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A contribution to the knowledge of Upper Devonian ammonoids from the Holy Cross Mts

ABSTRACT: The paper comprises a short review of previous paleontological studies on the Upper Devonian ammonoids from the Holy Cross Mts and some remarks concerning their occurrence and state of preservation. Two species, hitherto unknown in Poland, found in Frasnian deposits in the vicinity of Łagów, *Manticoceras bickense* (Wedekind) and *M. inversum* Wedekind, are described. In the species *Manticoceras bickense* (Wedekind) sexual dimorphism has been recognized.

INTRODUCTION

Upper Devonian ammonoids from the Holy Cross Mts have been the subject of several paleontological studies. Gürich (1896) was the first to describe and illustrate a few species. Dybczyński (1913) published an illustrated work on the ammonoid fauna of the Upper Famennian shales from Kielce; the assemblage was represented primarily by small specimens of inner whorls, previously pyritized, which have undergone limonitization. There, only very small forms were preserved in their entity, together with the body chambers. Dybczyński's assemblage was collected in excavations of the Sieklucki brickyard in operation at that time. These exposures have now been abandoned and are inaccessible. The same time, Sobolev (1913) published a well illustrated monograph on the Famennian ammonoids, based on a very rich material collected in the vicinity of Łagów, and in the pits of the Sieklucki brickyard at Kielce,

mentioned above. This material provided a basis for Sobolev's far reaching phylogenetic speculations and for the elaboration of an original and rather controversial systematics of the Ammonoidea, which has not been accepted, however, by other authors. In the thirties, the late J. Czarnocki, eminent explorer of the Holy Cross geology, gathered a large collection of Upper Devonian cephalopods; his work on clymenids is presently being prepared for a posthumous publication. A few examples of sexual dimorphism in Frasnian and Famennian ammonoids have been presented by Makowski (1962a, b). The papers by Kościelniakowska (1959, 1962) contain paleontological notes on some Frasnian ammonoids. The fauna described by her was collected in shales and in general was poorly preserved, a fact resulted in some erroneous identifications which have been corrected in a new study (Kościelniakowska 1967).

The paleontological works mentioned above and certain data from stratigraphical and regional studies testify to the fact that the Famennian ammonoids from the Holy Cross Mts are of frequent occurrence and in many cases perfectly preserved, and thus deserve broad and modern investigation.

On the contrary, the Frasnian ammonoids in the Holy Cross Mts are very rare and their state of preservation is significantly worse. Kościelniakowska (1967) described an assemblage of the Frasnian ammonoids from Wzdół, where together with a few species of the genus *Tornoceras*, also *Manticoceras cordatum* (Sandberger), *M. adorfense* Wedekind, *Ponticeras prumiense* (Steininger) and *Crickites expectatus* Wedekind were found. These species usually occur in the *Iβ* and *Iγ* zones; the first and last ones extend into the *Iδ* zone as well. Two species (sexual pair): *Manticoceras intumescens* (Beyrich) and *M. ammon* (Keyserling) from the Frasnian deposits of Płucki near Łagów, described by Makowski (1962b), also occur in the *Iβ* and *Iγ* zones. Both these species, were found at Płucki in the same limestone layer, some 20 cm thick. In the course of continuous exploitation, two other interesting species of the genus *Manticoceras* were found in this layer. These species are the subject of the present contribution.

SYSTEMATIC DESCRIPTION

Family **Gephyroceratidae** Frech, 1897

Genus **MANTICOCERAS** Hyatt, 1884

Manticoceras bickense (Wedekind, 1913)

(Pl. 1, Figs 1—3)

1913. *Gephyroceras bickense* Wedekind; Wedekind, p. 69, Pl. 6, Fig. 6.

1917. *Gephyroceras* (*Manticoceras*) *bickense* Wedekind; Wedekind, p. 124, Pl. 23, Fig. 6.

1920. *Manticoceras bickense* Wedekind; Paeckelmann, p. 117.

1931. *Manticoceras bickense* Wedekind; Matern, p. 68.

Material. — Twelve specimens completely preserved; among them a few with aperture preserved completely or almost completely. The state of preservation of specimens makes possible a supplement to the descriptions of previous authors.

Description. — The shell strongly evolute with whorls very slowly enlarging. Young whorls have a section slightly flattened in the plane of symmetry; so the height of the whorl is somewhat less than its width. Later, the outline of the whorl section becomes circular. The first whorl, *i.e.* protoconch, with large, swollen first chamber is perfectly seen in a number of the specimens. The first whorl ends with a fairly distinct constriction underlaid by internal callosity, observable in thin sections. On some specimens one more constriction is marked at the beginning of the second whorl, but it occurs already on the proper shell. The first whorl, ended by constriction and internal callosity, attains 1.2–1.3 mm in diameter, thus representing the largest known protoconchs of the ammonoids.

Growth lines, very well preserved on several specimens, have the following course: from the umbilical suture they form a concave arch that bends backward; later, on the ventro-lateral side, they form a distinct and somewhat sharp projection. On the ventral side they form a rather shallow sinus. However, it should be mentioned that the course of growth lines distinctly changes with the age of the individual. The course of these lines on the whorl of medium magnitude is straighter and the lateral projection and ventral sinus are weaker. The lateral projection becomes increasingly marked on the final body chamber. However, the final aperture has a form of lobe projected along the ventral side, the frontal margin of which is cut by weakly developed sinus.

In addition, it may be recorded that distinct and often deep impressions of labial callosities (internal constrictions) are evidently marked on the internal mould of the final body chamber. These constrictions occur mainly on the terminal half of the last whorl and the closer they approach the aperture the denser they become. On one specimen the aperture is preceded by three irregular constrictions lying near one another. These constrictions are the most distinctly marked on the ventral side, where they form a forward bent arch, and they usually disappear in the half of the whorl height, rarely reaching the umbilical suture.

The final body chamber is relatively very long and occupies more than 3/4 of the whorl. On the collected specimens the septal lines are very obscure and only one or two last lines, located at the base of body chamber, may be discerned on a few specimens. Moreover, the septal lines were obliterated in the course of the fossilization process as a result of strong recrystallization of the shell mould. It should be added that, hitherto, the septal line of this species was not exactly described, and the previous authors mentioned it (Wedekind 1913, Matern 1931) as not preserved or unsatisfactorily preserved (Paeckelmann 1921). The line observable on the collected specimens has a relatively simple course with lateral saddle gently bent, which brings it closer to the septal lines of such species as *Manticoceras gerolsteinense* (Steininger), *M. sandbergeri* (Wedekind), included together with the species under discussion to the genus *Gephyroceras* by Wedekind (1913). However, it has already been stated above, the observed lines are of the last septa of adult specimens and thus they might have undergone a secondary simplification, to some degree.

Sexual dimorphism. — Among twelve specimens with visible first chamber and first whorl, at the same time exhibiting features of the adult specimens, three specimens have 7 whorls and a diameter in the range of 15 to 17 mm. The other nine specimens have 6 whorls and a diameter in the range of 10 to 15 mm. These facts point to the A-type dimorphism (Makowski 1962a, b) which agrees with features observed in the case of other species belonging to the genus *Manticoceras*. Large and small forms do not exhibit any differences except in the number of

whorls. Lack of differentiation in dimensions of large and small forms is connected with very slow increase of height of whorls and, as a result, with slow increase of diameter of specimens. Consequently, the larger small forms attain the same diameter as some specimens of large forms.

Remarks. — The species *Manticoceras bickense* (Wedekind) displays some resemblance to *M. calculiforme* (Beyrich) in general shape of shell and whorl section, but distinctly differs from it by the absence of a furrow on the ventral side (cf. Wedekind 1913). Moreover, *M. bickense* differs from other representatives of the genus *Manticoceras* by its relatively very long body chamber and occurrence of labial callosities (internal constrictions), which do not occur in the other species of the genus. However, the other features important for systematics, such as the course of growth lines and the outline of septal line, confirm its assignment to the genus *Manticoceras*. Bogoslovsky (1969) has expressed the independent view that this species belongs to the genus *Archoceras*, and thus to other suborder (Anarcestina Müller & Furnish) than the genus *Manticoceras* (suborder Gephyroceratina Ruzhentsev), according to the systematics accepted by him.

Occurrence. — The species *Manticoceras bickense* (Wedekind) has hitherto been recorded only from Bicken, Oberscheld-Sessacker and Barmen in Germany, from the $I\beta$ to $I\delta$ zone (Wedekind 1913, Matern 1931).

At Piucki near Łagów the species was found together with *Manticoceras intumescens* (Beyrich), *M. ammon* (Keyserling) and *M. inversum* Wedekind, thus it does not overpass its previously mentioned stratigraphical range¹.

Manticoceras inversum Wedekind, 1913

(Pl. 1, Figs 4—6)

1913. *Manticoceras inversum* Wedekind; Wedekind, p. 60, Pl. 4, Figs 1—2.

1917. *Manticoceras inversum* Wedekind; Wedekind, p. 126, Pl. 22, Figs 1, 1a.

Material. — One specimen.

Description. — The shell flat, discoidal and with high whorls; umbiculus narrow and shallow. The shell section, up to 25 mm in diameter, lenticular in outline and sharp on the ventral side, where the distinct keel occurs. The keel disappears with further growth of the shell, and ventral side becomes rounded. Growth lines are preserved fragmentary, but their distinct projection forward on the lateral side and narrow sinus on the ventral side may be discerned. The septal line is characterized by a strongly developed lateral lobe.

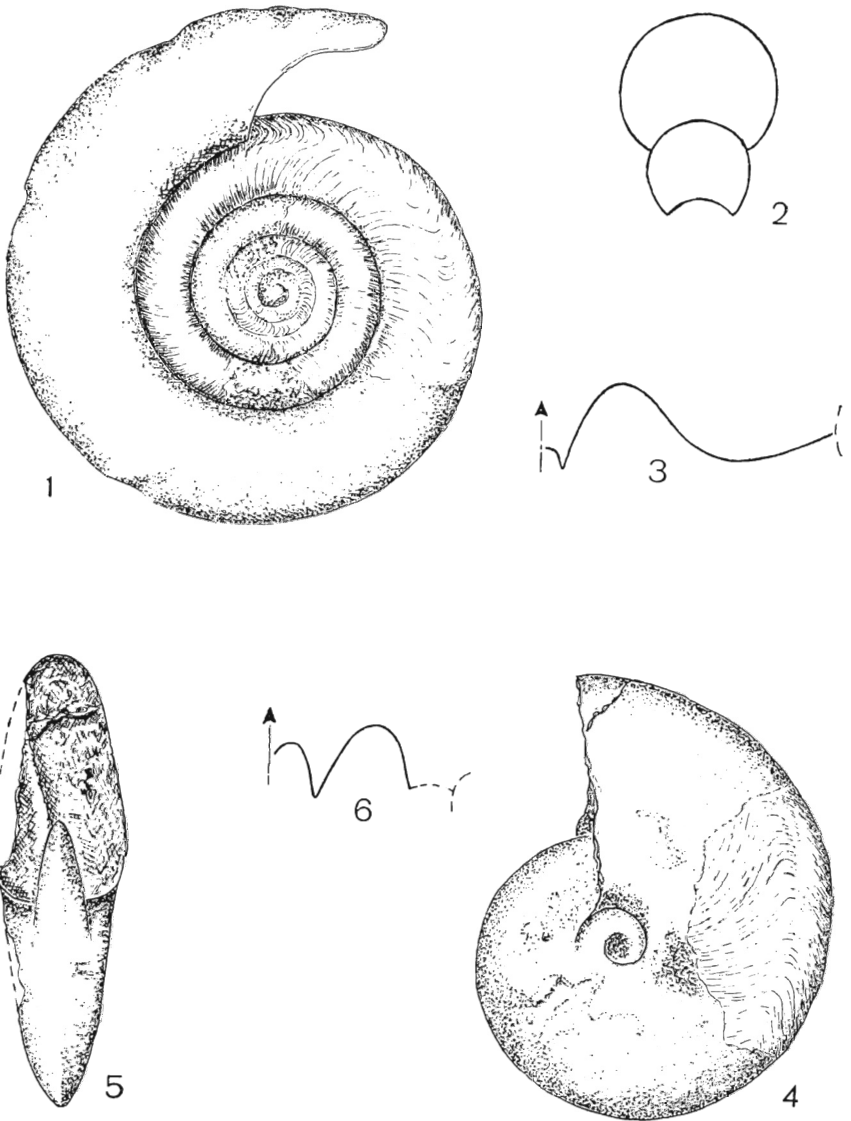
Remarks. — The collected specimen in all its features agrees with a description and illustrations presented by Wedekind (1913), who also mentioned that the growth lines were observed fragmentary although he did not give their description.

Occurrence. — The species *Manticoceras inversum* Wedekind has hitherto been known from Martenberg in Germany, in the $I\beta$ zone (Wedekind 1913, Matern 1931).

At Piucki near Łagów the species was found together with *Manticoceras intumescens* (Beyrich), *M. ammon* (Keyserling) and *M. bickense* (Wedekind).

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¹ According to Wolska (1967, p. 366), the conodonts from the *Manticoceras*-bearing layer at Piucki point to the *Palmatolepis triangularis* Zone (to $I\delta$ — to III). As discussed by Szulczewski (1971, p. 35) on the occurrence of *Palmatolepis linguiformis* Müller, the conodont assemblage recorded by Wolska at Piucki, is of a mixed character and contains faunal elements of older zones; the *Palmatolepis triangularis* time corresponds to a final deposition of the conodont-bearing sediment.



1 - 3 — *Manticoceras bickense* (Wedekind); 1 small form, lateral view $\times 4.5$, 2 section of whorls near to the aperture, adult specimen (small form), $\times 4.5$, 3 septal line of adult specimen (small form), at 11 mm diameter of the shell, $\times 14$; Frasnian, locality Płucki near Łagów.
 4 - 6 — *Manticoceras inversum* Wedekind; 4 lateral view, 5 anterior view, 6 septal line at 22 mm diameter of the shell; all figures $\times 2.25$; Frasnian, locality Płucki near Łagów.

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**PRZYCZYNEK DO ZNAJOMOŚCI AMONITÓW GÓRNODEWOŃSKICH
Z GÓR ŚWIĘTOKRZYSKICH**

(Streszczenie)

Artykuł zawiera krótki przegląd dotychczasowych opracowań paleontologicznych amonitów (nadrząd Ammonoidea) z górnego dewonu Gór Świętokrzyskich wraz z uwagami o ich występowaniu i stanie zachowania. Bliżej omówiono znaleziska amonitów frańskich, które należą tutaj do rzadkich skamieniałości i na ogół są źle zachowane. Z utworów franu odsłaniających się w Płuckach koło Łagowa opisano dwa nie znane dotychczas w Polsce gatunki goniatytów (por. Pl. 1): *Manticoceras bickense* (Wedekind) i *M. inversum* Wedekind, występujące w jednej warstwie razem z *M. intumescens* (Beyrich).

Gatunek *Manticoceras bickense* (Wedekind) reprezentowany jest w zbiorach autora przez kilkanaście dobrze zachowanych okazów, co pozwoliło na uzupełnienie dotychczasowych opisów tego gatunku i rozpoznanie w nim dymorfizmu płciowego.

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