan.

### Key Words (キーワード)

*Chusenella taishakuensis* Sada, sp. nov. (チューセネラ タイシャクエンシス), Taishaku (帝釈), Tamebira (為平), Uyamanoro (宇山野呂), Carboniferous (石炭紀), Permian (二畳紀), Hiroshima Prefecture (広島県)

### Introductory Remarks

Since 1966 the studies of the Carboniferous and Permian Taishaku Limestone in Hiroshima Prefecture of Japan have been carried out intermittently by Sada who also had published many other papers with regard to fusulinaceans. In addition to these, Ueno and Shimizu (1993) reported *Fusulina quasicylindrica* Lee and others, and Sada and Fukuda described *Paraschwagerina taishakuensis* from Uyamanoro area in 1995. Recently, Sada found out a species of *Chusenella* abundant in the outcrop of limestone where it was located at about 300m. to the eastward from Tamebira of Uyamanoro. It is new to science to establish the fusulinacean biostratigraphy of Taishaku Limestone. In this paper is given the description of the species as *Chusenella taishakuensis* Sada, sp. nov.

The limestone cropped out in this locality is biomicite and contains *Chusenella taishakuensis*, sp. nov. abundantly. Furthermore, *Parafusulina* and *Neoschwagerina* limestones are exposed nearby the locality of *Chusenella*. From these, the *Chusenella taishakuensis* fauna is considered to be of Lower Permian (Wolfcampian or Late Sakumarian).

Before going to the description, Sada's sincere thanks are due to President Takamitsu Oka of the University, Dean Toshihiko Matsuo and Prof. Keiko Hiraoka of Faculty of Social Information of Hiroshima Bunka Gakuen University, for their kindness to let him contribute the Journal.

### Systematic Description

Family *Schwagerinidae* Dunbar and Henbest, 1930

Subfamily *Polydiexodinae* A. D. Miklukho-Maklay, 1953

*Chusenella* Hsu, 1942

Type species: *Chusenella ishanensis* Hsu, 1942

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*Chusenella taishakuensis* Sada, sp. nov.

Figs.1-16

*Description:* The shell of *Chusenella taishakuensis* Sada, sp. nov. is medium in size, fusiform with bluntly pointed poles. The mature shells of seven volutions (Figs. 1, 3, 6) are 6.00 to 6.10 mm. long and 2.00 to 2.25 mm. wide, giving the form ratios of 2.6 to 3.0. The specimen of holotype (Fig. UHA-G12-1) is 6.00 mm. in length and 2.25 mm. in width. The form ratio is 2.6.

The proloculus is small and spherical. The outside diameters 139 to 182  $\mu$  in typical specimens. The shell is tightly coiled in the inner three volutions. The radius vectors of the typical specimens illustrated as Figs. 1, 3, 6 are 104, 150-208, 234-286, 338-390, 546-624, 832-860 and 1066-1118  $\mu$  in the first to the seventh volution, respectively. The chambers are nearly the same in height throughout the length of the shell.

The spirotheca is thin and is consisting of a tectum and a finely alveolar keriotheca. The thickness of the spirotheca measured at the tunnel of the first to the seventh volution of the specimens (Figs. 1, 3, 6) is 13, 13, 26-52, 26-52, 52-104, 52-104, and 26-104  $\mu$ , respectively. The thickness of the proloculus wall is 13  $\mu$ .

The septa are thin and strongly fluted throughout the shell. The septal counts of the first to the seventh volution are illustrated as Fig 16 are 7(+), 12, 15, 15, 17, 17 and 21, respectively. The fillings are observed in the axial and polar regions.

*Remarks:* In the general shape of the shell, *Chusenella taishakuensis* Sada, sp. nov. resembles *C. sinensis* Sheng (1963, p.241, pl. 2, figs. 7-18) from *Parafusulina* zone of Kwangsi in South China. However, the present species has the fewer number of volutions, the smaller shell and larger proloculus in diameter.

*Chusenella taishakuensis*, sp. nov. somewhat resembles *C. schwagerinaeformis* described by Sheng (1963, p.211, pl. 23, figs.1-6) from *Parafusulina* zone of Kwangsi in south China. The present species, however, differs from the latter in having shorter length and width, and fewer volutions of the shell. The chambers are nearly the same in height throughout the length of the shell.

*Chusenella taishakuensis*, sp. nov. can be distinguished from *Chusenella* sp. A (Sada and Yokoyama, 1966, p.313-314, pl.33, fig. 6, pl.34, fig. 2) from Taishaku Limestone in having larger shell, large number of volutions and thicker spirotheca.

The present species is discriminated from *Chusenella? atetsuensis* Sada (1964 p.255-257, pl.26, figs. 12-18) reported from Atetsu Limestone in the shell shape and the internal modes. *C. ? atetsuensis* is smaller, slender, and elongate fusiform to subcylindrical shell with a straight axis of coiling. Furthermore, the shell of *C. atetsuensis* is closely coiled inner and outer volutions and the proloculus is smaller.

*Occurrence:* *Chusenella taishakuensis* was discovered at the outcrop about 300 m. east of Tamebira in the Uyamanoro area. The species is abundant in the limestone of biomicrite. This is considered to be of Lower Permian.

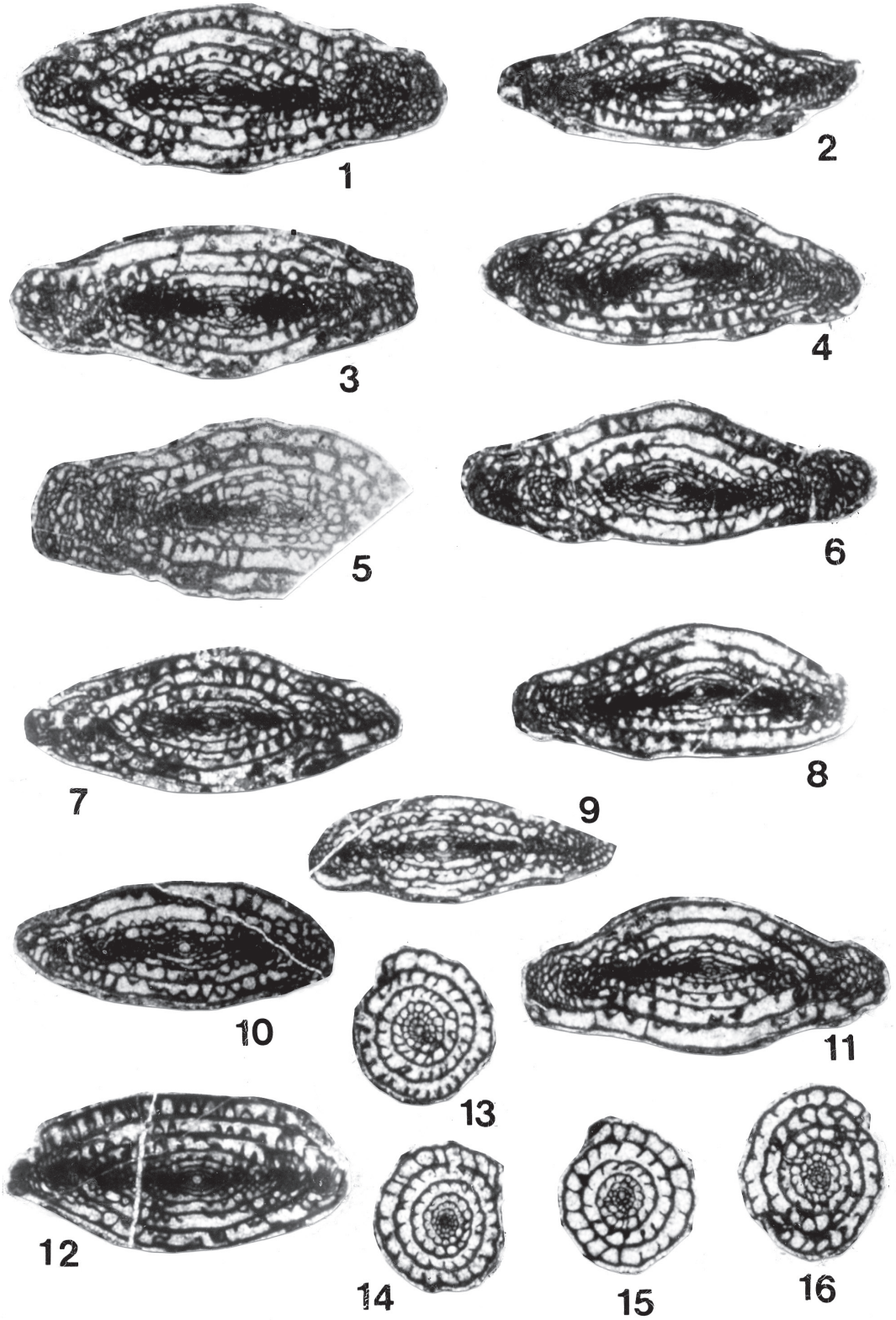
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Figs. 1-16. *Chusenella taishakuensis* Sada, sp. nov. (All X 11) →

1. Axial sections of holotype: Rg. No. UHA-G12-1.

2-12. Axial sections of paratype: Rg. No. UHA-G12-18, G12-27, G12-14, G12-24, G12-7, G12-13, G12-36, G12-5, G12-17, G12-20 and G12-9, respectively.

13-16. Sagittal sections: Rg.No. UHA-G12-43, G12-52, G12-42 and G12-48, respectively.



Measurements of *Chusenella taishakuensis* Sada, sp. nov.

Specimen Rg. No.	UHA-G12-1	UHA-G12-27	UHA-G12-7
Figure	Fig.1	Fig. 3	Fig.6
Length	6.00	6.10	6.00
Width	2.25	2.00	2.25
Form ratio	2.66	3.05	2.66
Proloculus	0.139	0.182	0.182
Radius vectors			
vol.			
1	0.104	0.104	0.104
2	0.156	0.150	0.208
3	0.260	0.234	0.286
4	0.390	0.338	0.390
5	0.624	0.546	0.572
6	0.832	0.860	0.832
7	1.118	1.066	1.092
Thickness of			
spirotheca			
vol.			
0 (Proloc. wall)	0.013	0.013	0.013
1	0.013	0.013	0.013
2	0.013	0.013	0.013
3	0.052	0.026	0.026
4	0.052	0.026	0.026
5	0.078	0.052	0.104
6	0.052	0.078	0.104
7	0.052	0.026	0.104

(Measurements in millimeters)

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