59. **Note on Hoplitoplacenticeras from Hokkaido** *)

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(Communicated by Teiichi KOBAYASHI, M. J. A., Oct. 12, 1982)

*Hoplitoplacenticeras* is an ornate ammonite genus which is regarded as one of the widespread leading fossils of the Upper Cretaceous. For some reasons, however, no example of this genus has been reported from the Cretaceous of Japan. Recently I have been engaged in a field work to make clear the faunal characteristics of the Campanian in Japan. Owing to the kind help of some friends of mine, a species of this genus has been recently found from Hokkaido. This is worth reporting before the full description of the fauna.

**Genus Hoplitoplacenticeras** Paulcke, 1907

*Type species:* *Hoplites plasticus* Paulcke, 1907

*Hoplitoplacenticeras monju* sp. nov.

*Material:*—Holotype GK. H5933 (Fig. 1), obtained by M. Yamashita and now kept in the Geological Collection of Kyushu University; paratype (immature) (Fig. 2) in the Collection of Y. Kawashita.

*Description:*—The shell is small. The holotype, in which the body-chamber is preserved for about 180°, measures 45 mm in diameter. The whorl is slightly broader than high in the intercostal section (with B/H = 1.11) but fairly broader than high in the costal section (with B/H = 1.19) in the adult shell; it is slightly broader than high at the immature stage as represented by the small paratype. Its venter is only gently convex or nearly flat and bordered by angular ventrolateral shoulders; flank is moderately inflated, passing to the steeply inclined umbilical wall by way of the rounded umbilical shoulder. The umbilicus is rather narrow, about 28% of the entire shell diameter.

The whorl is well ornamented by ribs and tubercles. The ribs are prorsiradiate on the main part of the flank and gently curved forward on the venter. The tubercles are in six rows. The umbilical tubercles are shifted upward somewhat below the mid-flank, hence may be called lateral tubercles. They are spinose, when the preservation is favourable. The ventrolateral tubercles are fairly strong and nodose on the main part, becoming clavate on the late part of the body-chamber. Paired ventral tubercles on either side of the siphonal zone are at first arranged in chevrons and alternated; later

*) Studies of Cretaceous Ammonites from Hokkaido—XLIV.
more or less clavate and opposite. There are also branched or intercalated minor ribs on the flank. Some of them are looped between the lateral and ventrolateral tubercles. Others are as long as the major ones but narrower and have weaker tubercles. The ribs are sharp-headed on the flank but broadened on the venter. They are fairly numerous, about 15 per half whorl on the venter of the adult shell and also in immature stages. On the minor ribs singly extended on the venter the tubercles are small. Doubled minor ribs are sometimes superimposed on the major ribs of the venter, being looped between the tubercles.

Because the test is well preserved, the sutures are not exposed except for an eroded part where details are obliterated.

*Measurements* (in mm):

<table>
<thead>
<tr>
<th>Specimen</th>
<th>Diameter</th>
<th>Umbilicus</th>
<th>Height</th>
<th>Breadth</th>
<th>B./H.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Holotype</td>
<td>45.0(1)</td>
<td>12.7(.28)</td>
<td>20.0(.44)</td>
<td>23.8(.53)</td>
<td>1.19</td>
</tr>
<tr>
<td>Paratype</td>
<td>8.4(1)</td>
<td>2.1(.25)</td>
<td>4.0(.47)</td>
<td>4.4(.52)</td>
<td>1.10</td>
</tr>
</tbody>
</table>

Figs. 1–2. *Hoplitoplacenticeras monju* sp. nov. 1: Holotype, ventral (a) and lateral (b) views; external mould of the venter (c) with *Metaplacenticeras subtilistriatum* (Jimbo) in ventral view (top).

2: Paratype, two lateral (a,b) and frontal (c) views. Scale bar: 10 mm. (Photos by courtesy of Dr. M. Noda.)

*Etymology*—*Monju* [Mañjuśri in Sanskrit] is a divinity of knowledge who serves the Buddha.

*Comparison*—This species resembles a comparatively thick-whorled and coarsely ornamented variety of *H. plasticum* (Paulcke), called "*Hoplitites plasticus-crassus*", from the Campanian of Patagonia,
but it has more numerous ribs with more frequent intercalation and branching of minor ribs and its ventrolateral tubercles are stronger, more numerous and often clavate. The depressed zone between the paired ventral tubercles is distinct in the Patagonian form but is almost negligible in ours.

_H. monju_ resembles also _H. trangahyense_ Collignon, from the Upper Campanian of Madagascar, in the shell-form and the general configuration of the ornament. In the former there are some independent minor (narrower) ribs which are provided with smaller tubercles near the mid-flank (i.e. shifted umbilical tubercles) and/or at the ventrolateral shoulder, whereas in the latter the minor ribs are all looped at the lateral (i.e. umbilical by some authors) and ventrolateral tubercles, which are all more massive and less numerous than in the former.

_H. marroti_ (Coquand) [= _H. vari_ (Schlüter)] and _H. coesfeldiense_ (Schlüter), well known species from the Upper Campanian of Western Europe, Eastern Europe, North America, Angola and Madagascar, have compressed whorls with slanting ventrolateral shoulders. The former has flexiradiate, regular ribs which arise in pairs from the tubercles at the umbilical margin. The latter has more numerous ribs, but otherwise similar to the former.

The small immature shell (paratype) of _H. monju_ retains to some extent the regular ornamentation of _H. marroti_ type, but the umbilical tubercles are already shifted upward with their highest point slightly below the mid-flank. Its whorl is not so compressed as in _H. marroti_, being slightly broader than high.

**Occurrence:** The holotype was obtained from an exposure at loc. E-33, Embetsu-Rubeshe (Wembets-Rubeshe of Jimbo), Teshio province, northwestern Hokkaido, along with _Metaplacenticeras subtilistriatum_ (Jimbo). Paratype came from the same Zone of _M. subtilistriatum_ exposed in the stream of Tan-no-sawa, a branch of the Abeshina, Teshio province.

**Biostratigraphic implications.** _Hoplitoplacenticeras_ includes a considerable number of species which occur in various regions of the world. Although a taxonomic restudy may be needed on some of them, reliable stratigraphic data show that the majority of them occurs in the lower part of the Upper Campanian and that a few of them may range up to the upper part of the same substage, as has been discussed carefully by Cobban and Howarth. Furthermore, Collignon have described eight species of _Hoplitoplacenticeras_ from the Upper Campanian of Madagascar.

On the Pacific coast of Canada two species of the genus, _H. vancouverense_ (Meek) and _H. cf. plasticum_ Paulcke, have been reported to occur in the next lower zone below the Zone of _Meta-
placenticeras pacificum and the two zones both have been referred to the lower part of the Upper Campanian.\textsuperscript{13)

In Japan Metaplacenticeras subtilistriatum occurs abundantly in a restricted part of the Upper Cretaceous sequence, defining a zone. Hoplitoplacenticeras monju occurs, though rarely, in the Zone of Metaplacenticeras subtilistriatum. This zone has been assigned to the upper part of the Campanian,\textsuperscript{61} because it is above the Zone of Inoceramus schmidti-Canadoceras kossmati which occupies the middle part of the Campanian.

In Southwest Japan the bed with M. subtlistriatum is overlain successively by the Subzone of Baculites kotanii, that of Didymoceras awajiense and then that of Pravitoceus sigmoidale. The four sub-zones altogether constitute the upper part of the Campanian.\textsuperscript{7}

In conclusion, the Zone of M. subtilistriatum is most probably assigned to the lower part of the Upper Campanian and this assignment is supported by the occurrence of H. monju in the same zone.

Acknowledgements. I appreciate highly the find of Messrs. Minoru Yamashita and Yoshitaro Kawashita by whose courtesy I had the opportunity of this study. Thanks are extended to Professor Emeritus Teiichi Kobayashi and Dr. Ikuwo Obata for their encouragements and to Dr. Masayuki Noda and Miss Kazuko Hara for their kind help in preparing the paper.

References

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