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Additional notes on some species of *Mantelliceras* (Ammonoidea) from central Hokkaido, North Japan

(Studies of the Cretaceous ammonites from Hokkaido and Sakhalin-XCVIII)

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Tatsuro Matsumoto and Seiichi Toshimitsu (2005) Additional notes on some species of *Mantelliceras* (Ammonoidea) from central Hokkaido, North Japan (Studies of the Cretaceous ammonites from Hokkaido and Sakhalin-XCVIII). *Bull. Geol. Surv. Japan*, vol. 56 (1/2), 31-36, 4 figs.

Abstract: In addition to *Mantelliceras japonicum* Matsumoto, Muramoto and Takahashi and *M. cantianum* Spath, previously reported from the lower Cenomanian in the Ikushunbetsu Valley of the Mikasa district, *M.* cf. *mantelli* (J. Sowerby) from the basal part of the Cenomanian, *M.* cf. *picteti* Hyatt and *M.* cf. *dixoni* Spath from somewhat higher stratigraphic levels in the same area are described. Also *M.* cf. *couloni* (Orbigny) from the Hobetsu district is redescribed with some amendment.

Keywords: *Mantelliceras couloni*, *M. dixoni*, *M. mantelli*, *M. picteti*, Cenomanian, Hokkaido

1. Introduction

The ammonoid genus *Mantelliceras* is highly important, for it includes a number of species, each of which has a short stratigraphic range and an extensive geographic distribution. For some reasons, *M. japonicum* Matsumoto, Muramoto and Takahashi, 1969, which occurs abundantly in the lower part of the Cenomanian Mikasa Formation, is so far endemic to Japan. It is fairly variable in morphological characters and in some respects allied to *M. tuberculatum* (Mantell, 1822) from England and Madagascar (see Matsumoto *et al*., 1969, p. 225). As a possibility, *M. japonicum* could be regarded as a geographic subspecies of *M. tuberculatum*. Since there is no material in the extensive area between Japan and western Europe or Madagascar, it is practically difficult to examine this possibility. On the other hand, *M. cantianum* Spath, 1926 and *M.* aff. *cantianum* have been reported from the same bed as that of *M. japonicum*, although rather rarely (Matsumoto *et al*., 1969, p. 256, pl. 27, fig. 3; pl. 28, fig. 1).

In this paper more species of *Mantelliceras* from the central part of Hokkaido are described, so that someone may find better preserved one in the future. Although their mode of preservation is somewhat incomplete, they can be classified into four species, as described in detail below. The morphological terminology in the description is the same as that used in the previous papers (e.g., Matsumoto, 1954).

The repositories of the specimens described below are as follows, with the abbreviation of the institute at the heading:

GK: Paleontological Collections, Kyushu University Museum, Fukuoka 812-8581

NSM: National Science Museum, Tokyo 169-0073

HMG: Hobetsu Museum, Hokkaido 054-0021

GSJ: Geological Museum, Geological Survey of Japan, AIST, Tsukuba 305-8567.

2. Systematic descriptions

Family Acanthoceratidae Grossouvre, 1894

Genus ***Mantelliceras*** Hyatt, 1903

Type species. — *Ammonites mantelli* J. Sowerby, 1814, by original designation (Hyatt, 1903, p. 113).

Mantelliceras cf. ***couloni*** (Orbigny, 1850)

Figure 1A, B

Synonymy. — *Mantelliceras* cf. *couloni* (d'Orbigny), Matsumoto and Toshimitsu, 1991, p. 2, pl. 1, figs. A-B.

Material. — HMG 740 (its plaster cast kept at GSJ F16754), a single specimen of half ammonite preservation.

Description. — A fairly large specimen, about 110 mm diameter at the end of the phragmocone, followed by the living chamber for half whorl, although the ventral part is somewhat deficient at the last portion.

The whorl is higher than broad and oval in cross-section. It is involute and narrowly umbilicate, although it tends to be somewhat evolute at its last growth stage.

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The shell is ornamented by numerous radial ribs which are nearly straight or slightly arcuate and alternately long and short. The major ribs are bullate at the umbilical margin. They may show faint lateral tubercles in the early growth stage, but no lateral tubercles are discernible on the later whorl, whereas the inner and outer ventrolateral tubercles are distinct on every rib; especially the outer ones pointed outward, where the preservation is favourable. Ribs are separated by interspaces nearly as narrow as or slightly narrower than the ribs in the late septate stage and somewhat wider interspaces on the body whorl.

Sutures are not well exposed, unless the shell layer is taken away.

Remarks. — Although the specimen is deficiently preserved, it is certainly referable to *Mantelliceras couloni* (Orbigny, 1850). It is amazing to recognize the similarity with the specimen MNHP1896-27, the paralectotype of *M. couloni* from the Lower Cenomanian *M. mantelli* Zone, the *Neostlingoceras carcitanense* Subzone of Sarthe, France (see Wright and Kennedy, 1984, text-fig. 20G-I). HMG 740 is more involute and rather resembles in this respect the idealized figure of Orbigny (1841, pl. 104).

Occurrence. — Loc. H3111, upper reaches of the Tosa-no-sawa, a tributary of the River Mukawa (for the location see Matsumoto and Toshimitsu, 1991, fig. 1). The specimen was squeezed out along the fault of NE trend, together with *Tetragonites* sp. (adult specimen) and *Dsmoceras* (*Pseudouhligella*) *japonicum* Yabe, 1904. This is a peculiar mode of occurrence.

Mantelliceras cf. ***mantelli*** (J. Sowerby, 1814)

Figure 2A-D

Material. — GK.H8626 [=TTC.H8·10·09], collected by Takemi Takahashi from the basal part of the Mikasa Formation at the eastern source of the 6th branch (the uppermost and longest branch) of the Kami-ichi-no-sawa, a tributary of the Ikushunbetsu River, Mikasa district.

Description. — This specimen is secondarily compressed. It is about 105 mm in diameter at the end of the phragmocone and only a posterior fraction of the body whorl is preserved. On the assumption that the body whorl was half whorl, the entire diameter should have been about 120 mm. The flank is somewhat inflated on the less distorted left side, but the entire shell is secondarily compressed as evidenced by the line of fracture roughly in parallel to the mid-line of the venter. The umbilicus is of moderate proportion in reference to the shell diameter (U/D = 0.35). It has a subrounded soulder and a steeply inclined wall.

Radial ribs are fairly strong and of moderate frequency; 14 major ribs on the outer whorl, regularly alternated with minor ones. The major ribs are provided with tubercles at the umbilical edge and also at the inner lateral point. On this specimen the inner lateral one is somewhat more prominent than the umbilical one. The inner and outer ventrolateral tubercles are moderately strong. The ribs and tubercles on the preceding whorl are stronger and coarser than those on the outer whorl.

Sutures are partly shown.

Remarks. — As only a deficiently preserved specimen is available, the identification is preliminary. The observable characters suggest the affinity with such form as *M. mantelli* from England as figured by Wright and Kennedy, 1984, pl. 20, fig. 1 in younger stage and *ibid*., pl. 20, fig. 5 in later stage.

One of us (T.M.) once saw better preserved specimen which could be certainly identified with *M. mantelli* in the collection of Kikuwo Muramoto, but we missed to illustrate it carefully because of his misfortunate decease.

Occurrence. — As for material; probably the basal part of the Cenomanian Stage.

Mantelliceras cf. ***picteti*** Hyatt, 1903

Figure 3A-D

Material. — A single specimen, GK.H8363, collected by Akio Tomita (No. 2 of his collection on May 25th, 1970) and provided us for study by way of Takemi Takahashi.

Description. — The shell is small, about 50 mm diameter at the end of its phragmocone, and less than half (about 40°) of the secondarily compressed body whorl is preserved. The umbilical ratio (U/D) at the end of the phragmocone is 0.26, but it seems to enlarge with growth.

The ribs are moderately strong, alternately long and short; occasionally with two shorter ones intercalated. They are slightly flexuous and of moderate frequency, separated by interspaces somewhat broader than the ribs; 13 major ribs are on the preserved outer whorl. The umbilical and lateral tubercles are on each major rib; the inner and outer ventrolateral tubercles on every rib. The outer ventrolateral tubercles are clavate and fairly prominent.

Sutures are fairly well exposed where the shell layer is taken away. They are generally similar to the illustration of Wright and Kennedy, 1984, text-fig. 25G.

Remarks. — Although this specimen is deficient in its incomplete preservation of the body whorl, it is well comparable with such specimens of *Mantelliceras picteti* Hyatt as described by Wright and Kennedy, 1984 (p. 117, pl. 27, figs. 3, 4). The previous assignment by Matsumoto and Toshimitsu (1991, p. 3) to *M. couloni* (Orbigny) is obviously inadequate.

Fig. 1. *Mantelliceras* cf. *couloni* (Orbigny, 1850).
HMG 740 of half-ammonite preservation from Loc. H3111, Tosa-no-sawa, Tomiuchi, Hobetsu district. Left lateral (A) and ventral (B) views. Scale bar = 10 mm.
Arrow indicates the end of the phragmocone. The figure is reproduced from Matsumoto and Toshimitsu, 1991, with additional indication of the end of the phragmocone by an arrow. Photos by S.T.


C
A
D
B

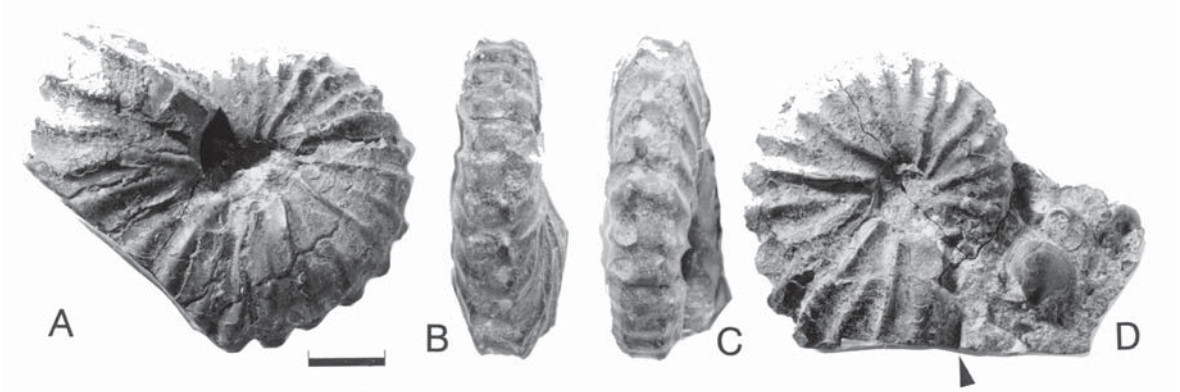

Fig. 3. *Mantelliceras* cf. *picteti* Hyatt, 1903.
GK.H8363, obtained *in situ* from a bed of sandstone at the waterfall of the 6th branch of the Kami-ichi-no-sawa, a tributary of the Ikushunbetsu River, Mikasa district. Left lateral (A), ventral (B, C) and right lateral (D) views. Scale bar = 10 mm. Reproduced from Matsumoto and Toshimitsu (1991, pl. 1).
Arrow indicates the end of the phragmocone. Photos courtesy of M. Noda.

Occurrence. — Obtained by A. Tomita *in situ* at the waterfall of the 6th branch of the Kami-ichi-no-sawa, a tributary of the Ikushunbetsu River. The upper part of the Lower Cenomanian Substage is suggested by this ammonite.

Mantelliceras cf. ***dixoni*** Spath, 1926

Figure 4A-D

Material. — A single specimen, NSM5733, collected by the late Tatsuo Muramoto and provided to us for study by way of the stuff of the National Science Museum.

Description. — A very small specimen, with the following dimensions: D= 22.4, U= 5.6, U/D= 0.25, H= 10.0, B= 10.6, B/H= 1.06 (linear dimension in mm). The whorl is subquadrate in cross-section, with slightly rounded venter and subangular umbilical shoulder.

The shell is ornamented by ribs of unequal length; 10 major ribs in the exposed outer whorl; each provided with tubercles at the umbilical shoulder, mid-lateral, inner and outer ventrolateral points; one or two minor ribs without umbilical and lateral tubercles are intercalated between the major ones. A few minor ribs are somewhat longer than others and may have faint mid-lateral tubercle. Suture unexposed.

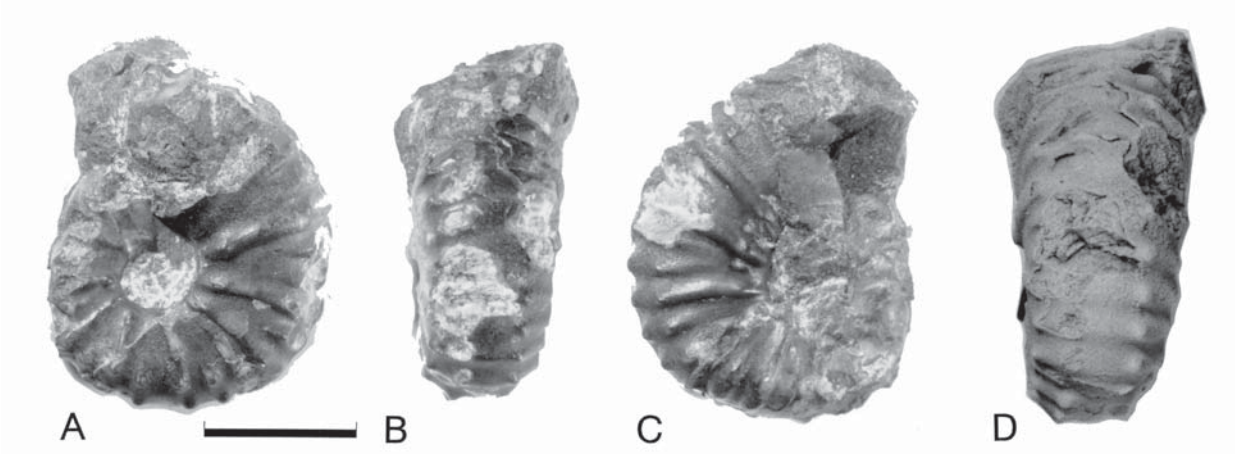

Fig. 4. *Mantelliceras* cf. *dixoni* Spath, 1926.
NSM5733, from Loc. Ik1051b, right side of the Ikushunbetsu River, Mikasa district. Right lateral (A), ventral (B, D: slightly enlarged) and left lateral (C) views of an immature specimen. Scale bar = 10 mm. Photos courtesy of M. Noda (A-C) and T. Nishida (D).

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Fig. 2. *Mantelliceras* cf. *mantelli* (J. Sowerby, 1814).
GK.H8626, obtained by T. Takahashi *in situ* from the eastern source of the 6th branch of the Kami-ichi-no-sawa, a tributary of the Ikushunbetsu River, Mikasa district. Left lateral (A), right lateral (B), ventral (C) and apertural (D) views. Scale bar = 10 mm. Arrow indicates the end of the phragmocone. Photos by S.T.

Comparison. — The specimen described above is very small, but it shows so characteristic features that can be regarded as a young part of the macroconch, as represented by the adult shells of BMNH C83750 and BMNH C81351 figured by Wright and Kennedy, 1984, pl. 37, fig. 1a, b and pl. 37, fig. 4a, b. The two British specimens are rather robust forms and regarded by the two authors as macroconchs.

Occurrence. — Solitarily at Loc. Ik1051b on the right side of the Ikushunbetsu River (see Matsumoto *et al*., 1969, fig. 9). This locality is referable to the upper part of the Lower Cenomanian Substage.

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北海道中央部から産出した*Mantelliceras*(アンモナイト類)の若干種の追加試料について

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要　旨

これまで北海道中央部三笠地域の幾春別川流域の白亜系セノマニアン階下部から産出した*Mantelliceras japonicum* Matsumoto, Muramoto and Takahashi及び*M. cantianum* Spathを記載したが,その後これらに加えて,*M.* cf. *mantelli*や,それより上位の層準から*M.* cf. *picteti* Hyatt及び*M.* cf. *dixoni* Spathを得たのでここに記載する.あわせて,穂別地域産の*M.* cf. *couloni* (Orbigny)についても修正を加えて再記載する.