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Note on Two Interesting Senonian Ammonites from Hokkaido and South Saghalin.

By

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Note on Two Interesting Senonian Ammonites from Hokkaido[1] and South Saghalin

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With 1 Plate

The two interesting Senonian species of ammonites dealt with in this article are

Nipponites mirabilis Yabe
Neocrioceras spinigerum (Jimbo).

Each is represented by a single specimen, that of *Nipponites* from Hokkaidô and that of *Neocrioceras* from South Saghalin. The two specimens are now preserved in the Institute of Geology and Palaeontology, Tôhoku Imperial University, Sendai, Japan.

Nipponites mirabilis Yabe

Pl. II (I), Figs. 1–3.

1904. *Nipponites mirabilis* Yabe: Cretaceous Cephalopoda from Hokkaidô, Pt. II, Jour. Coll. Sci. Imp. Univ. Tôkyô. Vol. XX, Art. 2, p. 20, Pl. IV, figs. 4–7; Pl. VI, fig. 6.

1926. *N. mirabilis* Shimizu: Three Interesting Cretaceous Ammonites recently acquired from Hokkaidô and Saghalin, Proceedings Imp. Academy, Vol. II, No. 10, p. 548.

Since a brief account of the specimen figured has already been given in one of my papers cited above, only a short recapitulation will be made here with some additional remarks.

The identity of the specimen with Yabe's holotype of the species can not be doubted, as the two agree in all important characteristics. The specific characters of the species are fully expressed in the following description, quoted from a paper by Yabe.

"At first the shell forms a more or less flat spiral coil, wound sinistrally as in *Helicoceras*, its diameter being about 2.7 cm., and the cross-section of the whorl at the end of the second volution about

1) 北海道.

0.9 cm. The further growth is no longer spiral, but it consists in turning to the right and then to the left several times and thus forming many U-shaped curves which cover the first part of the shell from six sides of a cube. The limbs of each single curve and of those adjacent come nearly in contact.

"In cross-section, the whorls of the younger, spiral portion are nearly round, while those of the older are somewhat oblong, the dorsoventral diameter being a little narrower than the lateral one. The body chamber is probably long, as about two anterior curves seem not to be separated.

"As our shell consists of several U-shaped curves, when it is compared with the ordinary *Turrilites*, one limb of a curve corresponds to a whorl of a sinistrally wound *Turrilites*, and the other to that of a dextrally wound one."

"The ribs are simple, smooth and uniform (except at the anterior end), sharp and high on the external surface, becoming somewhat weaker inside; they are closely and obliquely set, separated by flat intervals of a moderate width. Only near the anterior end of the shell, the ribs become dissimilar, some of them being higher and broader than others, which proves that the growth at these points had been frequently checked. With the exception of the anterior portion, the surface sculpture of this species is so much like that of *Heteroceras otsukai* as to suggest the existence of a relationship between the two species. In the spirally coiled, posterior portion of this shell, the siphuncle is sutural, by which fact it is distinguished from the *Helicoceras*. On the portion of the irregular growth, however, the siphuncle is always (?) situated in the median line of the external side.

"The suture-line was partly examined on the whorl which succeeds the regular spiral growth. It shows two saddles and corresponding lobes on one side of the siphonal line, and does not essentially differ from that of *Heteroceras otsukai*. The two saddles are comparatively slender and nearly equal in height; both are bipartite, with bifid subdivisions. The lateral lobe is very broad and bipartite, slightly exceeding the ventral one in depth. The siphonal saddle is relatively broad and high, with a few serrations along the margin."

This is an extraordinary type of evolute ammonite, coiled in a very peculiar way. YABE established this new genus twenty nine years ago on a specimen derived from the Upper Ammonite Beds of the Opiraushibets, province of Teshio[1]. The specimen being so

1) 天鹽國オピラウシベツ.

unique, some writers are disposed to regard it as nothing more than a pathological individiuum of a *Bostrychoceras*-like form.

YABE, in giving illustrated details of this extraordinary form, pointed out that its coils, though apparently very irregular, are arranged in a definite plan. His views now find confirmation in three other specimens that I have recently examined, which agree well with the holotype in all its features. Of these new materials, one, which is in our possession, came from the Upper Ammonite Beds of the upper valley of the Ashibets, province of Ishikari[1], while the other two[2], found by Mr. M. KAWATA of the Geological Institute of the Imperial University of Tôkyô, were found in the contemporaneous deposits of the Naibuchi[3] district, Japanese Saghalin.

With respect to the mode of life of *Nipponites*, E. W. BERRY[4] writes: "The extreme of benthonic adaptation is that of the apparently sessile, or at least static, genus *Nipponites*, *Nipponites* was irregularly coiled like some species of *Vermetus* or *Serpula*- a tendency which may be said to be shown to a very slight degree in species of *Heteroceras* or *Nostoceras*, but which in its extreme development in *Nipponites*, is, for the present, highly anomalous. As in the Gastropod genus *Vermetus*, *Nipponites* was undoubtedly derived from a trochoid coiled ancestor."

In sculpture, whorl-section, and suture-line, this species strongly recalls *Bostrychoceras*, to which *Heteroceras otsukai* also belongs. Hence *Nipponites* represents a development related to the loosely-coiled *Bostrychoceras*, as maintained by both YABE and SPATH[5].

Horizon: The Upper Ammonite Beds.

Locality: The upper valley of Ashibets, Ashibets-mura, Sorachi-gun, province of Ishikari, Hokkaidô[6]. Reg. No. 35340.

Neocrioceras spinigerum (JIMBO)

Pl. II (I), Figs. 4–9.

1894. *Crioceras spinigerum* JIMBO: Beitr. z. Kennt. d. Fauna d. Kreideform. v. Hokkaidô, Pal. Abh., Vol. VI, No. 3, p. 38, Pl. VIII, fig. 1.

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1) 石狩國芦別川上流.

2) I wish here to offer my warmest thanks to Mr. M. KAWATA, now of the South Manchurian Railway, who kindly allowed me to examine these specimens. I also wish to acknowledge my indebtedness in several ways to the late Professor Y. OZAWA, of the Tôkyô Imperial University.

3) 內淵川.

4) E. W. BERRY: Cephalopod Adaptations—The Record and Its Interpretation, Quaterly Review of Biology, Vol. III, No. 1, 1928, p. 105.

5) L. F. SPATH: On Cretaceous Cephalopoda from Zululand, Annals of the South African Museum, Vol. XII, Pt. VIII, No. 16, 1921, p. 254.

6) 北海道石狩國空知郡芦別村芦別川.

The single specimen examined is well preserved and slightly larger than 65 mm. in diameter.

I have examined the geno- and holotype of *Neocrioceras, Crioceras spinigerum* JIMBO from the Upper Ammonite Beds of Ikandai, Urakawa-gun, province of Hidaka, Hokkaidô [1], in the collection of the Geological Institute, Tôkyô Imperial University, and am fully convinced that the specimen here described is identical to those in the collection mentioned.

The original specific diagnosis of *N. spinigerum*, given by JIMBO, is as follows:

"Umgang quer-elliptisch, auf der Innenseite wenig abgeplattet. Die Aussenseite trägt 4 Reihen von Knoten, welche verhältnissmässig gross und zugespitzt sind; auf den Innenreichen sind diese etwas kleiner als auf den Aussenreichen. Feine Rippen erstrecken sich vollständig um die Windung herum, sind aber nicht alle genau parallel. Sie sind häufig zu 2 oder 3 mit einander verschmolzen, nachdem sie die Knoten überschritten haben. Zwischen 2 Knoten auf der Aussenseite sind 3-4 Rippen, und jeder Knoten ist ebenso dick wie der Zwischenraum zwischen 2 oder 3 aufeinander folgenden Rippen. Die Rippen steigen eine kleine Strecke an der Seite der Knoten in die Höhe, bleiben an Stärke und Charakter überall ungefähr gleich und sind an der Seite stark nach vorn gebogen."

"Die Lobenlinie zeigt 6 Loben. Die Lateralloben sind symmetrisch zweispitzig, und die Sättel symmetrisch zweitheilig. Der Siphonallobus, der ungefähr so lang wie der erste Laterallobus ist, hat einem langausgestreckten, zweispitzigen Ast auf jeder Seite. Der erste Lateralsattel ist sehr breit, aber er zeigt ungefähr dieselbe Form wie der zweite. Der Antisiphonallobus ist ziemlich breit und wie anderen Loben nach oben erweitert."

The adult characters of *N. spinigerum* are better exhibited in the present specimen than in the holotype. The ribs on the dorsal area are the narrowest of all and form a forward curve on the median line; the siphonal saddle is trifid on top; the siphonal lobe is longer than the first lateral; the first lateral saddle has a secondary lobe just lying on the dorsal margin; the antisiphonal lobe is rather narrow and trifid at the end.

In 1931, SPATH [2] established a new genus, *Neocrioceras*, on this species. That it represents a new type was long before recognized by YABE, who had used it for the genotype of his *Cyrtohamites* in an

1) 北海道日高國蒲河郡井寒台.

2) SPATH: Ibid., p. 52, Pl. VII, figs. 6 a-c.

unpublished paper dated 1901. We follow the international code of zoological nomenclature in accepting the former generic name instead of the latter.

N. spinigerum differs from SPATH's *Neocrioceras* cfr. *spinigerum*[1] from the Senonian of Pondoland in the following points: (1) much more depressed whorls, (2) much narrower and more convex flanks, (3) more forwardly inclined ribs on the flanks. The nature of these differences is such that we feel justified in considering the Pondoland specimen to represent a new species distinct from ours.

Horizon: The Kawakami Group[2].

Locality: Namikawa, Toyohara-gun, South Saghalin[3]. Reg. No. 36836.

In conclusion, I wish to express my cordial thanks to Prof. H. YABE, of the Institute of Geology and Palaeontology, in Sendai, for his kind guidance and for having allowed me the use of his private library.

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1) SPATH: Ibid., p. 52, Pl. VII, Figs. 6 a-c.

2) The Kawakami (川上) Group is virtually an equivalent of the Upper Ammonite Beds of Hokkaidô.

3) 樺太豊原郡並川.

PLATE II (I)

PLATE II (I)

(Figures are natural size unless otherwise stated.)

Figs. 1, 2, 3. *Nipponites mirabilis* YABE. Loc.: The upper valley of the Ashibets, Ashibets-mura, Sorachi-gun, province of Ishikari, Hokkaidô; the Upper Ammonite Beds; Reg. No. 35340. Fig. 1, side view; fig. 2, upper view; fig. 3, suture-line at part where it is 11 mm. in height and 10.5 mm. in breadth of whorl, ×2.

Figs. 4, 5, 6, 7, 8, 9. *Neocrioceras spinigerum* (JIMBO). Loc.: Namikawa, Toyohara-gun, South Saghalin; the Kawakami Group; Reg. No. 36836. Fig. 4, lower view; fig. 5, central view; fig. 6, diagramatic helicoidal early whorl; fig. 7, diagramatic ventral view, showing the ornamentation; fig. 8, sectional outline at about 50 mm. diam.; fig. 9, suture-line at 28 mm. diam., ×2.

Fig. 6.

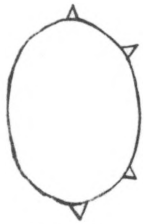

Fig. 7.

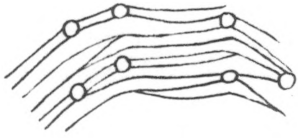

Fig. 8.

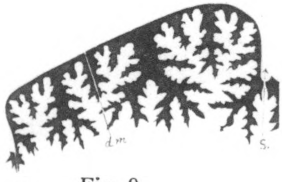

Fig. 9.

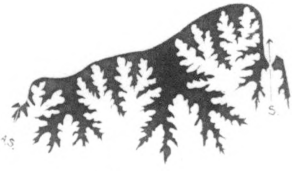

Fig. 3.

Fig. 4.

Fig. 5.

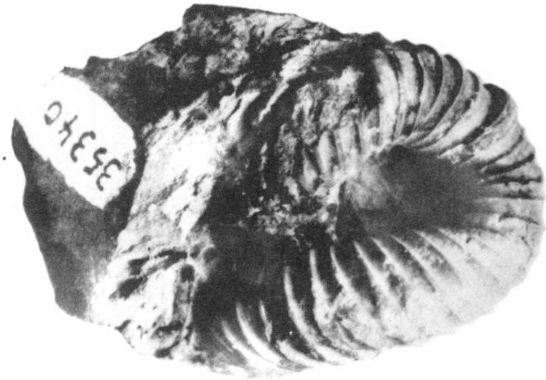

Fig. 1.

Fig. 2.

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