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Author(s)	Hayasaka, Ichirô
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A NEW PERMIAN SPECIES OF PORCELLIA FROM JAPAN

By

Ichirô HAYASAKA

(With 1 Plate)

Contribution from the Department of Geology and Mineralogy, Faculty of Science, Hokkaidô University, No. 532.

Among the Permian fossils entrusted to the writer for study by Mr. MASUTOMI[1] there is a species of plane-spirally coiled gastropod represented by two specimens that occurred in the *Fusulina*-limestone of Kinshôzan, Akasaka-machi, Gifu Prefecture. The specimens were considered by MASUTOMI possibly to be a species of ammonoid.

Porcellia LÉVEILLÉ 1835

Neither the original description nor DE KONINCK's monograph is accessible to the writer, but the genus is briefly but exhaustibly diagnosed by F. KÜHNE as follows:—"Die Gehäuse dieser Arten ist scheibenförmig zusammengedruckt. Die Wingungen sind in einer Ebene durchgerollt. Das Schlitzband liegt auf der Aussenwölbung der Windungen. Ihm entspricht eine ziemlich starke Ausbuchtung in Mündungsrande. Der Unterschied zur Gattung *Bellerophon* liegt in der Breite des Nabels".[2]

The plane-spiral, *Bellerophon*-like volution distinguishes *Porcellia* also from otherwise apparently similar genus *Euomphalus*. However, there are species in the last genus that are *Bellerophon*-like in volution with similar ornamentation on both the upper and the lower sides as, for instance, *Euomphalus pugilis* PHIL.[3] and *E. tuberculatus* DE KON.[4] The former is described:—"Whorls tuberculated on both sides. This distinguishes it from *E. bifrons*", which is "carino-tuberculate above". In *E. tuberculatus* DE KON. not only the tuberculation occurs on both sides but are the whorls generally rounded. In appearance, therefore, the Japanese species of *Porcellia* is very much like the last named species

of *Euomphalus*, being different from each other only in the details of tuberculation. There is a feature which distinguishes the two genera fundamentally: that is the development of a selenizone in *Porcellia* which is lacking in *Euomphalus*.

Porcellia puzoidea sp. nov.

Pl. 1, Figs. 1, 2.

Two incomplete specimens are at disposal. They are pictured in double size on the plate: the larger one is estimated to be about 35 mm or more across and about 13 mm thick, i.e., high. These specimens are very much like the type species of the genus. *P. puzo.* LÉVEILLÉ as is represented in KNIGHT[5] and KÜHNE[6], but differ from it in certain points. First, the surface of the conch is not ornamented with revolving and transverse fine striations. Examined in detail, the possibility that the fine network has been obliterated by weathering is out of the question. Secondly, the transverse ribs that count in both species 17–18 in one volution are decidedly more prominent-higher, wider and longer in the Japanese species.

Whorls are circular in section, with a narrow selenizone on the periphery. The form of the protoconch is not distinctly recognized in either of the two specimens.

As the Japanese species looks very closely allied to the type species *P. puzo*, the writer proposes to call it *P. puzoidea*: the two represent different geological horizons, too.

LOCALITY AND HORIZON:—As stated above *Porcellia puzoidea* occurred in a dark gray limestone with *Yabeina globosa* and the like belonging to a horizon of the *Fusulina*-limestone of Kinshôzan, Gifu Prefecture, Central Japan. The specimens are scarcely deformed, and naturally exposed on the light gray weathered surface of the rock, thus the peripheral parts having been torn off in collecting. A small nuclear part of an ammonoid—possibly a *Stacheoceras*—was found in association, not to speak of the abundant occurrence of the Fusulinid foraminifers.

The *Fusulina*-limestone of Kinshôzan has yielded, chiefly from the black bituminous horizon, many species of molluscs. Some of them have been described by the writer of this paper in a series of notes.[7] There are among pelecypods: *Aviculopecten minoensis* HAYASAKA, *Av. reticularis* HAYAS., *Liebea sinensis* FRECH., *Myophoria japonica* HAYAS., *Paralleodon obsoletiformis* HAYAS., and *Solenomorpha elegantissima* HAYAS. Four

species of DENTALIIDAE are: *Dentalium akasakensis* HAYAS., *D. neornatum* HAYAS., *D.* (*Laevidentalium*) cfr. *priscum* MÜNSTER and *D.* (*Plagioglypta*) *herculeum* DE KONINCK. Gastropods are more numerous, including: *Trachydomia magna* HAYAS., *Tr. conica* HAYAS.,[8] *Spiromphalus* (HAYASAKA) *yabei* HAYAS., *Bellerophon jonesianus* DE KON., *Bel. jonesianus* var. *hiuriciformis* HAYAS., *Pleurotomaria* aff. *multicarinata* MANSUY, *Pl. yokoyamai* HAYAS., *Murchisonia yabei* HAYAS., *Solenospira multicostata* HAYAS., *Naticopsis wakimizui* HAYAS., *Nat. minoensis* HAYAS., *Nat. fasciata* HAYAS., *Nat.* aff. *praealta* WANNER, and *Naticella japonica* HAYAS. An indeterminable species of *Koninckioceras* is the only cephalopod hitherto described, although a doubtful species of *Stacheoceras*, referred to above, will be studied later. *Porcellia puzoidea* is a new addition to the molluscan faunule mentioned above.

Porcellia is a genus hitherto known from the Lower Carboniferous and Devonian[9] formations of Europe. It is therefore worthy of putting on record the Permian occurrence, though the material at hand is not ample. It is interesting in this connection to remind that some fossils that characterize the Carboniferous in Europe, or those very closely allied to them, have been found in the Permian formations of Japan. To mention a few of them, there are *Laevidentalium* cfr. *priscum*, *Plagioglypta herculeum*, *Dentalium neornatum*, *Echinoconchus defensus*,[10] (?) *Davisiella comoides* and *Koninckioceras* sp. This seems to involve a problem which needs some consideration in the future.

The specimens, both the holotype and the isotype, collected by Eiji MATSUMOTO of Kyôto, were presented by him to the writer. For the presentation of the specimens, the writer's hearty thanks are due to Eiji MATSUMOTO.

References

1) The *Koninckioceras* sp. from the *Fusulina*-limestone of Kinshôzan recently described by the writer belongs to this material of Masutomi. See HAYASAKA: An Occurrence of *Koninckioceras* from the Japanese Permian, Japanese Journal of Geology and Geography, vol. XXV, pp. 57-59, 1 textfig., 1954.

2) KÜHNE, F. (1930): "Die Gastropoden" in "Die Fauna des deutschen Unterkarbons, 1 Teil, Abhandlungen d. preus. geol. Landesanst, N. F. Heft 122, p. 128.

3) PHILLIPS, John (1836): Illustrations of the Geology of Yorkshire, Pt. II, The Mountain Limestone District, p. 225.

FRECH, Fritz (1916): Geologie Keinasiens im Bereich der Bagdadbahn, Zeitschr.

deut. geol. Ges. Bd. 68, p. 229, pl. IX, fig. 2.

4) FRECH, *op. cit.*, p. 29, pl. IX, fig. 6.

5) KNIGHT, J. Brooks (1941): Paleozoic Gastropod Genotypes. Geol. Society of America Special Papers, No. 32, p. 268.

6) KÜHNE, F. (1930): loc. cit.

7) HAYASAKA, Ichirô (1925): On Some Paleozoic Molluscs of Japan, I, Lamellibranchiata and Scaphopoda. Science Rep. Tôhoku Imp. Univ. 2nd Ser. (Geology), vol. VIII, no. 2.

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HAYASAKA, Ichirô (1943): On Some Permian Gastropods from Kinsyôzan, Akasaka-Mati, Gihu Prefecture, Pt. I. Mem. Fac. Sci., Taihoku Imp. Univ., ser. III, vol. 1, no. 2.

HAYASAKA, Ichirô (1954): An Occurrence of *Koninckioceras*, form the Japanese Permian. Japanese Journal of Geol. & Geogr., vol. XXV, no. 1-2, pp. 57-59.

8) When the writer described this species in 1943 there was only a single specimen at hand while there were many of *Trachydomia magna*. The validity of the specific distinction of these two was barely sustained by a small incomplete specimen considered a young example. More recently (1953) H. OZAKI of the National Science Museum, Tôkyô, unconsciously reconed to the writer to another full-size specimen which he called T. magna. (OZAKI: On the Mode of Occurrence of Fossil *Fusulinidae* at Kinsyôzan, Akasaka-mati, Gifu Prefecture, Japan. Shizenkagaku to Hakubutsukan (Natural Science and Museums), XX, 1/2, pp. 8-10, figs. 1, 2.

Thus the specific independence of the two may be said more powerfully substantiated.

9) RÖMER, Friedrich Adolf (1866): Beiträge zur geolog. Kenntniss d. nordwestl. Harzgebirges. Palaeontographica vol. XIII, p. 205, Pl. XXXIII, fig. 6 (*Porcellia calceorae* RÖMER sp. nov.).

10) This and the next brachiopods are mentioned in HAYASAKA (1933): On the Carb. Brachiopod Fauna from the Nabeyama Region, etc., Mem. Fac. Sci. & Agric., Taihoku Imp. Univ., vol. VI, no. 2. This fauna is now regarded as of the Permian age instead of the Carboniferous.

Explanation of

Plate 1

Plate 1

(2 times natural size)

Porcellia puzoidea sp. nov. from Kinshôzan
Akasaka-machi, Gifu Prefecture

Fig. 1. HOLOTYPE.

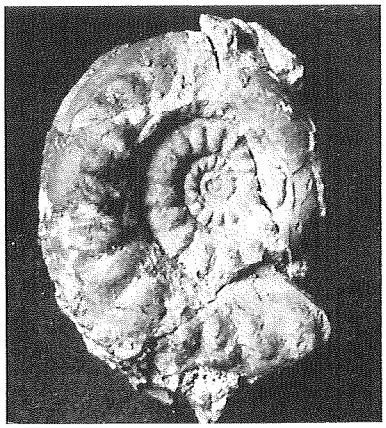
a. Basal view, showing characteristic transverse ribs; no textile ornamentation formed of spiral and transverse fine striae.

b. Seen from outside: shell substance is torn off and a narrow selenizone is shown in part.

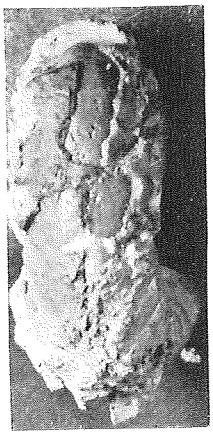
Fig. 2. PARATYPE.

a. Top view.

b. View of the chink showing the symmetrically spiral, circular whorl.



1a



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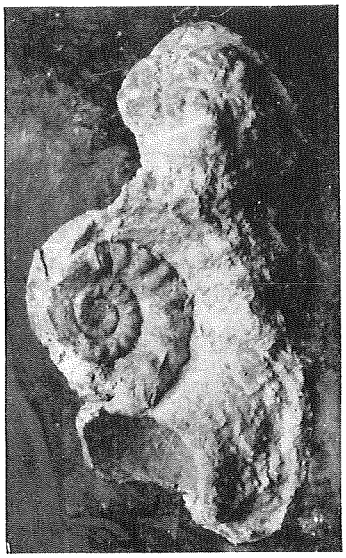

2a

2b

HAYASAKA : Porcellia.

KUMANO photo.