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SHELL COLOR PATTERN IN AN UPPER DEVONIAN  
RHYNCHONELLID BRACHIOPOD

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Four specimens of *Coeloterorhynchus schucherti* (Stainbrook, 1945) from the Frasnian of southern Poland retain their color pattern of the shell preserved in form of several radial stripes.

**Key words:** shell preservation, color pattern, Rhynchonellida, Brachiopoda, Devonian.

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## INTRODUCTION

Among Paleozoic brachiopods specimens with preserved color pattern are rather rare, thus being of great interest. Blodgett et al. (1983) noted that among Devonian brachiopods retaining their color pattern, four taxa are representatives of Inarticulata, five of Rhynchonellida (the sixth taxon has been recently described by Biernat 1984), five taxa of Athyrididina and twenty five taxa of Terebratulida. *Coeloterorhynchus schucherti* (Stainbrook, 1945) described here from the Frasnian of Dębnik, southern Poland, is the seventh Devonian taxon of the order Rhynchonellida and the first from the Upper Devonian.

The collection studied contains only one almost complete shell and 10 fragments of shells and valves of *Coeloterorhynchus schucherti*. Traces of color pattern have been observed in 4 specimens. All specimens come from the vicinity of Dębnik (Cracow region, S Poland) where they occur in dark-gray, marly biopelmicrites of the upper part of the Rokiczany Dół ravine. Stratigraphically, those layers represent the brachiopod *Plionoptycherhynchus cracoviensis* Zone (= *Calvinaria cracoviensis* Zone: Baliński 1979); on the basis of conodonts they can be correlated

with the Middle and Upper *Polygnathus asymmetricus* Zone (Frasnian do Ia to do I $\beta$ ) (for details on locality, stratigraphy and assemblaged fauna see Baliński 1979).

Specimens are housed at the Institute of Paleobiology, Polish Academy of Sciences, Warszawa (abbreviated ZPAL).

DESCRIPTION OF THE COLOR PATTERN  
IN *COELOTERORHYNCHUS SCHUCHERTI* (STAINBROOK)

In all four specimens of *C. schucherti* the preserved color pattern is observed as several brownish radial, more or less long stripes or bands. The brownish coloring substance is seen under the microscope as being dispersed in the semi-translucent shell substance. As the color pattern is preserved differently in each specimen (mainly because of the degree of exfoliation of the shell substance), it is necessary to provide the description of every case considered.

ZPAL Bp XXIII/186a (pl. 21: A-C, pl. 22: 1). An almost complete shell (see also Baliński 1979, pl. 4: 4, 7) with destroyed ventral umbo and top of the tongue; shell exfoliated in places, especially in the anterior part. On the pedicle valve at least nine radially elongated stripes are visible. The longest are the median stripes, up to 4 mm, the shortest are the lateral ones, some of them are hardly seen. The median and some of the lateral stripes start a little earlier than the costae, at about one-third to one half of the shell length from the umbo.

On the brachial valve the color stripes are disposed radially, similarly to those on pedicle valve. Two median stripes are the longest, reaching up to 7 mm; they coincide with the lateral slopes of the fold. The other stripes coincide with lateral costae of the valve. As it can be seen from pl. 21: A-C not all color stripes reach the margins of valves owing to an extensive exfoliation of the shell substance in the anterior part of shell.

ZPAL Bp XXIII/187a. A small fragment of the extensively exfoliated shell. On small fragment of the pedicle valve one color stripe is visible situated along one costa in sulcus (only one costa is preserved). On the brachial valve (about half of the valve is preserved) color stripes coincide with the lateral costae, as are those in the specimen described above.

ZPAL Bp XXIII/187h. A small, extensively exfoliated fragment of brachial valve; shell substance is preserved only partially on the lateral costate part of valve. Three radial color stripes are seen along three preserved costae.

ZPAL Bp XXIII/187i (pl. 21: D, pl. 22: 2). A small fragment of the pedicle valve representing the anterior part of sulcus. Four costae are

preserved on the sulcus bottom; two median costae are somewhat longer than the lateral ones. Color stripes quite precisely coincide with the four costae (pl. 21: D).

#### REMARKS

Although the specimens described above are fragmentary and exfoliated, a general reconstruction of the color shell pattern of *Coeloterorhynchus schucherti* (Stainbrook) can be attempted. A complete color pattern of fossil shells consists of several radial stripes some of which more or less coincide with the radial costae. Medially, these stripes start at about one-third to one half of the shell length from the beaks, laterally, they are gradually shortened; at the postero-lateral parts of the shell the stripes are limited to the valve margins. In all probability all stripes extend up to the commissure of the valves.

Among the Devonian rhynchonellids retaining their color pattern 3 taxa display radial bands, i.e. *Ancillotoechia rex* Johnson, *Cassidirostrum radiatum* Johnson (Johnson 1975) and the indeterminate rhynchonellid (Boucot and Johnson 1968). Another 2 taxa feature irregular spots, namely *Pugnax pugnoides pugnoides* (Schnur) (Schmidt 1941) and *P. pugnoides latus* Schmidt (Schmidt 1941). Another recently described species? *Solidipontirostrum radwańskii* Biernat (Biernat 1984) has a variable intraspecific color pattern from spotted to subradially banded, and obliquely banded. Thus, *Coeloterorhynchus schucherti* (Stainbrook, 1945) under study would be the fourth taxon of the Devonian rhynchonellids which retains color markings displaying radial banding.

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WZÓR BARWNY NA MUSZLACH DEWOŃSKICH RYNCHONEL  
(BRACHIOPODA)

Streszczenie

Cztery spośród jedenastu okazów *Coeloterorhynchus schucherti* (Stainbrook, 1945) z iranu Dębника (Region Krakowski) zachowują ślady pierwotnego wzoru barwnego. Są to promieniście ułożone brązowe pasy; niektóre z nich pokrywają się z radialnymi żebrami. Opisane znalezisko jest siódmym przypadkiem zachowania wzoru barwnego u dewońskich rynchonel, a pierwszym dla górnego dewonu. Wzór barwny muszli *C. schucherti* przedstawiony jest na Pl. 21: A—D oraz Pl. 22: 1, 2.

Praca wykonana w ramach problemu MR II.6.

EXPLANATION OF PLATES 21 AND 22

Plate 21

Color pattern as preserved in two specimens of *Coeloterorhynchus schucherti* (Stainbrook) from Dębnik, Frasnian.

A—C. Slightly damaged shell (ZPAL Bp XXIII/186a) (top of the tongue destroyed) in dorsal, ventral and lateral views; color stripes (solid black areas) not complete as the shell substance is exfoliated in places (dotted lines delimit exfoliated areas).

D. Fragment of the sulcate part of pedicle valve (ZPAL Bp XXIII/1871) in anterior view; four radial stripes visible (solid black areas), which coincide with four costae. See also pl. 22.

Plate 22

Two specimens of *Coeloterorhynchus schucherti* (Stainbrook) retaining color markings.

1a—c. Slightly damaged and partially exfoliated shell (ZPAL Bp XXIII/186a) in dorsal, ventral and lateral views,  $\times 3$ .

2. Fragment of the sulcate part of pedicle valve (ZPAL Bp XXIII/1871) in anterior view,  $\times 3$ . For more explanations see pl. 21.



