

**A find of a Cenomanian ammonite from Tomiuchi,
Hobetsu district, Hokkaido**

(Studies of Cretaceous ammonites from Hokkaido-LXVIII)

by

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Abstract—An ammonite which can be referred to *Mantelliceras* (D'ORBIGNY), one of the well known indices of the Lower Cenomanian (Cretaceous), was found at a locality 3.6km north from the town of Tomiuchi, Hobetsu district, Hokkaido. This marks not only an extended geographic distribution of *M. couloni* to Japan but also a new location of the exposed Cenomanian rocks which have been hitherto unrecognized in the neighbourhood of Tomiuchi. In this paper we describe this ammonite. As to the geological setting of this ammonite locality a short note is given as Appendix (written in Japanese) in which Masayuki NODA *** joins with us. The Cenomanian strata are distributed narrowly along a fault of NW trend, which may extend eventually to the Hobetsu thrust.

Key words— Cenomanian, *Mantelliceras couloni*, geographic distribution, Hobetsu thrust.

I Introduction

The Hobetsu district, south central Hokkaido, is well known for the extensive distribution of the fossiliferous Upper Cretaceous strata ranging in age from the Turonian to Maastrichtian. Hitherto, however, no Cenomanian ammonite has been described from this area, although one of us (T.M.) once recognized on fossil evidence Cenomanian strata distributed in a limited area on the east side of the middle valley of the River Hobetsu, a tributary of the River Mukawa.

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Tomiuchi, modern place name for Hetonai, facing the River Mukawa, is celebrated for the type area of the Hetonaian, approximate equivalent of the Campanian and Maastrichtian. Below the Hetonaian in a belt on its northeast side the Upper Yezo Group of the Urakawan (Santonian-Coniacian) age is distributed. In 1988 we did geological field work in this part and found unexpectedly Cenomanian ammonites at a point about 3.6 km north of the Tomiuchi town in the upper reaches of the Tosa-no-sawa, a tributary of the Mukawa.

This paper is to describe one of the collected ammonites which indicates clearly the Lower Cenomanian. In connexion with its occurrence a short geological note is given as an Appendix (in Japanese), for which T. M., S. T. and M. NODA are responsible.

II Palaeontological description

Family Acanthoceratidae DE GROSSOUVRE

Genus *Mantelliceras* HYATT

Remarks.—See WRIGHT and KENNEDY (1984,p.97) for this genus.

Mantelliceras cf. *couloni* (D'ORBIGNY)

Plate I, Figs. A–B

Compare.—

Ammonites Mantelli SOWERBY; D'ORBIGNY, 1841, p. 340 (pars), pl. 104, figs. 1–4.

Ammonites couloni D'ORBIGNY, 1850, p. 147.

Mantelliceras couloni (D'ORBIGNY); WRIGHT and KENNEDY, 1984, p. 119, pl. 21, fig. 1; pl. 23, figs. 5, 6; pl. 29, figs. 1–3; pl. 30, figs. 1, 2; pl. 31, figs. 3–5; pl. 36, fig. 5; text-figs. 20A–I, 25F, H, 27A–D (with full synonymy).

Material.—HMG-740, a single specimen collected by S. T., T. M. and M. NODA on July 27, 1988 at loc. H3111, Hobetsu area.

Description.—The specimen is incomplete, its right side is dissolved into rock matrix; its left side, with test preserved for the most part, has been developed by S. T.'s careful trimming.

The body chamber occupies about half a whorl, although it is somewhat destroyed. The phragmocone ends at diameter (D) (unrestored)=110 mm. The shell looks fairly involute and the umbilicus (U) fairly narrow. The whorl section (half restored) is suboval, with its height (H) greater than breadth

(B). The dimensions (in mm) (costal) measured at the middle of the body chamber are as follows, although they have been modified to some extent from the original ones: D=140 (1) U=28 (.20) H=69 (.49) B=54 (.38) B/H=0.78

Ribs are numerous, 21 on the last half of the septate whorl and 18 on the body-chamber, alternately long and short and separated by interspaces nearly as broad as the ribs on the outer flank. They are gently flexuous on the phragmocone, becoming later straight, strong, sharp-headed on inner flank and broadened outward.

The umbilical bullae are only faintly discernible on some of the long ribs; the ribs may be bluntly angulate at the inner ventrolateral shoulder and sharply tuberculate at the outer end, although the median ventral sulcus is not well shown on account of the poor preservation.

Suture is only partly exposed and cannot be traced.

Comparison. — WRIGHT and KENNEDY (1984) have amply described the specific characters and extent of variation of *Mantelliceras couloni* (D'ORBIGNY), with which the present specimen is most probably identified. The seemingly small ratios of U/D and B/H in our specimen are certainly due to the secondary compression. As the preservation is incomplete, we call this specimen *Mantelliceras* cf. *couloni* (D'ORBIGNY).

M.couloni resembles *Mantelliceras saxbii* (SHARPE, 1857), which has been also amply redescribed by WRIGHT and KENNEDY (1984, p. 121). According to them the extent of variation in B/H ratio and in rib density of *M. couloni* overlaps that of *M. saxbii*. A clear distinction is the prominent outer ventrolateral clavate tubercles in *M. couloni*. In this respect the specimen which was collected by A. TOMITA on May 25, 1970 from sandy siltstone exposed below the water fall of the 6th branch of the Kami-ichi-no-sawa, a tributary to the River Ikushumbets and donated to Kyushu University (registered as GK. H8363) through T. M. (illustrated in this paper in Plate I, Figs. C-E), is certainly another example of *M. couloni* from Hokkaido. It may be immature, for its last suture is at D = 50 mm, but could be a microconch.

Discussion. — *Mantelliceras budaense* ADKINS (1931, p. 41, pl. 2, fig. 3; pl.4, fig. 10) is thought by some authors (e. g. WRIGHT and KENNEDY, 1984, p. 120) to have affinities with *M. couloni* rather than with *M. cantianum* SPATH (see Ditto, p. 103). One of us (MATSUMOTO, 1960, p. 39, fig. 3) once examined the holotype of *M. budaense* from Texas and noted that the specimen is not so poorly preserved as the photographs might suggest and that it has distinctly both the inner lateral and umbilical tubercles like those of *M. cantianum*. Its dimensions measured at a point about 60° adorally from the beginning of the body-chamber are as follows:

D=82.0 (1) U=25.0 (.30) H=35.3 (.43) B=39.3 (.48) B/H=1.11

Its whorl is broadest between the inner lateral tubercles as in *M. cantianum*. Its ribs are as strong as those of *M. cantianum* but less numerous and separated by wider interspaces. The ribs run across the venter without forming a groove like that of *M. couloni* between the outer ventrolateral tubercles. Therefore, we are inclined to recognize closer affinities between *M. budaense* and *M. cantianum*, although the true relationships should be concluded by examining more numerous specimens from N. America.

Occurrence.—The described specimen was obtained from the mudstone at loc. H3111, about 3.6 km north from the town of Tomiuchi, along a fault of NW trend running across the upper reaches of the Tosa-no-sawa, a branch of the River Mukawa. It indicates the presence of the Lower Cenomanian which has not been hitherto recognized in this part of the Hobetsu area. It was associated with *Desmoceras (Pseudouhligella) japonicum* YABE (HMG-741,742) and *Tetragonites* cf. *kitchini* (KRENKEL) (HMG-743).

M. couloni itself characterizes a horizon at the top of the *Neostriogoceras carcitanense* Subzone of the Lower Cenomanian Zone of *M. mantelli* in England (WRIGHT and KENNEDY, 1984, p. 120). its further geographic distribution is known in France, Roumanian, Iran (KENNEDY *et al.*, 1979), Israel (LEWY & RAAB, 1978) and now extended to Japan.

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Heonai (辺富内), Hobestu (穂別), Ikushumbets[Ikushunbetsu] (幾春別),
Kami-ichi-no-sawa (上一の沢), Mukawa (鶴川), Tomiuchi (富内),
Tosa-no-sawa (トサノ沢)

北海道穂別町富内北方からセノマニアン アンモナイトの発見
松本達郎・利光誠一

(和文要旨)

穂別町富内北方 3.6km地点、トサノ沢上流で、アンモナイト *Mantelliceras* cf. *couloni* (D'ORBIGNY) を他の 2 種とともに見出した。

M. couloni は白亜系の下部セノマニアンを示すが、日本からは従来報告されていなかった。またこの地区にはセノマニアンは未知であった。よってここに本種を記載・図示する。この標本は伴った 2 種の標本とともに本館に寄贈する。なお三笠産の同種の小型のものも併せて図示した。

産地・産状については、付録として和文でやや詳しく説明するが、要するに NW 断層に沿った狭長だがセノマニアンの泥岩が分布する。

付録 穂別町富内北方の白亜紀セノマニアンのアンモナイト産地について

松本達郎・利光誠一・野田雅之

Appendix- Geological setting of the Cenomanian ammonite locality, north of Tomiuchi, Hobetsu district

Tatsuro MATSUMOTO, Seiichi TOSHIMITSU & Masayuki NODA

英文で報告したアンモナイト *Mantelliceras* cf. *couloni* (D'ORBIGNY) は白亜紀セノマニアンの初期の示準化石であり、それに伴う *Desmoceras* (*Pseudouhligella*) *japonicum* もセノマニアンを示し、*Tetragonites kitchini* は層序的分布が長いがセノマニアンにも産する種である。

このように確実にセノマニアンと決定できる地層は従来富内北方のトサノ沢の流域には知られていなかったし、私たちとしても予想外の発見であった。調査の端緒を与えてくださった高橋功二・和田信彦両氏に感謝している。

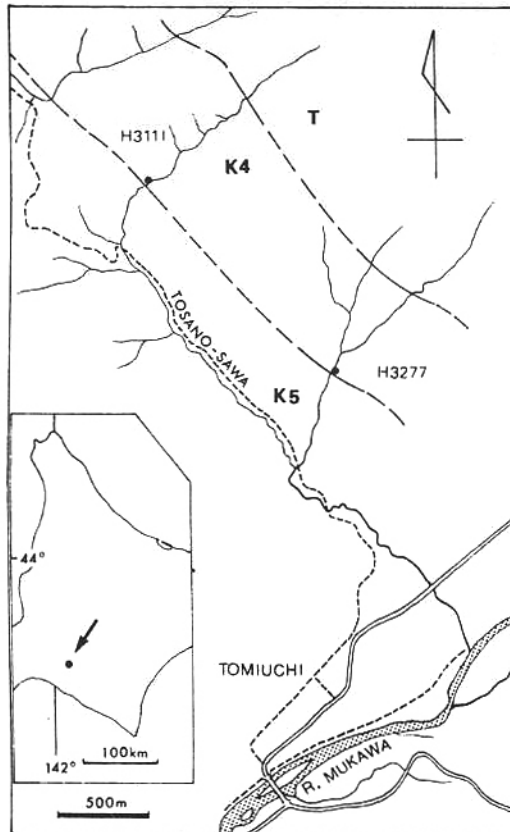
高橋・和田 (1987) の地質図に示されている通り、富内の西方には函淵層群が分布する。“石狩炭田地域”の同層群にはアンモナイト等の海生動物化石は僅かしか産しないのに対

し、穂別地区ではかなりよく産し、地質時代がカンパニアン～マストリヒチアンであることがわかるだけでなく、化石帯区分ができる。それ故に富内（旧称辺富内）の地名に因んでヘトナイ統が設立された。

富内北方のトサノ沢流域には同統の下位の浦河統（ほぼサントニアン～コニアシアン）に当る上部エゾ層群がおもに分布する。しかし、地質図幅に記されているようにトサノ沢の上流と支流を横断してNW方向の断層がほぼ平行に複数あり、これによって図幅の北東部には第三系の幌内層や滝の上層が分布し、更に変成岩類や蚊紋岩も分布している。図幅には狭長ではあるが、中部エゾ層群の上部、すなわち佐久層相当の砂岩・砂質泥岩も断層にはさまれて存在することが示されている。

松本ら（1989）が記したように穂別地区の佐久層類似層（砂岩をかなり狭する部層）は、チュロニアンの上部にもいくらかあるが、むしろチュロニアン下半部に著しく、かつ顕著な凝灰岩・凝灰質砂岩を伴う。穂別ダム工事に見事な露出を示し、下部チュロニアンを示す *Mytiloides modeliaensis* (SORNAY) を産したのは後者である。他方トサノ沢には類似の砂質岩がいくらか分布しており、高橋・和田両氏をへて提供していただいた化石（その中には *Yubariceras yubarense*, *Kamerunoceras* sp. juvenile を含む）も産することが、地質図出版後ではあるが、判明している。この化石はむしろ中部チュロニアンの下部を示唆する。この様に佐久層類似層が場所により少し宛異なった時代に出現する

ことに興味があり、既報(MATSUMOTO, 1989)の中穂別滝川の沢の最上流部に産した大型アンモナイト *Pachydesmoce-
ras pachydiscoide* MATSUMOTO とほぼ同時代という関連もあるのでこの沢を調査した次第である。



第1図 穂別町富内北方地区の図

セノマニアン化石産地（・印）と断層（太線）を示す。左下は富内の位置を示す。

Fig. 1. Map of the area north of Tomiuchi Hobetsu district.

Solid small circle: locality of Cenomanian ammonite,
Thick line: fault,
K4: Cenomanian and Turonian,
K5: Coniacian and Santonian,
T: Tertiary

所が、この砂質岩部層の露頭の若干下流の loc, H 3111 にかなり著しい断層があり、ネバとともに押し出された泥岩中の石灰質団塊中に今回報告の下部セノマニアンのアンモナイトを産した（第1図参照）。

この断層の延長は地形的にも山稜を横切る凹みがあってほぼ追跡できるが、南東延長がトサノ沢下流の東の支流で認められ、H 3277で *Austiniceras* cf. *austeni* (SHARPE) (GK. H 8372)を採集した。*Austiniceras* はプゾシア科のアンモナイトで垂直分布は長いという人もいるが、上記種はセノマニアンにだけ産する。また北西延長はシュツの沢の南支流の奥の二股に著しい崩壊があり防災工事が施されている個所を通過してほぼ北西に向かう流路に平行して沢のすぐ北側を走るようで、これに沿うても同様に下部セノマニアン～上部アルピアン化石を含む泥岩の押し出しが期待されるから調査したが、確認する迄に至っていない。

断層から少し過ぎて北東側に砂質泥岩・砂岩を主とし、凝灰岩～凝灰質砂岩を狭在するチュロニアン下半部の佐久相当層が分布し、その北東側に著しい崩壊を伴う断層があって幌内層が分布する。両断層は約 600 m 距たっている。

この断層のさらに北北西への追跡はまだ不十分ではあるが、結局は大立目（1941）の穂別推被衝上断層に連結する——逆に言えばその深部の傾斜が強く直線状に走る部分がこの2本の断層ではないかと予測している。

セノマニアンの泥岩は富内北方のトサノ沢ではごく狭く分布し、いわば断層に沿うて絞り出された産状で含化石団塊があった。

やや幅のあるセノマニアンの分布は中穂別稲里対岸のペンケトナド沢、ペンケワッカタンネナイ沢（山本沢とも言う）下流、穂別川本流（山本沢口からサヌシュベ川口まで）に沿うて観察できる。泥岩を主とし灰白色の凝灰岩を狭在する地層で、小褶曲を呈する。大型の石灰質団塊を含む部分があるがメガ化石は所どころに *Desmoceras* (*Pseudouhtigella*) cf. *japonicum*, *Inoceramus* cf. *virgatus* (SCHLÜTER) 等が保存不良が見出され、セノマニアンとわかる。ペンケトナド沢下流で木島敏夫氏採集の見事な搭状アンモナイト *Mariella lewesiensis* (SPATH)（三笠市博物館に展示）（これは大型だが、小型の *M. dorsetensis* (SPATH) と同一種ではないかという可能性もある）は明確に下部セノマニアンを示す。

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Explanation of plate I

A-B: *Mantelliceras* cf. *couloni* (D'ORBIGNY).

HMG 740 from loc. H 3111, Tosa-no-sawa, Hobetsu, district (coll. S. T., T. M. & M. N.), lateral and ventral views, $\times 0.9$.

C-E: *Mantelliceras couloni* (D'ORBIGNY).

GK. H8363 from the 6th branch of the Kami-ichi-no-sawa, Ikushumbetsu valley (Coll. A. TOMITA), right and left lateral and ventral views, $\times 1$.

Arrow indicates the position of the last suture.

Photos by M. NODA.

Explanation of plate II

A-C: *Desmoceras (Pseudouhligella) japonicum* YABE.

A: HMG 741 from loc. H 3111, Tosa-no-sawa, Hobetsu district, lateral view $\times 0.9$

B-C: HMG 742 from the same nodule as above; B: lateral view, C: view from upper right of B, showing the venter of the inner whorl where suture is well exposed, $\times 0.9$.

D: *Tetragonites* cf. *hitchini* (KRENKEL).

HMG 743 from loc. H 3111, lateral view, $\times 0.8$.

E: *Austiniceras* cf. *austeni* (SHARPE).

GK. H8372 from loc. H3277, tributary of the Tosa-no-sawa, lateral view, $\times 0.6$.

All collected by S. T., T.M., and M. N.

Photos by M. NODA.

