Additional Problematica from the Shimanto Belt of Kyushu, Kii Peninsula and Shikoku, Southwest Japan

Jiro KATTO
Department of Geology, Faculty of Science
Kochi University, Kochi, Japan

INTRODUCTION AND ACKNOWLEDGEMENTS

In the present article, some Problematica from Aburazu, Miyazaki Prefecture in Kyushu, from the tip area of southern Kii Peninsula in Wakayama Prefecture and from Mt. Bandagamori in Kochi Prefecture in Shikoku are described. These Problematica are mostly additional to the previous record (see bibliography).

Some Problematica described in this article are from the collection of the writer (Pl. I, figs. 1, 2; Pl. II, figs. 1, 2) and others were collected by Mr. Yukio Sako (Pl. I, figs. 3, 4; Pl. II, fig. 4) and Mr. Tadao Imamura (Pl. II, fig. 3).

At this place, the writer expresses thanks to Mr. Yukio Sako of Kushimoto-Cho, Wakayama Prefecture and Mr. Tadao Imamura of Kochi City, for kindly donating specimens to the writer and also their guidance to the fossil localities.

This paper is dedicated to late Dr. Kotora Hatai, formerly Professor of Historical Geology in the Institute of Geology and Paleontology, Tohoku University, Sendai, Japan.

DESCRIPTION OF THE PROBLEMATICA

Burrow of some kind of marin worm

Burrow

Pl. I, fig. I

Poorly preserved trail-like structure measuring about 6.5 mm in diameter. The structure seems to be the filling of the burrow of some kind of marine worm.

Locality and formation: - Aburazu, Miyazaki Prefecture. Tsuma Formation. Miocene.

Sun-crack filling

Pl. I, fig. 2

Several irregular structures of sand, thought to be fillings in the sun-cracked sandstone.

Locality and formation: - Aburazu, Miyazaki Prefecture. Tsuma Formation. Miocene.

Genus Harmothoe Linnaeus

Cfr. *Harmothoe imbricata* Linnaeus

Pl. I, fig. 3

Harmothoe imbricata Okuda and Iizuka, 1949 - Illustrated Encyclopedia of the Fauna of Japan, Hokuryukan Co. Ltd.,Tokyo, p. 1314, fig. 3719.

Harmothoe imbricata Okuda aud Iizuka, 1967 - Encyclopedia of Science and

Technology, vol. 4, p. 61, pl. 11, fig. 7.

A single somewhat worm specimen measuring about 55 mm in length, and about 13 mm in width of body and cirri included is in the collection. The body is approximately 3 mm in width as exposed. Lateral sides with well developed appendages that are cirri-like, numbering about 8 per 1 cm. Central part of body longitudinally with depressed area.

Remarks: - The present fossil resembles the named species, which now lives in shallow and warm marine environments of the northern hemisphere.

Locality and formation : - Tanosaki, Tanami in Kushimoto City, Wakayama Prefecture. Tanami Formation. Oligocene.

Class Polychaeta

Family Lycoridae

Genus *Nereites* Kranstz, 1859

Nereites cfr. *tosaensis* Katto, 1960

Pl. I, fig. 4

Nereites tosaensis Katto, 1960 - Sci. Rep., Tohoku Univ., Ser. 2, Geol., Spec. Vol. (Hanzawa Memorial Volume), p. 324, pl. 34, figs. 6, 12, pl. 35, fig. 7.

A single worm and broken specimen is referred to the named species, with some doubt reserved.

Locality and Formation : - Tanosaki, Tanami, Kushimoto City, Wakayama Prefecture. Tanami Formation. Oligocene.

Faecal Pellets

Pl. II, fig. I

Abundant minute pellets, about 1 mm in diameter, rounded structures distribut at random on bedding plane of a fine-grained grayish colored sandstone.

These small rounded structures may be the pellets of some kind of marine mollusc.

Locality and Formation: - Kushimoto Cho, Wakayama Prefecture. Tanami Formation. Oligocene.

Family Codiaceae Lamouroux, 1812

Genus *Halimeda* Lamouroux, 1812

Halimeda sp.

Pl. II, fig. 2

Halimeda sp. indet., Katto, 1975 - Res. Repts. Kochi Univ., vol. 24, Nat. Sci., no. 6, p. 6, pl. 1, figs. 6, 7, 8.

A broken part of the branch of Halimeda is in the present collection. It was found in association with detached parts of the Arafune tube structures (Katto, op. cit., no. 15, p. 118, figs. 1, 3).

Locality and Formation : - Arafune, Kushimoto-cho, Wakayama Prefecture. Tanami Formation. Oligocene.

Genus *Sabiuracolites* Katto, 1975

Cfr. *Sabiuracolites wakayamaensis* Katto

Pl. II, fig. 3

Cfr. 1975 - *Sabiuracolites wakayamaensis* Katto, Res. Repts. Kochi Univ., vol. 24, Nat. Sci., no. 6, p. 5, pl. 1, figs. 3, 4, 5.

The present specimen may be the counterpart of the named species. It is an impression of the upper (?) part of the named (?) species, although doubt is reserved because the preservation is not good.

Locality and Formation : - Mt. Bandagamori, Susaki City, Kochi Prefecture. Kokuzosan Formation. Jurassic?.

Genus *Chondrites* Sternlerg, 1833

Chondrites sp.

Pl. II, fig. 4

1974 *Chondrites* sp. Katto, Res. Repts. Kochi Univ. vol. 23, Nat. Sci., no. 4, p. 2, fig. 2.

The branching form of rounded tubular structure in the collection closely resembles the *Chondrites* sp. that was described and figured in the work given above. A very large specimen of the some structure was also collected from the some place.

Locality and formation: - Azumame, Kushimoto City, Wakayama Prefecture. Tanami Formation. Oligocene.

LITERATURE CITED

Katto, J. (1960): Some Problematica from the so-called unknown Mesozoic strata of the southern part of Shikoku, Japan. *Sci. Rep. Tohoku Univ., Sendai, Japan, Sec. Ser., Spec. Vol., No.* 4 (*Hanzawa Memorial Volume*), p. 323—334, pls. 34, 35.

————, (1969): A note on the cross-sections of *Nereites* from the Eocene Muroto Formation of Kochi Prefecture, Japan. *Res. Rep. Kochi Univ.*, vol. 18, no. 3, p. 21—23, pl. 1.

Katto, J. (1974): A pellet-cord from the Cenozoic (Miocene) of Higashi-Muro-gun, Wakayama Prefecture, southwest Japan. *Ibid.*, vol. 23, no. 1, p. 1—7, pl. 1.

————, (1974): Some spiral structures from Wakayama Prefecture, Japan. *Ibid.*, vol. 23, no. 3, p. 13—16

————, (1974): A fossil branching structure from the Cenozoic deposits of Wakayama Prefecture, Japan. *Ibid.*, vol. 23, no. 4, p. 17-20.

————, (1974): Some tubular and rod structures from the Cenozoic (Miocene) rocks of the Kii Peninsula, Wakayama Prefecture, southwest Japan. *Ibid.*, vol. 23, no. 15, p. 115—121, pl. 1.

————, (1975): Some Miocene marine fossils from the Kii Peninsula, Wakayama Prefecture, Japan. *Ibid.*, vol. 24, no. 6, p. 1—9, pl. 1.

————, (1976): Additional Problematica from southwest Japan. *Ibid.*, vol. 25, no. 2, p. 17—24, pls. 1—6.

Katto, J. and Matsumoto, T. (1981): A trace fossil and an ammonite from the Torinosu Group exposed around the Junior High School of Kamo, Kochi Prefecture (Central Shikoku). *Ibid.*, vol. 30, p. 1—8, pls. 1—5.

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PLATES I ~ II

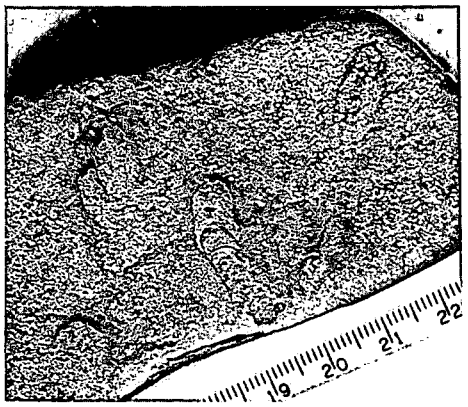
Explanation of Plate I

Fig. 1. Burrow
Sea-coast of Aburazu, Miyazaki Prefecture. Tsuma Formation. Miocene.

Fig. 2. Sun-crack filling
Sea-coast of Aburazu, Miyazaki Prefecture. Tsuma Formation. Miocene.

Fig. 3. Cfr. *Harmathoe imbricata* Linnaeus
Tanosaki, Tanami in Kushimoto City, Wakayama Prefecture. Tanami Formation. Oligocene.

Fig. 4. *Nereites* cfr. *tosaensis* Katto
Tanosaki, Tanami in Kushimoto City, Wakayama Prefecture. Tanani Formation. Oligocene.



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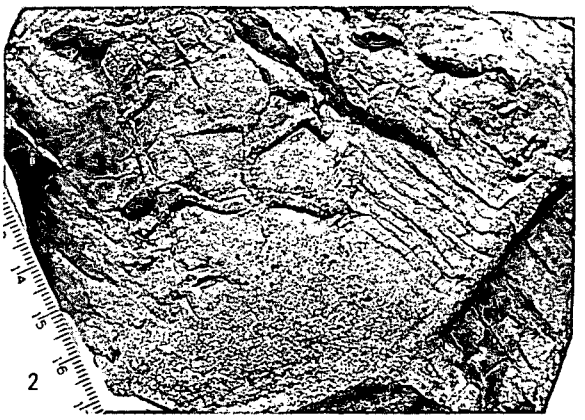

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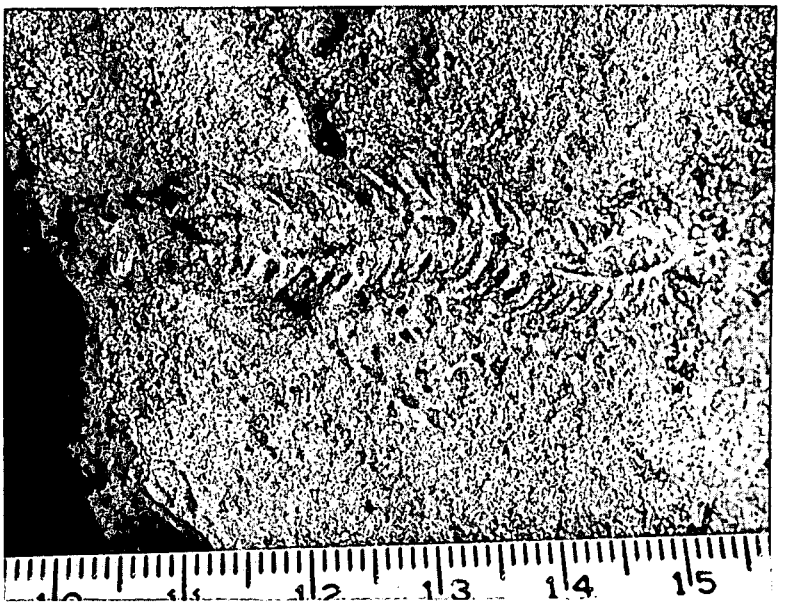

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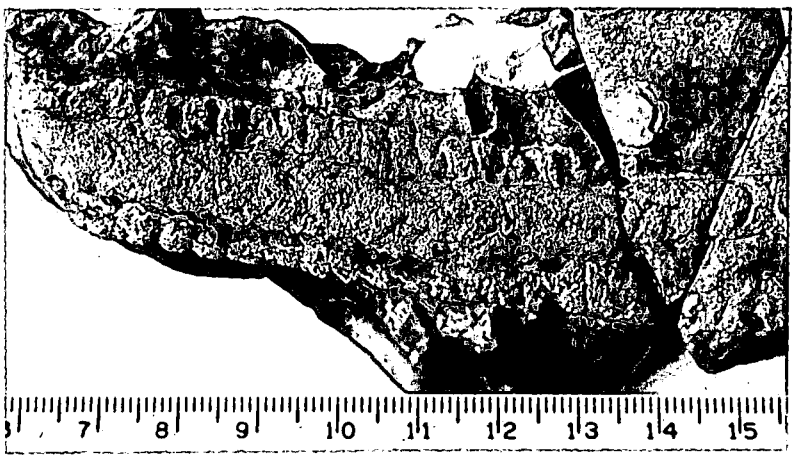

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Explanation of Plate II

Fig. 1. Faecal Pellets
Sea coast of Suganohama, Kushimoto City, Wakayama Prefecture. Tanami Formation. Oligocene.

Fig. 2. *Halimeda* sp.
Arafune, Kushimoto-city, Wakayama Prefecture. Tanami Formation. Oligocene.

Fig. 3. Cfr. *Sabiuracolites wakayamaensis* Katto
Mt. Bandagamori, Susaki City, Kochi Prefecture. Kokuzozan Formation. Jurassic?.

Fig. 4. *Chondrites* sp.
Azumame, Kushimoto City, Wakayama Prefecture, Tanami Formation. Oligocene.

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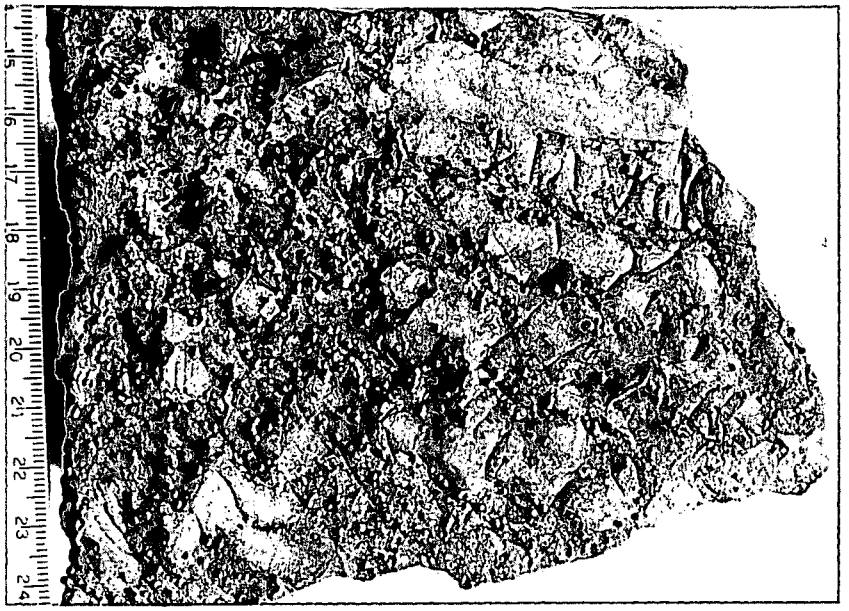

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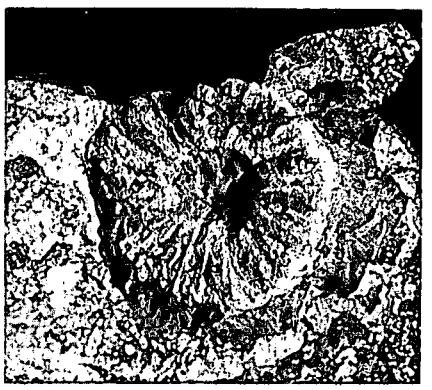

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