**ALASKOTHYRIS NEW GENUS (FAMILY STRINGOCEPHILIDAE, SUBFAMILY RENSSELANDIINAE) FROM THE GIVETIAN (UPPER MIDDLE DEVONIAN) OF THE NORTHWESTERN BROOKS RANGE, NORTHERN ALASKA**

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**Abstract**—We describe a new genus and species of Middle Devonian (Givetian) brachiopod, *Alaskothyris frosti* n. gen., n. sp., found in Middle Devonian (Givetian) strata exposed near Nigtun Lake, Howard Pass 1:250,000 scale quadrangle, northwestern Alaska. The species occurs in a single monotypic, coquinoïd brachiopod accumulation within Noatak National Preserve. This rensselandiinid brachiopod is significant in that it represents only the fourth species of a Middle Devonian brachiopod ever described from the northwestern Alaska, an area with thick Devonian platform carbonate and siliciclastic-dominated strata successions. Despite the great areal extent of Devonian strata here, the area has had only limited paleontological study, and remains almost a *terra incognita* for Devonian fossils. The strata hosting the new brachiopod genus and species are part of the Arctic Alaska superrane (Blodgett et al., 2002). Evaluation of the taxonomic diversity and character of the Devonian fauna found here is important in determining the paleogeographic origin of this superrane and the paleobiogeography of the Bering Strait region separating northeast Russia and northwestern Alaska.

**INTRODUCTION**

In the present paper we establish a new genus and species of rensselandiinid brachiopod, *Alaskothyris frosti* n. gen., n. sp., which exhibits morphological similarities to the genus *Chascothyris*. The Alaskan occurrence is biogeographically significant in that similar related forms have previously been reported only from Eurasian strata of the Old World Realm. This occurrence gives further support for the Eurasian origin (most notably with Siberia) of some of Alaska’s accreted terranes (Blodgett et al., 2002; Blodgett and Baranov 2014). In addition this new genus provides a glimpse into the poorly known Devonian brachiopod fauna of northern Alaska (belonging to the Arctic Alaska superrane). Our recent studies (Blodgett and Dutro, 1992; Baranov and Blodgett, 2013; Boucot and Blodgett, 2003; and unpublished) indicate that northeast Russia and Alaska as a region was the locus of evolution of many new Givetian stringocephaloid brachiopod genera. It appears to represent a local faunistic center, with many of the new genera subsequently becoming more widespread.

Previous publications providing illustration and description of northern Alaskan Devonian brachiopods are limited to a few publications and include Sartenae (1969), Blodgett et al., (1988), Blodgett and Dutro (1992), Popov et al., (1994), Baxter and Blodgett (1994), Dutro et al. (1994), Blodgett et al., (2002), Blodgett and Baranov (2012), and Baranov and Blodgett (2013).

**LOCALITY INFORMATION AND STRATIGRAPHIC SETTING**

In 1968 A.K. (Gus) Armstrong of the U.S. Geological Survey collected the brachiopod specimens described here from exposures in the western Brooks Range. The locality (USGS locality 8451-SD) is situated in the Howard Pass 1:250,000 scale quadrangle, northwestern Alaska. The species occurs in a single monotypic, coquinoïd brachiopod accumulation within Noatak National Preserve. This rensselandiinid brachiopod is significant in that it represents only the fourth species of a Middle Devonian brachiopod ever described from the northwestern Alaska, an area with thick Devonian platform carbonate and siliciclastic-dominated strata successions. Despite the great areal extent of Devonian strata here, the area has had only limited paleontological study, and remains almost a *terra incognita* for Devonian fossils. The strata hosting the new brachiopod genus and species are part of the Arctic Alaska superrane (Blodgett et al., 2002). Evaluation of the taxonomic diversity and character of the Devonian fauna found here is important in determining the paleogeographic origin of this superrane and the paleobiogeography of the Bering Strait region separating northeast Russia and northwestern Alaska.

**SYSTEMATIC PALEONTOLOGY**

**Suborder Terebratululida Waagen, 1883**

**Superfamily Stringocephaloidea King, 1850**

**Family Stringocephalidae King, 1850**

**Subfamily Rensselandiinae Cloud, 1942**

**Genus *Alaskothyris* n. gen.**

**Type species:** *Alaskothyris frosti* n. gen., n. sp. from unnamed Middle Devonian (Givetian) strata exposed near Nigtun Lake, Howard Pass 1:250,000 scale quadrangle, northwestern Alaska.

**Etymology:** Combination of the geographic name Alaska and the Greek term “thyra” (meaning door). The name is in allusion to the externally similar related genus *Chascothyris* Holzepfel, 1895.

**Diagnosis:** Transverse rensselandiinid brachiopods similar externally to the genus *Chascothyris*, but differing in the presence of a prominent pedicle support structure in the ventral valve (see serial sections shown in Fig. 3A at 3.2 mm and succeeding anterior intervals, and in Fig. 3B from 2.5 mm and succeeding anterior intervals).

**Occurrence:** The new genus is presently known only from the single locality referenced above from near Nigtun Lake, Howard Pass 1:250,000 scale quadrangle, northwestern Alaska.

**Comparison:** The new genus differs from all other rensselandiinid genera (i.e., *Chascothyris, Newberria*) in its unique, highly distinctive pedicle support structure observed in the ventral valve. Such a feature is unknown in other rensselandiinid brachiopods. The most similar rensselandiinid genera in terms of their transverse exteriors are *Chascothyris* Holzepfel, 1895, *Elmaria* Nalivkin, 1947, and *Rensselandioidea* Yang, 1983. Externally the new genus most closely resembles *Chascothyris*, but is clearly distinguished by the brachial support structure (Figs. 3A, B) found in the ventral valve. The remaining rensselandiinid genera such as *Newberria* Hall in Whitesaves, 1891 and *Ectorensselandia* Johnson, 1973, and Cloud, 1942 differ externally in being much more elongate and not transverse.

The genus *Subrensselandia* Cloud, 1942, recently separated from the Rensselandinae and placed by Boucot and Blodgett (2003) into a new subfamily, *Subrensselandiinae* Boucot and Blodgett also differs by being more elongate and not transverse in shape.

**Alaskothyris frosti** n. sp.  
Figs. 1-5

**Etymology:** The new species is named in honor of Dr. Herbert C. Frost, National Park Service, Alaska Regional Director, Anchorage, Alaska, for his support to science, management and stewardship of National Park Service paleontological resources.
FIGURE 1. *Alaskothyris frosti* n. gen., n. sp., A-E, holotype, USNM 604946, in A, ventral, B, posterior, C, lateral, D, opposing lateral, and E, anterior views of ventral valve. F-J, paratype, USNM 604947, in F, ventral, G, posterior, H, oblique posterior, I, even more obliquely posterior (almost dorsal), and J, lateral views of an articulated specimen in which only the posterior-most portion is preserved. Scale bars = 1 cm.

FIGURE 3. A – F – Microstructure of the ventral valve of *Alaskothyris frosti* n. gen., n.sp., Holotype, USNM 604946. A – boundary between the outer (1) and middle (2) layers, B – microstructure of the outer (1) layer, C – boundaries between the middle (2) and inner layers, D – microstructure of the middle (2) layer, E – boundary between middle (2) and inner (3) layers, F – microstructure of the inner (3) layer; p – punctae. Scale bar given in each view.

FIGURE 4. Selected transverse serial sections illustrating the internal structures of two ventral valves of *Alaskothyris frosti* n. gen., n. sp. A, Holotype, USNM 604946. B, paratype, USNM 604948.
We thank Kathy Hollis and Mark Florence, both of the Department of Paleobiology, U.S. National Museum, for arranging a loan of the collection for study. We also thank Peter E. Isacson (University of Idaho, Moscow) and Howard R. Feldman (Division of Paleontology, Invertebrates, American Museum of Natural History, New York, N.Y.) for their helpful reviews of this manuscript. The work was partly supported by the Russian Fund of Basic Researches (grant 13-05-00520), Program of Presidium of the Russian Academy of Science No 23, Project No 23.1.

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