

# 13. On a new species of *Benneviaspis* from the Red Bay Series in Spitsbergen.

By

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The Norwegian Spitsbergen Expedition in 1928 under the leadership of Prof. VOGT collected a considerable number of lower vertebrates from the Red Bay Series. Of these, the Cephalaspid collection is now being studied by the writer in the Paleozoological Department of the Swedish Museum of Natural History; it contains many forms of great interest both from the general anatomical and systematic points of view. The material includes representatives of the genera *Cephalaspis* (about 20 species, most of them new), *Securiaspis*, hitherto only described from England, *Benneviaspis*, *Hoelaspis* and *Kiaeraspis*. In addition it contains forms that must be considered new genera.

I will here give a preliminary description of a new species of *Benneviaspis*.

The genus *Benneviaspis* was first characterized by STENSIÖ in 1927, in the genotype *B. holtedahli* from the upper parts of the Red Bay Series (horizons J, L, and the Cliff, of Ben Nevis; in the collection of 1928 it has been found in the Ctenaspis- and Benneviaspis-horizons of Ben Nevis). At the same time its occurrence in England was established, and in 1932 STENSIÖ described two species, *B. lankesteri* and *B. anglica*, from the Dittonian of England. The new species here described comes, like *B. holtedahli*, from the upper parts of the Red Bay Series, more exactly from a fine-grained reddish sandstone on the North Plateau of Ben Nevis.

## ***Benneviaspis longicornis* n. sp.**

Diagnosis. — A *Benneviaspis* with maximum breadth of cephalic shield, measured across posterior ends of cornua, probably more than twice the length in median line. Lateral margins of the shield distinctly concave. Cornua directed laterally and slightly backwards, slender and very

long. Their inner margins lack denticles. Pectoral sinus very shallow. Interzonal part rapidly narrowing backwards, its posterior angle reaching backwards beyond the tips of the postero-lateral angles. Dorsal electric field about three times as long as broad. Lateral electric field extending backwards on the cornua, not projecting medially on the shoulder girdle. (Condition of superficial layer of exoskeleton unknown.)

Holotype. — Cephalic shield in possession of the Paleontological Museum, Oslo.

Material. — This species is based on the holotype alone, which consists of a fragmentary cephalic shield, lacking the rostral area and the right cornu.



Fig. 1. *Benneviaspis longicornis* n. sp.  
Fragmentary cephalic shield, in dorsal view. The exoskeleton largely removed, so that several internal canals can be seen. Holotype.  $\times 4$  diam.

Description. — The imperfect state of preservation precludes the length of the shield being measured. The maximum breadth between the posterior ends of the cornua may be estimated at 3.8 cm. The interzonal part is 1.1 cm broad across the lateral angles. The shield has therefore belonged to an individual of a small size. Nothing can be said regarding the rostral margin. The lateral margins are distinctly concave. The cornua are very long and slender, much longer and of more lateral direction than in other species of *Benneviaspis*, being probably about half as long as the distance from their tips to the rostral end of the shield. They are flattened, and their inner margins seem to be devoid of denticles. The pectoral sinuses are very broad and shallow, not well defined. The interzonal part projects behind the cornua, and narrows rapidly backwards. Its postero-lateral angles are well developed, but do not reach back beyond the posterior angle. The posterior margin of the interzonal part between the posterior angle and each postero-lateral angle is rather deeply concave, its deepest part close to the latter angle. The interzonal part behind the dorsal electric field has no dorsal spine, nor any dorsal median crest. The

dorsal electric field is long and narrow, about three times as long as its maximum breadth, which seems to be situated about midway, and it probably narrows uniformly forwards and backwards. The lateral electric fields are imperfectly preserved; their exact extent is difficult to make out, but they reach fairly far backward on the cornua; their postero-medial corner does not seem to project medially on the shoulder girdle. The orbital openings are oval; the pineal plate has become detached, and its exact shape is therefore uncertain, but its place is marked by a transverse groove. The nasal opening proper is situated on a small protuberance, but there is no distinct circumnasal fossa. The exoskeleton of the shield is so imperfectly preserved that nothing can be said about its superficial layer, or of its mucous and sensory canal systems.

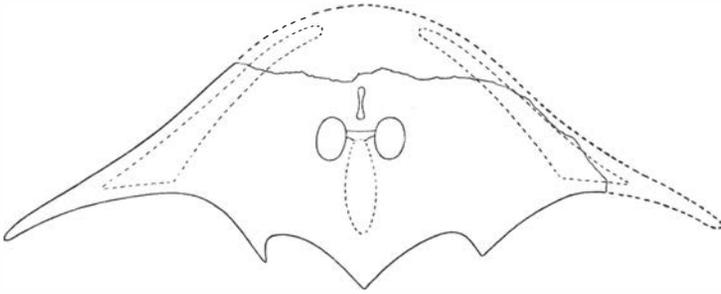


Fig. 2. *Benneviaspis longicornis* n. sp.  
Attempted restoration of cephalic shield.  $\times 2.5$  diam.

The endoskeleton of the cephalic shield is rather well ossified, and shows several details of internal anatomy. We thus find that the canal common to the two most anterior nerves to the electric field is at least continued to a point much nearer to the electric field than to the orbital opening before bifurcating. The canal of the dorso-lateral superficial vein 3 joins the canal of the dorso-lateral superficial vein 4, and the common canal thus formed opens directly in the canal of the vena capitis lateralis, as is normal in this genus, and not into the orbit. The canals of the dorso-lateral superficial veins 5 and 6 also join into a common canal before opening into the canal for the vena capitis lateralis. On the right side can be seen a communication between the dorso-lateral superficial veins 4 and 5.

Remarks. — The species described differs clearly from other hitherto known species of *Benneviaspis* by its small size, and by its long and slender cornua projecting more laterally. In fact, it is somewhat suggestive both of the genus *Securiaspis* and of *Hoelaspis*.

Geological horizon and locality. — Red Bay Series, North Plateau, 600 m., on Ben Nevis (= Vogti horizon).