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82. *On the Occurrence of Acervulina, an Encrusting Form of Foraminifera in the Jurassic Torinosu Limestone from the Kwantô Mountainland, Central Japan*

By

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(Contribution from the Institute of Geology and Palaeontology, Tôhoku Imperial University, Sendai, Japan: Read Oct. 8th; received Oct. 24th, 1938)

In one of the thin slices of the Upper Jurassic Torinosu limestone which is very prolific of fossils, mostly reef-builders,¹⁾ collected by Dr. H. HUZIMOTO from Hukazawa near Itukaiti, Musasi Province (in the Kwantô Mountainland), Central Japan, is found *Acervulina*, an encrusting foraminifera, by Prof. H. YABE, who kindly submitted it to me for scrutiny. Although the living representatives of

1) T. HARADA: Die Japanischen Inseln, Eine Topographisch-Geo'ogische Uebersicht, 1890, pp. 95-96.

S. SHIMIZU: 1) Remarks on Two Ammonites, *Harpoceras japonicum* NEUMAYR and *Arpadites sakawanus* MOJSISOVICS from the Sakawa Basin in Shikoku. 2) A Tithonian Species of *Perisphinctes* from the Torinosu Limestone of Koike, Province of Iwaki, Japan. Jour. Geol. & Geogr. vol. 5, no. 4, 1926-1927, pp. 215-222.

S. SHIMIZU: Note on Two Tithonian Species of *Perisphinctes* from the Torinosu Limestone of Koike, Province of Iwaki, Ibid. vol. 7, no. 2, 1930, pp. 45-48, pl. 6.

S. SHIMIZU: Note on a Species of Tithonian Genus *Streblites* from the Torinosu Limestone of Koike, Iwaki Province, Ibid. vol. 9, nos. 1, 2, 1931, pp. 13-15.

H. YABE: Cretaceous Stratigraphy of the Japanese Islands, Sci. Rep. Tôhoku Imp. Univ. Sendai, Japan, 2nd Ser. (Geol.), vol. 11, no. 1, 1927, p. 92.

H. YABE and S. TAYAMA: 1) *Cladocoropsis mirabilis* FELIX from the Torinosu Limestone of Japan. 2) *Milleporidium remesi* STEINMANN? from the Torinosu Limestone of Itsukaichi, Province of Musashi, Japan. Jour. Geol. & Geogr. vol. 5, no. 3, 1927, pp. 107-110, pls. 8-9, pp. 117-119, pl. 12.

H. YABE and S. HANZAWA: *Choffatella* SCHLUMBERGER and *Pseudocyclammia*, a New Genus of Arenaceous Foraminifera, Sci. Rep. Tôhoku Imp. Univ. Sendai, Japan, 2nd Ser. (Geol.), 1926, vol. 9, no. 1, pp. 9-11, pl. 2.

H. YABE and T. SUGIYAMA: Stromatoporoids and Related Forms from the Jurassic of Japan, Japan. Jour. Geol. & Geogr. vol. 8, nos. 1-2, 1930, pp. 23-28, table 1.

H. YABE and T. SUGIYAMA: On Some Spong'omorphoid Corals from the Jurassic of Japan, Sci. Rep. Tôhoku Imp. Univ. 2nd Ser. (Geol.), vol. 14, no. 2A, 1931, pp. 103-195, pls. 34-35.

H. YABE and T. SUGIYAMA: Jurassic Stromatoporoids from Japan, Ibid. vol. 14, no. 2 B, 1935, pp. 135-192, pls. 40-70.

T. KOBAYASHI: Contributions to the Jurassic Torinosu Series of Japan, Japan. Jour. Geol. & Geogr. vol. 12, nos. 3-4, 1935, pp. 69-91, pls. 12, 13.

the genus *Acervulina* are very common in the warm and shallow waters of the Pacific, Atlantic, Indian, and Mediterranean and its fossil examples are also commonly found in various deposits of the Neogene, there is apparently no record of its occurrence as a fossil in deposits older than the Cretaceous,¹⁾ and its discovery in a Jurassic rock of Japan is important and noteworthy.

The fossil now in question is not common in the Torinosu limestone, and we have met with only one specimen of it in numerous thin slices of the rock. It is intergrown with calcareous algae and 16 mm in size, resembles *Acervulina inhaerens* SCHULTZE (including var. *plana* CARTER)²⁾ in every respect. The latter is attached to a certain substratum and over-growing itself, consists of numerous chambers in more or less concentric arrangement around a coiled nucleoconch, later irregularly disposed, moreover superposed in vertical lines as to make successive layers. The chambers are variable in size even in one and the same specimen, and also variable in form, usually polygonous with straight edges, sometimes round or irregular with curved edges in tangential section; depressed, nearly rectangular in transverse section; typically the roofs and floors of the chambers which are cribrate by numerous pores are convex, curved downward along their peripheries, though usually flat at tops. The vertical walls of the chambers are compact and as thick as the roofs and floors. Compared with *Acervulina inhaerens* SCHULTZE, the present form stands close to the latter in every respect as already mentioned. But, in tangential section the vertical wall of chambers are always sinuous and 12-16 μ thick in the latter being remarkably thicker than in the former. Moreover, the roofs and floors are never vaulted. As shown in the following table the chambers of the present form is much inferior in height to those of *Acervulina inhaerens* SCHULTZE. Therefore, I propose a new name *huzimotoi* for the present form in honour of Dr. H. HUZIMOTO, who found the present specimen, and place it as a variety of *Acervulina inhaerens* SCHULTZE. The type specimen of *Acervulina inhaerens huzimotoi* nov. var. is placed in the Institute of Geology and Palaeontology, Tôhoku Imperial University, Sendai, Japan. I.G.P.S.J. Cat. No. 21446.

I wish, herewith, to express my cordial thanks to Prof. H. YABE who kindly gave valuable advice and criticism for the present study and to Dr. H. HUZIMOTO, who kindly supplied me the present specimen.

1) J. J. GALLOWAY: A Manual of Foraminifera, 1933, p. 308.

2) M. S. SCHULTZE: Ueber den Organismus der Polythalamien (Foraminiferen) nebst Bemerkungen über die Rhizopoden im Allgemeinen, 1854, p. 68, pl. 6, fig. 12.

H. YABE: Notes on a *Carpenteria*-Limestone from B.N. Borneo, Sci. Rep. Tôhoku Imp. Univ. 2nd Ser. (Geol.), vol. 5, no. 1, 1918, p. 22, pl. 4, fig. 4; pl. 6, figs 3, 4.

H. YABE and S. HANZAWA: Geological Problem Concerning the Raised Coral Reefs of the Riu-kiu Islands and Taiwan; etc., Ibid. vol. 7, no. 2, 1925, pp. 46, 47, pl. 9, figs. 1, 8, 9; pl. 10, fig. 3.

H. YABE and S. HANZAWA: Tertiary Foraminiferous Rocks of the Philippines, Ibid. vol. 11, no. 3, 1929, p. 179, pl. 16, fig. 6.

H. YABE and S. HANZAWA: Tertiary Foraminiferous Rocks of Taiwan (Formosa). Ibid. vol. 14, no. 1, 1929, p. 37, pl. 1, fig. 6; pl. 5, fig. 7; pl. 9, fig. 12; pl. 10, fig. 8.

S. HANZAWA: Notes on Tertiary Foraminiferous Rocks from the Kwantô Mountainland, Japan, Ibid. vol. 12, no. 2A, 1931, p. 156, pl. 26, fig. 4.

Fig. 1

Fig. 2

Acervulina inhaerens huzimetoï nov. var.

Fig. 1. Trangular and transvers sections. $\times 23$

Fig. 2. Trangular section. $\times 100$

Table of dimensions of *Acervulina inhaerens* and its varieties for comparison.

	Width of chambers	Height of chambers	Thickness of roofs & floors	Thickness of vertical walls	Diameter of pores
<i>A. inhaerens plana</i> (living) ¹⁾	49-230 μ	26-93 μ 80 μ as usual	5 μ	5 μ	5-7 μ
<i>A. inhaerens</i> (living) ²⁾	70-90 μ				
<i>A. inhaerens</i> (living) ³⁾	60 μ				1 μ
<i>A. inhaerens plana</i> (Miocene) ⁴⁾	74-140 μ	32-34 μ			
<i>A. inhaerens plana</i> (Oligocene) ⁵⁾	70-230 μ	30-70 μ			
<i>A. inhaerens plana</i> (Eocene) ⁶⁾	66-80 μ				
<i>A. inhaerens huzimotoi</i> nov.	55-154 μ	25 μ	5 μ	12-16 μ	5 μ

關東山地鳥ノ巢石灰岩中に皮殻構造有孔蟲 *Acervulina* の産出する事に就て (摘要)

半澤正四郎

本文は藤本治義博士が關本山地五日市附近深澤の侏羅紀鳥ノ巢石灰岩中より採集せし *Acervulina* の記載である。
Acervulina は今日温暖なる浅海に極めて普通なる種屬で新第三紀層中にも夥多産する、化石として最も古い者は白堊紀より知られて居るのみであるから今回侏羅紀層から發見せられた事は特記に値する。

鳥ノ巢石灰岩の *Acervulina* は現生種 *Acervulina inhaerens* SCHULTZE に類似するが垂直壁が著しく厚く、房の輪廓が常に不規則でまた房の高さが *Acervulina inhaerens* の者の平均より低い。故に茲に本化石に對し *Acervulina inhaerens huzimotoi* なる新變種名を提議する。

1) M. LINDSEY: On *Gypsina plana* CARTER, and the Relations of the Genus, Trans. L. Soc., London, Zoöl. vol. 16, pt. 1, 1913, pp. 45-51.

2) M. LINDSEY: Ibid.

3) M. S. SCHULTZE: loc. cit.

4) S. HANZAWA: loc. cit.

5) H. YABE: loc. cit. 1918.

6) F. TRAUTH: Das Eozänvorkommen bei Radstadt im Pongau u.s.w. Denkschr. K. Akad. Wiss. Wien, Mat. Nat. Kl. vol. 95, 1918, pp. 70, 71, pl. 9, figs. 17, 18.