Although the Palaeozoic deposits developed in the northern part of the Kitakami Mountains are seemingly to be Permian in age from the lithologic nature, at least so far as their major parts are concerned, fossils are very few. These deposits have been accordingly stratigraphically little investigated up to the present.

In this short note new occurrence of fusulinid foraminifera, Colania douvillei (OZAWA) will be presented, which was actually discovered by the present author with Parafusulina sp. and coral fragments from a lenticular limestone, dark gray in colour, cropping out at a left bank of a river, about 700 m east of the Kitagawame primary school, when he recently made an excursion along the river Nagasawa, in the vicinity of Hana-mura (village), Shimoei-gun (county), Iwate prefecture, the central part of the Northern Kitakami Mountains. Geology of the area is composed of the alternation of chert and slate. The limestone from which the fossils were found out is about 7 m in thickness, is observed to be intercalated in the thickly bedded black slate formation.

As a matter of fact, the discovery of fusulinid foraminifera in this area above stated, is not new, since Y. ONUKI and H. KUDO (1954) have already reported the occurrence of Neoschwagerina sp. and Parafusulina sp. from the same area, although the present author is not quite sure, whether or not the locality mentioned by them is same as the one by the author. Further, Y. ONUKI (1969) described the presence of Neoschwagerina sp. at Fukushima, Toyomane-cho (town), and Yabeina sp. from Wainai, Niizato-mura (village), Shimohei-gun.
(county) of the same prefecture.

However, all these fossils were merely listed up by those authors, and details of the fossils are unknown for us at the present. The present note will be eventually the first report on description of fusulinid fossils from the northern part of the Kitakami Mountains. The finding of such neoschwagerinid may be somewhat interesting, since this is one of the recorded northern limit of distribution in respect to such younger neoschwagerinid in Japan.

Colania dowvillei (OZAWA) is widely discovered in the upper Permian throughout Japan, and has been regarded to be one of the remarkable fusulinid elements of the Eastern Tethys Sea region. Nevertheless, two bioseries seem to have been distinguished in Japan amongst Neoschwagerininae. One of which is represented by such genera as Cancellina-Minoella-Colania-Lepidolina, while the other one is by Maklaya-Neoschwagerina, especially Neoschwagerina craticulifera type-Yabeina, especially Yabeina globosa type series. Such two types of bioseries are also traced in Japan in somewhat different geographical province. By the finding of Colania dowvillei (OZAWA) from the Northern Kitakami Mountains, it has become more obvious that the Kitakami Mountains belong to the district characterized by the former bioseries. It is also worthy of note that none of species belonging to the latter bioseries which is typically found in the central Japan, as Akasaka

![Text-fig. 1. Map showing the sampled locality.](image-url)
district, is found until present in the Kitakami Mountains.

Before going into description, the author wishes to express his sincere thanks to Professor M. MINATO and Professor M. KATO for their kindness in reading manuscript and valuable suggestions.

**Description of species**

Family Verbeekinidae STAFF & WEDEKIND, 1910

Subfamily Neoschwagerininae

DUNBER & CONDRA, 1928

Genus Colania LEE, 1934, emend.

OZAWA, 1970

*Colania douvillei* (OZAWA)

Pl. 46, figs. 1-6

1906. *Neoschwagerina globosa* DOUVILLE, pl. 17, pl. 18, figs. 1 & 2.


1925. *Neoschwagerina douvillei*: OZAWA, pl. 3, fig. 6; art. 6, pp. 55-57, pl. 11, figs. 5 & 6.

1935. *Neoschwagerina douvillei*: GUBLER, pp. 111-113, pl. 6, fig. 2; pl. 8 figs. 6 & 10 (non pl. 7, figs. 7, 8, 10 & 11).


1956. *Neoschwagerina douvillei*: CHEN, pp. 58-59, pl. 13, figs. 3-7; pl. 14, fig. 7.


1958. *Neoschwagerina douvillei*: SAKAGAMI, pp. 92-93, pl. 4, figs. 7-10.


1970. *Colania* sp. sp. nov., OZAWA, pl. 1, figs. 2, 6-7; pl. 7, figs. 5-7.


**Material:** UHR 19350-UHR 19385. Deposited in the Department of Geology and Mineralogy, Faculty of Science, Hokkaido University.

**Lectotype:** R. TORIYAMA (1958) selected the lectotype of this species as DOUVILLE’s *Neoschwagerina globosa* illustrated as fig. 1, on pl. 18 in 1906.

**Description:** Shell is large, fusiform with bluntly rounded poles and weakly convex mid-portion. Mature shell may possess more than 17 volutions. On account of ill-orientation of thin sections and result of erosion out of the volutions of the specimens at hand, exact size of shell is unknown. Still, illustrated specimen (fig. 3) shows to possess probably 15 to 16 volutions and estimated about 10. 4 mm in length and 5.2 mm in width. The shell expands uniformly and tightly throughout the growth of the shell. Height of volution in the outer volutions is 100 to 150 microns.

Size of proloculus is not correctly measured, since no well oriented sections are available for study, although it may be larger than 60 microns at least in diameter.

Spirotheca is composed of tectum and kerotheca. Keriothecal structure is not well observable in certain part of spirotheca but is distinct in other part of it.
The spirotheca gradually increases in thickness; 10 to 15 microns in the inner volutions, and 40 to 45 microns in the outer volutions.

Transverse septula are slender and regularly spaced throughout the shell. The distal margin of them reaches the top of the parachomata. Incipient secondary transverse septula appear from the middle to the outer volutions.

Septa are numerous. Initial axial septula begin to appear from the fifth to the sixth volution. So-called 1 type of them from the nineth, and 21, 21+s, are observable in the outermost few volutions.

Remarks: The present form is included in the genus Colania by its large, slightly inflated fusiformed shell with regularly spaced slender transverse septula, ill-developed secondary transverse septula.

In application of the classification of Neoschwagerininae proposed by M. Minato & S. Honjo (1959 & 1966), upon the basis of the axial septula, the present form shows to possess similar axial septula as Colania doulvillei (Ozawa), collected from the “Gifuella” zone at Akasaka. Compared to the previously described Neoschwagerina doulvillei by many authors, the present form represents relatively primitive natures especially in development of axial septula, relatively thick sprotheca and small proloculus inspite of having larger shell than any other forms hitherto described.

Neoschwagerina okuboi described by R. Morikawa and Y. Suzuki (1961) from Akasaka may be highly probable to be synonymous with Colania doulvillei.

Colania kotsuboensis CHOI, from the southern Kitakami Mountains provides well developed axial and transverse septula than Colania doulvillei. In this point these two forms are safely discriminated.

The present form is readily distinguishable from Colania gifuensis and C. amicula in possessing larger shell with well developed natures of axial and transverse septula.

Colania doulvillei (Ozawa) has never been found out up to date in the Southern Kitakami Mountains, although fusulinid fauna there has thoroughly examined by many workers.

References cited


Kanuma, M. (1960): Stratigraphical and palaeontological studies of the Southern part of the Hida Plateau and the northeastern part of the Mino Mountainland,
600. Colania douvillei


OZAWA, T. (1970a): Notes on the phylogeny and classification of the superfamily Ver-
Explaination of plate 46

Colania douvillei (OZAWA)
Fig. 1. Slightly parallel sagittal section. ×10, UHR 19360.
Fig. 2. Deep parallel section, revealing the development of the axial septula. ×10, UHR 19379.
Fig. 3. Tangential section. Note the secondary transverse septula in the outer volutions. ×10, UHR 19356a.
Fig. 4. Enlarged photograph of a parallel section, which shows the especially well developed keriothea in the wall. ×100, UHR 19356b.
Fig. 5. Enlarged photograph of fig. 3, showing the nature of primary and secondary transverse septula. ×100.
Fig. 6. Parallel section. ×10, UHR 19384.
Locality: Kitagawame, Hanawa-mura, Shimohei-gun, Iwate prefecture, Northern Kitakami Mountains.