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STANISŁAWA DUSZYŃSKA

DEVONIAN FORAMINIFERS FROM WYDRYSZÓW (HOLY CROSS MOUNTAINS)

Abstract. — Seven species of Foraminifera are described from the Couvinian of Wydryszów, four of which are considered new. These are: *Hyperammina couviniana*, *Ammodiscus similis*, *Reophax wydryszowiensis* and *Pseudopalmula polonica*.

INTRODUCTION

The foraminifers here described have been obtained from the Couvinian rocks of the Holy Cross Mountains (Góry Świętokrzyskie) at Wydryszów, situated within the Łysogóry Region. The present paper is a continuation of the writer's studies on Devonian foraminifers of Poland (1956). The investigations have been carried out at the Institute of Palaeozoology of the Polish Academy of Sciences, under the supervision of Professor Dr. Roman Kozłowski, to whom the most sincere thanks are due for his valuable suggestions.

J. Czarnocki (1950), when describing the Devonian outcrops of Wydryszów, refers them to the transition beds between the Lower and the Middle Devonian, and calls this stratigraphic unit Couvinian. He also gives a list of fossils occurring in Wydryszów, without, however, mentioning the microfossils.

M. Pajchel (1957) revises Czarnocki's opinion and refers the Wydryszów deposits to lower Middle Devonian, calling them Eifelian.

In the present paper the writer has accepted the term Couvinian (instead of the Eifelian) with reference to the lower Middle Devonian stage, following in this respect M. Lecompte (1955).

The Couvinian series in Wydryszów is developed in fairly diverse lithofacies: the base is built of sandstones overlain by dolomites, the upward succession being marls, mudstones, limestones intercalated by marls, marls alternating with mudstones, and mudstones at the top.

The marls are characterized by a rich microfaunal assemblage. Foraminifers described in this paper were recovered from these beds. The seven species that have been found are: *Reophax wydryszowiensis* n. sp. *Ammodiscus similis* n. sp., *Hyperammina couviniana* n. sp., *Pseudopalmula polonica* n. sp., *P. palmuloides* Cushman & Stainbrook, *P.* aff.

extremitata Bykova, and *Semitextularia thomasi* Miller & Carmer. *Semitextularia thomasi* has been also recorded from Czechoslovakia (V. Pokorný, 1951), as well as from the Upper Devonian of Iowa in the U. S. A. (A. K. Miller & A. M. Carmer, 1933), and from the Voronezh district in U. S. S. R. (E. V. Bykova, 1952). *Pseudopalmula palmuloides* is known from the Upper Devonian of Iowa (J. A. Cushman & A. M. Stainbrook, 1943), and from the Voronezh district, while *Pseudopalmula* aff. *extremitata* has been reported from Frasnian beds of the latter region (Bykova, 1952).

In Poland, Devonian foraminifers have, thus far, been found in Givetian brachiopod shales (S. Duszyńska, 1956) at the Grzegorzowice—Skały section and in the Couvinian marls of Wydryszów. When comparing the foraminiferal faunas of these two sections, it has been ascertained that three species occur in Grzegorzowice, i. e. *Semitextularia thomasi* Miller & Carmer, *Moravammina segmentata* Pokorný and *Textularia? proboscidea* Cushman & Stainbrook, while seven above mentioned species are recorded from Wydryszów. *Semitextularia thomasi* is common to both localities.

The Grzegorzowice specimens of these species are satisfactorily preserved, the greater part of tests, however, is filled in by iron oxides, hampering a more exact analysis of internal structure. The Wydryszów specimens are well preserved, allowing observations concerning the structure of the initial part of test. *Moravammina segmentata* Pokorný is known from the Givetian of Czechoslovakia, *Textularia? proboscidea* Cushman & Stainbrook — from the Frasnian of Iowa. Four out of the seven here described Wydryszów species have been recorded from younger stages of the Devonian (Givetian, Frasnian, Famennian). The genera *Hyperammina* and *Ammodiscus* have not, thus far, been reported from the Devonian. They were known as occurring in the Silurian (P. H. Dunn, 1942) and in the Carboniferous (H. J. Plummer, 1944) beds. Their occurrence, therefore, in the Devonian of Wydryszów fills up this gap.

The here described foraminifers have a varied wall structure. In *Reophax* the wall is made up of large angular quartz grains cemented by siliceous matrix. In *Ammodiscus* and *Hyperammina* the siliceous matrix cements very fine quartz grains. Treatment in hydrochloric acid has shown the lack of carbonates. Tests of *Semitextularia* and *Pseudopalmula*, on the other hand, are readily dissolved in hydrochloric acid. Their wall is made up of extremely fine carbonate particles, whose shape cannot be determined under the polarizing microscope.

All the described and figured specimens are housed at the Palaeozoological Laboratory of the Polish Academy of Sciences in Warsaw (numbered: Z. Pal. No. F. 293—299).

DESCRIPTIONS

Family **Hyperamminidae** Eimer & Fickert, 1899
Subfamily **Hyperammininae** Cushman, 1910
Genus *Hyperammina* Brady, 1878
Hyperammina couviniana n. sp.
(fig. 1)

Holotypus: Fig. 1b.
Stratum typicum: Couvinian marls.
Locus typicus: Wydryszów, Holy Cross Mountains, Poland.
Derivatio nominis: couviniana — occurring in the Couvinian.

Material. — 33 specimens, slightly damaged.

Dimensions of three specimens (in mm):

Specimens→	Z. Pal. No. F. 293/1 (holotype)	Z. Pal. No. F. 293/2	Z. Pal. No. F. 293/3
Length	0.70	0.73	0.90
Width	0.15	0.21	0.24

Description. — Test unilocular in the form of tubule, slightly curved, with both ends usually open. The supposed prolocular end is narrower,

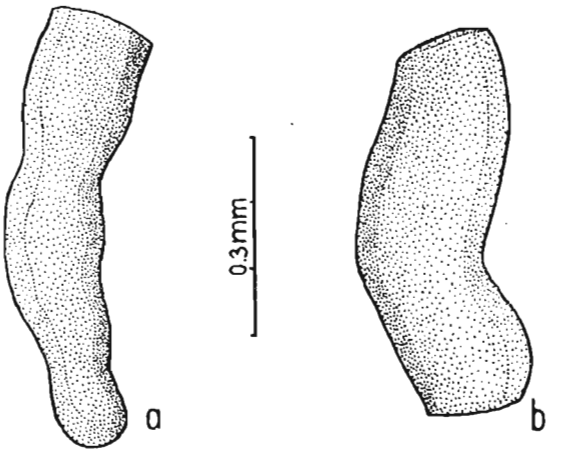


Fig. 1. — *Hyperammina couviniana* n. sp., *a* specimen with tubule swollen out in the adapical part, *b* holotype.

the other slightly broader, with large aperture. Initial part of the tubule rarely preserved. In one specimen the adapical end sealed up and with

a faint swelling, which, though not sharply delimited, possibly corresponds to the proloculus. Walls built up of very fine quartz grains, cemented by siliceous matrix.

Variability. — Tests commonly short, only very few slightly elongate, usually straight, only occasionally curved. The majority with surface smooth, only sometimes folded.

Remarks. — *Hyperammina couviniana* n. sp. resembles *H. elegantissima* Plummer, 1944, from the Upper Carboniferous, but *H. couviniana* n. sp. is shorter and considerably broader.

Family **Ammodiscidae** Rhumbler, 1895
Subfamily **Ammodiscinae** Cushman, 1910
Genus *Ammodiscus* Reuss, 1861

Ammodiscus similis n. sp.
(fig. 2)

Holotypus: Fig. 2.
Stratum typicum: Couvinian marls.
Locus typicus: Wydryszów, Holy Cross Mountains, Poland.
Derivatio nominis: similis — similar to *A. semiconstrictus*.

Material. — 17 specimens.
Dimensions of three specimens (in mm):

Specimens→	Z. Pal. No. F. 294/1	Z. Pal. No. F. 294/2	Z. Pal. No. F. 294/3 (holotype)
Length	0.30	0.42	0.64
Width	0.27	0.44	0.64
Thickness of test	0.07	—	—

Description. — Test arenaceous, round, flat, centrally slightly concave, consisting of a planispirally coiled tubule with 5-7 coils. Near the proloculus the coils are narrower, at the aperture they widen up and slightly overlap. Aperture rounded. Walls built of fine quartz grains and siliceous matrix.

Variability. — Variability noted in the shape of test is associated with mechanical deformation.

Remarks. — *Ammodiscus similis* n. sp. resembles *A. semiconstrictus* Waters, described from the Upper Carboniferous of Oklahoma (*fide* B. F. Ellis & A. R. Messina, Catalogue of Foraminifera). The features common to these two species are the fine grained structure of the wall,

the roundness of test and a slight enlargement of the coils nearer to the aperture. They differ in that *Ammodiscus similis* n. sp. is a small form, with fewer coils and without folds on the surface of test, very characteristic of *A. semiconstrictus*. The distribution of these two species differs too: *A. similis* n. sp. occurs in the Couvinian, while *A. semiconstrictus* is found in Middle Carboniferous rocks.

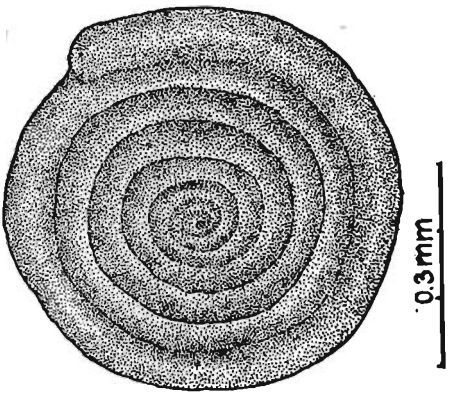


Fig. 2. — *Ammodiscus similis* n. sp., holotype.

Family **Reophacidae** Cushman, 1927
Subfamily **Reophacinae** Cushman, 1927
Genus *Reophax* Montfort, 1808
Reophax wydryszowiensis n. sp.
(fig. 3-4; pl. I, fig. 1-4)

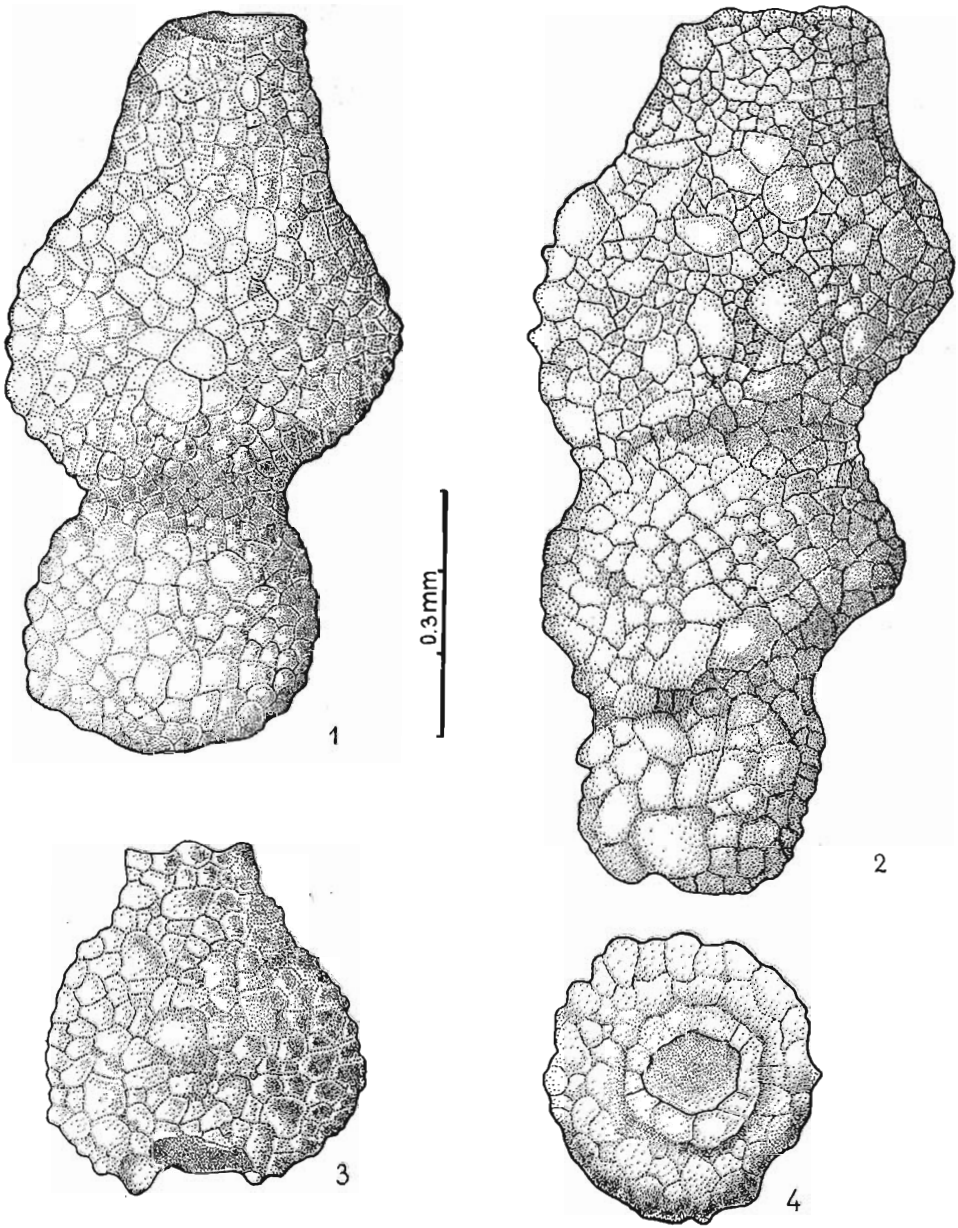
Holotypus: Pl. I, fig. 1.
Stratum typicum: Couvinian marls.
Locus typicus: Wydryszów, Holy Cross Mountains, Poland.
Derivatio nominis: wydryszowiensis — occurring in Wydryszów.

Material. — About 300 specimens.
Dimensions of three specimens (in mm):

Specimens→	Z.Pal.No.F 295/1	Z.Pal.No.F 295/2 (holotype)	Z.Pal.No.F 295/3
Length of test	0.61	0.70	0.81
Width of last chamber	0.30	0.36	0.36
Diameter of proloculus	0.21	0.24	0.18

Description. — Test arenaceous, uniserial, bi- or trilocular. Wall built of large angular quartz grains. Matrix siliceous, crystallized, microcrystalline, moderately abundant. Examination of thin sections shows that the thickness of test walls is equal to a single quartz grain. Size of grains ranges from 6 to 78 μ, with length from 24 to 48 μ. Arrangement of quartz grains is approximately parallel. Inner and outer surfaces of wall rough. Proloculus well developed, globose, from 0.03 to 0.34 mm in diameter. Chambers rounded, with volume increasing in the direction of aperture.

Pl. I



Reophax wydryszowiensis n. sp.

Fig. 1. Bilocular form, holotype.
Fig. 2. Trilocular form.
Fig. 3. Unilocular form (specimen broken off).
Fig. 4. Apertural view of test.

The chambers are in intimate contact with each other being joint by a deep suture. The last chamber is pear-shaped, the neck with a terminal circular aperture.

Variability. — Uni-, bi- or trilocular forms have been found in the Wydryszów material, their numbers being 40, 145 and 80 specimens respectively. This shows that bilocular specimens are the most frequent, those with 1 or 3 chambers being rarer. Tri- and bilocular tests represent normal specimens. Unilocular specimens result most likely from mechanical damage suffered by bi- and trilocular specimens. This inference is based on the observation that the unilocular specimens correspond well with the last chamber of the bi- and trilocular forms. In each there is a neck with terminal aperture. Opposite the aperture on the outer wall surface all the unilocular specimens display a scar in form of protruding remnants of a broken off chamber, or of a depression at the juncture of chambers. A diagram plotted on dimensions of 220 specimens is here given to confirm the statement that unilocular forms, provided with a neck and aperture, belong to the described species. This diagram shows the width/length ratio of the last chamber (uni-, bi- and trilocular forms). The diagram (fig. 4) is uniapical, indicating that all the measured specimens are conspecific.

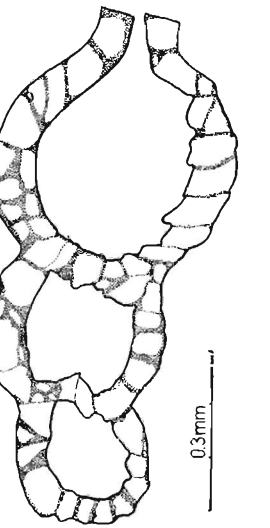


Fig. 3. — *Reophax wydryszowiensis* n. sp., thin section.

Important differences of dimensions of embryonal chambers of bi- and trilocular forms have been noted in the studied material. The embryonal chamber of bilocular forms is more than three times the size of that chamber in trilocular forms. The size of proloculus in bilocular tests is from 0.13 to 0.34 mm, whereas in trilocular ones it is from 0.03 to 0.18 mm. This is probably a case of dimorphism: forms with a large proloculus are most likely referable to megalospheric individuals, those with a small proloculus — to microspheric individuals.

Remarks. — *Reophax wydryszowiensis* n. sp. has been found in the Wydryszów Couvinian beds only. Genus *Reophax* has not thus far been recorded earlier than from the Carboniferous. *Reophax wydryszowiensis* n. sp. strongly resembles *R. arenatus* (Cushman & Waters) from the Upper Carboniferous (Plummer, 1944). Both these species have many common features consisting: in the restricted number of chambers, i. e. two, three, rarely four; in dimensions of chambers increasing with individual growth;

in the last chamber pear-shaped with aperture on the neck; the sutures and proloculus distinct. In both cases the test is rough, coarse-grained, weakly cemented. The differences consist in size of the first chambers: in *Reophax wydryszowiensis* n. sp. it is considerably smaller, with diameter from 0.03 to 0.18 mm, while in *R. arenatus* the diameter is from 0.15 to 0.30 mm.

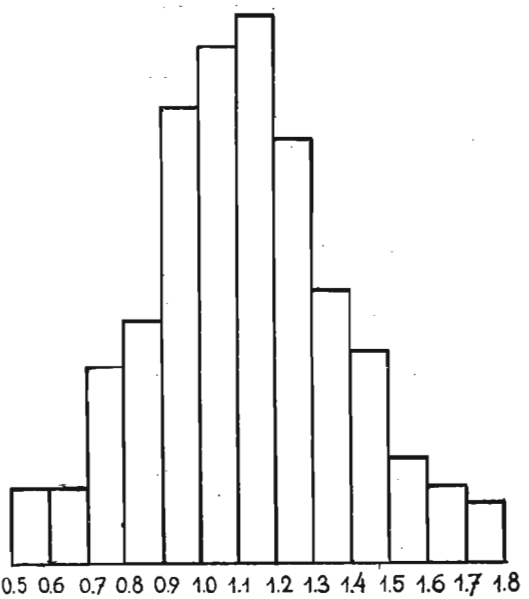


Fig. 4. — *Reophax wydryszowiensis* n. sp., diagram showing the width/length ratio of the last chamber (of uni-, bi- and trilocular forms); 0.2 cm = 1 individual.

Family **Semitextulariidae** Pokorný, 1956
Genus *Semitextularia* Miller & Carmer, 1933
Semitextularia thomasi Miller & Carmer, 1933
(pl. II)

1933. *Semitextularia thomasi* Miller & Carmer n. sp.; A. K. Miller & A. M. Carmer, Devonian Foraminifera..., p. 428, pl. 50, fig. 10 a-e.

1943. *Semitextularia thomasi* Miller & Carmer; J. A. Cushman & A. M. Stainbrook, Some Foraminifera..., p. 77, pl. 13, fig. 24-28.

1951. *Semitextularia thomasi* Miller & Carmer; V. Pokorný, The Middle Devonian Foraminifera..., p. 19, fig. 15.

1952. *Semitextularia thomasi* Miller & Carmer; E. V. Bykova, Foraminifery devona..., p. 33.

1955. *Semitextularia thomasi* Miller & Carmer; M. J. Copeland & R. W. Kesling. A new occurrence..., p. 106, pl. 1, fig. 1-13.

1956. *Semitextularia thomasi* Miller & Carmer; S. Duszyńska, Foraminifers from the Middle Devonian..., p. 25, pl. 1, fig. 1-9.

Material. — The Wydryszów material containing about 150 specimens permits additional data to be ascertained concerning species *Semitextularia thomasi* (Duszyńska, 1956). The collected tests are in an excellent state of preservation, clearly showing the arrangement of chambers.

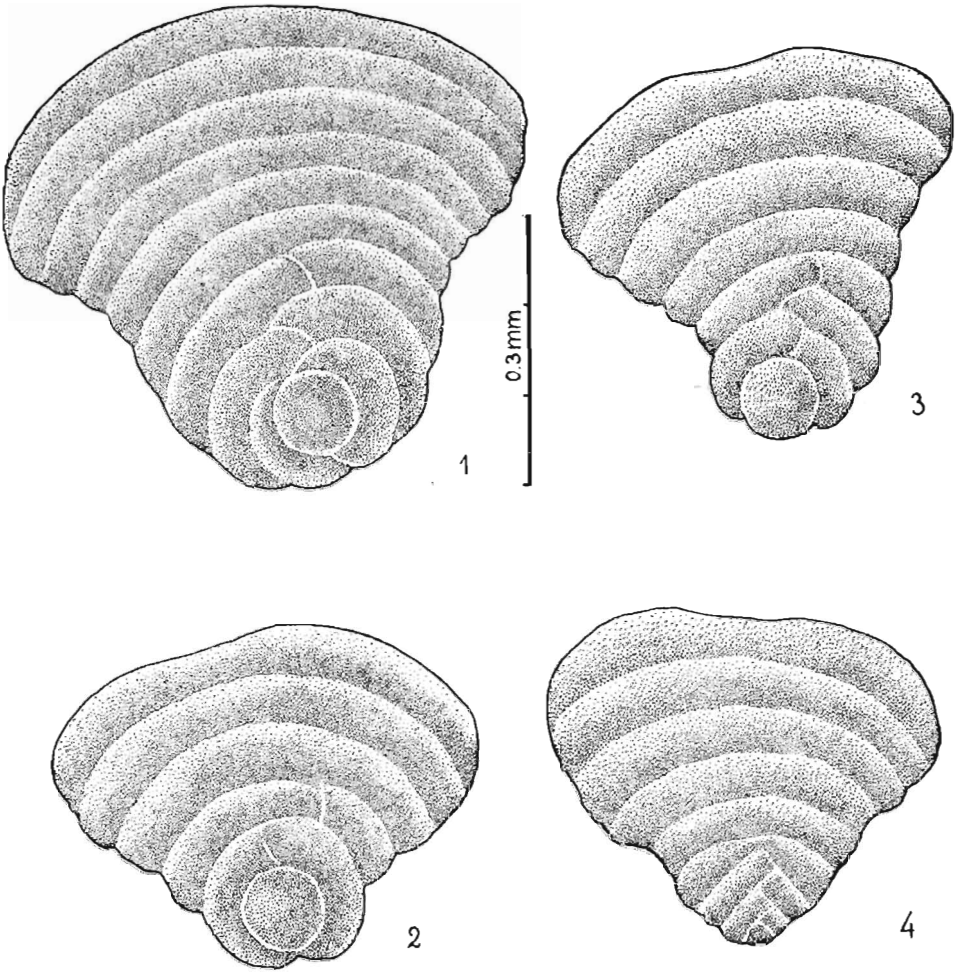
Dimensions of three specimens (in mm):

Specimens→	Z.Pal.No.F 296/1	Z.Pal.No.F 296/2	Z.Pal.No.F 296/3
Length	0.27	0.36	0.45
Width	0.30	0.36	0.45

Description. — Test fan-shaped, flattened, in the initial part realizing first the biserial and then the uniserial arrangement of chambers. Wall built of extremely fine homogeneous particles of calcium carbonate, grey coloured in polarized light. *Semitextularia thomasi* from Wydryszów displays strong individual variations, mostly concerning the structure of the initial part of test. Specimens occur with a large, round proloculus surrounded by several biserial and later uniserial chambers. There are also specimens with the proloculus so completely surrounded by chambers as to appear enclosed within a ring. Most frequently, however, the proloculus is fairly large and round, the adjacent biserial chambers forming a semicircle only so that the lower part of the proloculus is not surrounded by the chambers. Specimens have also been observed with a small, barely detectable proloculus, whose shape it is difficult to define. In these forms there occur more biserial chambers (up to 8), than uniserial (up to 6). On this evidence, it may be supposed that we are dealing here with dimorphism: in microspheric forms the proloculus is extremely small, while in megalospheric ones it is large, round, from 0.03 to 0.07 mm in diameter.

Remarks. — The Wydryszów specimens of *Semitextularia thomasi* closely resemble those from Grzegorzowice, but their state of preservation is different. The Wydryszów specimens are better preserved, with readily discernible arrangement of chambers, free of impurities. The majority of the Grzegorzowice specimens were filled in by iron oxides which made difficult their examination in transmitted light.

Pl. II



Semitextularia thomasi Miller & Carmer

Fig. 1-3. Megalospheric forms. Fig. 2. Proloculus in a closed ring. Fig. 3. Proloculus with lower part not concealed by chambers.
Fig. 4. Microspheric form.

Miller and Carmer (1933) were the first to describe this species from Devonian beds of Iowa. The presence of the adapical part, planispirally coiled, was by those authors regarded as the most sound evidence for their classification. As mentioned in the diagnosis, they based their observations on one specimen on which they referred this species to the subfamily Spiroplectammininae, family Textulariidae.

In 1955, M. J. Copeland and R. W. Kesling described this species from the Middle Devonian of Wanakah (U. S. A., N. Y.). These writers did not, apparently, have at their disposal sufficiently adequate material, since they were not able to make accurate observations regarding the arrangement of chambers in the initial part of test. They expressed some doubts with respect to the statement of Miller and Carmer concerning the planispiral coiling of the adapical part of test. Hence they are of the opinion that *Semitextularia* does not belong to the subfamily Spiroplectammininae, as had been supposed by Miller and Carmer, but to that of Textulariinae.

Pokorný (1956), after discussing the genera *Semitextularia, Pseudopalmula* and *Paratextularia,* arrived at the conclusion that their assignment to the family of Textulariidae is incorrect, inasmuch as spiral coiling of the adapical part — which is a feature of marked significance — has not been noted in these genera. According to Pokorný, a biserial arrangement of chambers is a feature common to all these forms. He believes that the evolution of such forms may have occurred "in several phylogenetic lines from *Textularia* to *Cribrostomum*" (1956, p. 284). On evidence of features common to these three genera, Pokorný establishes the new family of Semitextulariidae to include all of them.

Neither do the present writer's observations on *Semitextularia thomasi* confirm those made by Miller and Carmer. Although the Wydryszów specimens display strong individual variation concerning structure of the initial part of test, yet, in spite of the large numbers of examined specimens, she did not encounter a typically planispiral form. Hence, she places this species in the family Semitextulariidae Pokorný, 1956.

Occurrence. — The holotype of this species has been described from the Upper Devonian of Iowa, U. S. A. Later, *Semitextularia thomasi* was recorded from the Givetian of Wanakah, U. S. A. (N. Y.), the Upper Devonian of the Voronezh district in U.S.S.R., and from the Givetian of Čelechovice in Czechoslovakia. In Poland it has been reported from the Upper Givetian section of Grzegorzowice—Skały, and from the Couvinian of Wydryszów.

Subfamily **Textulariinae** Schultze, 1854
Genus *Pseudopalmula* Cusman & Stainbrook, 1943
Pseudopalmula palmuloides Cushman & Stainbrook, 1943
(fig. 5 i 6)

1943. *Pseudopalmula palmuloides* Cushman & Stainbrook; J. A. Cushman & A. M. Stainbrook, Some Foraminifera..., p. 78, pl. 13, fig. 35-37.
1952. *Pseudopalmula palmuloides* Cushman & Stainbrook; E. V. Bykova, Foraminifery devona..., p. 49, pl. 12, fig. 11; pl. 13, fig. 4.

Material. — 20 specimens.
Dimensions of three specimens (in mm):

Specimens→	Z.Pal.No.F 297/1	Z.Pal.No.F 297/2	Z.Pal.No.F 297/3
Length	0.21	0.30	0.39
Width	0.21	0.18	0.24

Description. — Test triangular, biserial, flattened. Chambers 4 to 14, strongly elongate, slightly curved, reaching the base of test. Near the proloculus chambers short, each successive pair longer, the two last being the longest. Proloculus round, readily discernible, sutures slightly depressed. Aperture at end of last chamber not well visible. Walls built of cryptocrystalline calcite.

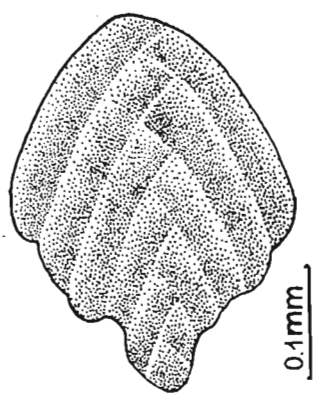


Fig. 5. — *Pseudopalmula palmuloides* Cushman & Stainbrook, typical specimen.

Variability. — It consists in variable elongation of chambers connected with different degree of their curvature. Some specimens are markedly elongate, with the chambers attaining the base of the test. In a few the adapical part is pushed forward. Some of the tests have shorter, less curved chambers, with the proloculus and the first chambers extending farther down, so that the adapical part of test is pointed. Some specimens display slight asymmetry, the chambers on one side being longer than those on the other. The proloculus is not always equally conspicuous.

Remarks. — The specimens described from Poland differ from the holotype in slightly smaller dimensions.

Occurrence. — The holotype of this species was described from the Upper Devonian of Iowa, U.S.A. It also occurs in the Devonian of the Voronezh district in U.S.S.R.

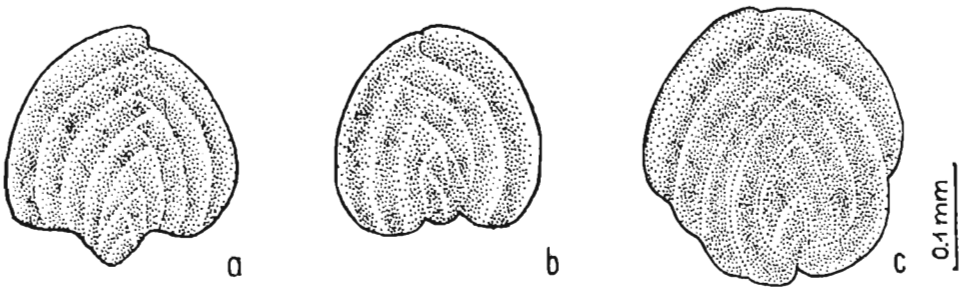


Fig. 6. — *Pseudopalmula palmuloides* Cushman & Stainbrook, *a-c* specimens showing the range of individual variations.

Pseudopalmula polonica n. sp.
(fig. 7)

Holotypus: Fig. 7c.
Stratum typicum: Couvinian marls.
Locus typicus: Wydryszów, Holy Cross Mountains, Poland.
Derivatio nominis: polonica — first described from Poland.

Material. — 3 specimens.
Dimensions of three specimens (in mm):

Specimens→	Z.Pal.No.F 298/1 (holotype)	Z.Pal.No F 298/2	Z.Pal.No.F 298/3
Length	0.59	0.47	0.31
Width	0.51	0.43	0.23

Description. — Test triangular, with rounded corners, biserial, flattened, consisting of 8 to 11 elongate and slightly curved chambers. Each chamber subdivided by transverse partition into a number of secondary chamberlets. Width of particular chamberlets about equal to thickness of transverse partition. Outer surface of test distinctly transversely striated. Near the proloculus the chambers short, elongating towards aperture. Sutures somewhat depressed. Proloculus round, of large dimensions (0.11 to 0.07 mm). Aperture terminating the last chamber not very conspicuous. Walls built of cryptocrystalline calcite.

Variability. — One specimen differs somewhat from the other two. It is the smallest, quadrilocular only, while its proloculus is large, measuring 0.11 mm, that is one-third of the whole size of the specimen. It appears to be a young individual, as suggested by its shape, which corresponds well with chamber arrangement in the adapical part of mature forms.

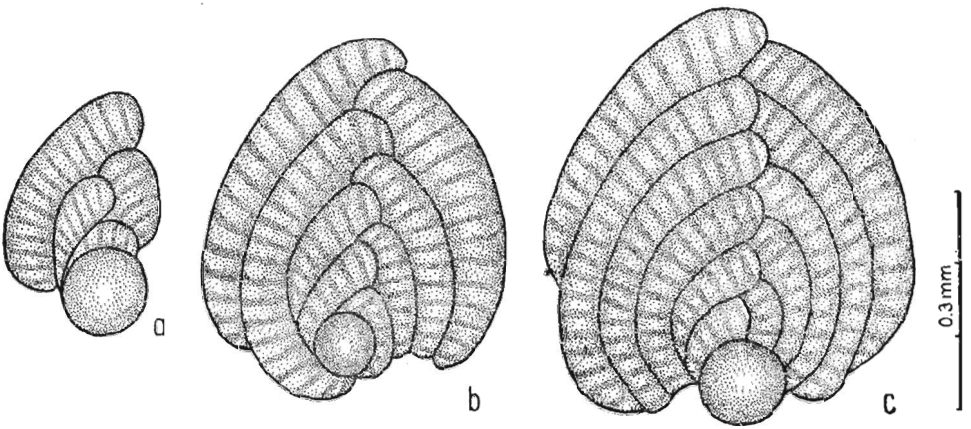


Fig. 7. — *Pseudopalmula polonica* n. sp., *a* juvenile form, *b-c* mature forms.

Remarks. — *Pseudopalmula polonica* n. sp. resembles *P. palmuloides* Cushman & Stainbrook, 1934, but is considerably larger, having longer and broader chambers. Each chamber is subdivided by partitions into smaller chamberlets, so that the surface of test is transversely striated, which cannot be ascertained in *P. palmuloides*.

Pseudopalmula aff. *extremitata* Bykova, 1952
(fig. 8)

1952. *Pseudopalmula extremitata* Bykova; E. V. Bykova, Foraminifery devona..., p. 46, pl. 13, fig. 3.

Material. — 58 specimens.

Dimensions of three specimens (in mm):

Specimens→	Z.Pal.No.F 299/1	Z.Pal.No.F 299/2	Z.Pal.No.F 299/3
Length	0.18	0.27	0.33
Width	0.15	0.19	0.15
Thickness of test	from 0.07 to 0.10		—
Thickness of test wall	0.02		—

Description. — Test outline like an oval wedge, biserial, elongate. Chambers 5 to 7, fairly high, short, uniformly increasing towards aperture, slightly convex. Sutures somewhat depressed. In thin sections the chambers are semicircular and mutually parallel throughout a series, but at an obtuse angle in relation to the next series. Medially, the chambers alternate and slightly overlap. The basal aperture slit-like. Walls of fine crystalline calcite.

Variability. — Variability is mainly that of the shape of test. In some specimens the chambers are more numerous and more elongate,

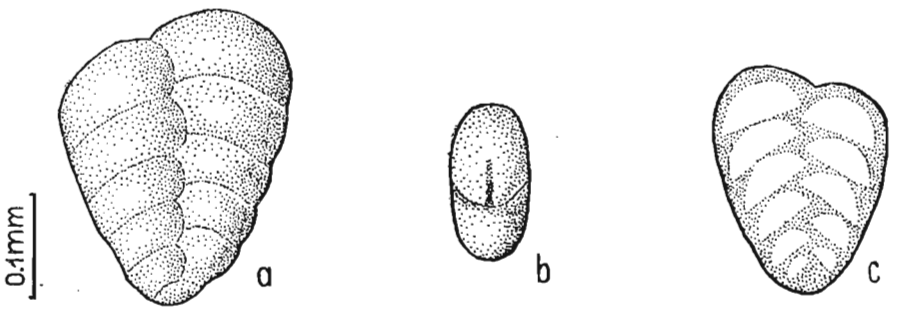


Fig. 8. — *Pseudopalmula* aff. *extremitata* Bykova, *a* typical specimen, *b* surface of aperture, *c* microscopic thin section.

while in others broader and less numerous. Certain forms are of nearly uniform width throughout their length; in others the chambers of the adapical part are shorter, those of the apical being markedly longer. They are shaped like an elongate triangle with rounded angles.

Remarks. — *Pseudopalmula* aff. *extremitata* resembles *P. extremitata* Bykova. Their diagnostic feature is the smaller number of chambers in the former species and a different type of aperture: Genus *Pseudopalmula* was established by Cushman and Stainbrook (1943). In their diagnosis of that genus they state that the aperture is single. In her paper published in 1952 Bykova describes numerous new species of that genus from Frasnian beds in the Voronezh district (U.S.S.R.). The material available to her was fairly abundant, but she states to have been unable to find a slit-like aperture. Under strong magnification she succeeded to detect an assemblage of minute apertural foramina.

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STANISŁAWA DUSZYŃSKA

OTWORNICE DEWOŃSKIE Z WYDRYSZOWA (GÓRY ŚWIĘTOKRZYSKIE)

Streszczenie

Autorka opisuje 7 gatunków otwornic, znalezionych w osadach marglistych kuwinu, w miejscowości Wydryszów. Występują tu 4 nowe gatunki: ***Hyperammina couviniana, Ammodiscus similis, Reophax wydryszowiensis*** i ***Pseudopalmula polonica***. Dalsze 3 gatunki znane są już z literatury: ***Semitextularia thomasi*** występuje w żywecie Polski w profilu Grzegorzowice-Skały i w Czechosłowacji, w dewonie górnym — w Ameryce, w stanie Iowa, oraz w ZSRR, w rejonie woroneżskim; ***Pseudopalmula palmuloides*** znana jest z górnego dewonu Ameryki, w stanie Iowa, jak

również w ZSRR, w rejonie woroneżskim; *Pseudopalmula* aff. *extremitata* znana jest z franu ZSRR, w rejonie woroneżskim.

Otwornice dewońskie na terenie Polski były znane dotychczas tylko z łupku brachiopodowego w profilu Grzegorzowice-Skały, gdzie stwierdzono 3 gatunki; w Wydryszowie natomiast występuje ich 7. Są one lepiej zachowane, a mianowicie nie są wypełnione tlenkami żelaza, co ułatwia badania.

Spośród tych siedmiu gatunków, opisanych z Wydryszowa, cztery były znane w dewonie, lecz w piętrach młodszych (żywet, fran, famen). Pozostałe trzy są nowe i należą do rodzajów: *Hyperammina, Ammodiscus* i *Reophax*. Rodzaje *Hyperammina* i *Ammodiscus,* których dwa gatunki opisano w niniejszej pracy, dotychczas nie były cytowane z dewonu. Znano je z syluru, a następnie od karbonu wzwyż. Znalezienie wymienionych rodzajów w dewonie Wydryszowa wypełnia zatem tę lukę. Także znalezienie *Reophax* w kuwinie pozwala na przesunięcie dolnej granicy występowania tego rodzaju, znanego dotychczas dopiero od karbonu.

Poniżej podane są diagnozy nowych gatunków.

Hyperammina couviniana n. sp.

(fig. 1)

Skorupka jednokomorowa w postaci rurki, nieco wygiętej, zwykle otwartej na obu końcach. Jeden koniec jest trochę węższy, drugi zaś nieco szerszy. Ujście znajduje się na całej średnicy rurki. Początek rurki jest najczęściej nie zachowany. Koniec adapikalny jednego okazu jest zamknięty i nieco rozdęty; być może, że rozszerzenie to odpowiada prolokulusowi, chociaż nie jest ono wyraźnie odgraniczone. Ściany zbudowane są z bardzo drobnych ziarnek kwarcu i spoiwa krzemionkowego.

Ammodiscus similis n. sp.

(fig. 2)

Skorupka zlepieńcowata okrągła, płaska, pośrodku nieco wklęsła, utworzona przez rurkę zwiniętą planispiralnie, tworzącą 5-7 skrętów. Przy prolokulusie skręty są węższe, przy ujściu zlekka się rozszerzają i trochę zachodzą na siebie. Ujście zaokrąglone. Ścianki zbudowane są z drobnych ziarnek kwarcu i lepiszcza krzemionkowego.

Reophax wydryszowiensis n. sp.

(fig. 3 i pl. I)

Skorupka zlepieńcowata, jednoseryjna, dwu- lub trójkomorowa. Ścianka zbudowana z dużych kanciastych ziarnek kwarcu bez śladów obtoczenia. Lepiszcze krzemionkowe, przekrystalizowane, mikrokrystaliczne, niezbyt obfite. Badania szlifów wykazały, że grubość ścianek skorupki równa jest grubości pojedynczego ziarna kwarcu. Wielkość poszczególnych ziarn jest różna, waha się w granicach od 6 do

78 μ, a długość — od 24 do 47 μ. Ziarna kwarcu położone są względem siebie mniej lub więcej równolegle. Powierzchnia wewnętrzna i zewnętrzna ścianki jest chropowata. Prolokulus kulisty, o średnicy 0,03—0,34 mm. Komory są zaokrąglone, o wzrastającej w kierunku ujścia objętości. Poszczególne komory stykają się bezpośrednio ze sobą, łącząc się głębokim szwem. Ostatnia komora ma kształt gruszkowaty i szyjkę z terminalnym zaookrąglonym ujściem.

Pseudopalmula polonica n. sp.
(fig. 7)

Skorupka trójkątna o zaokrąglonych narożach, dwuseryjna, spłaszczona, złożona z 8-11 komór mocno wydłużonych, trochę wygiętych. Każda komora jest podzielona poprzecznymi przegrodami na szereg wtórnych komórek. Szerokość poszczególnej komórki jest prawie równa grubości przegrody poprzecznej. Zewnętrzna powierzchnia skorupki jest wyraźnie poprzecznie prążkowana. Komory przy prolokulusie są krótkie, w kierunku ujścia wydłużają się. Szwy nieco wgłębione. Prolokulus okrągły, duży, o średnicy 0,11 do 0,07 mm. Ujście na końcu ostatniej komory, niezbyt widoczne. Ścianki zbudowane są z kryptokrystalicznego kalcytu.

OBJAŚNIENIA DO ILUSTRACJI

Fig. 1 (p. 73)

Hyperammina couviniana n. sp., *a* okaz z rozdętą rurką w części adapikalnej, *b* holotyp.

Fig. 2 (p. 75)

Ammodiscus similis n. sp., holotyp.

Fig. 3 (p. 77)

Reophax wydryszowiensis n. sp., szlif mikroskopowy.

Fig. 4 (p. 78)

Reophax wydryszowiensis n. sp.

Wykres stosunku szerokości ostatniej komory (form jedno-, dwu i trójkomorowej) do jej długości; 0,2 cm = 1 osobnik.

Fig. 5 (p. 82)

Pseudopalmula palmuloides Cushman & Stainbrook, okaz typowy.

Fig. 6 (p. 83)

Pseudopalmula palmuloides Cushman & Stainbrook, *a-c* okazy wykazujące zmienność osobniczą.

Fig. 7 (p. 84)

Pseudopalmula polonica n. sp., *a* forma młodociana, *b-c* formy dorosłe.

Fig. 8 (p. 85)

Pseudopalmula aff. *extremitata* Bykova, *a* okaz typowy, *b* powierzchnia ujściowa, *c* szlif mikroskopowy.

Pl. I (p. 76)

Reophax wydryszowiensis n. sp.

Fig. 1. Forma dwukomorowa, holotyp. Fig. 2. Forma trójkomorowa. Fig. 3. Forma jednokomorowa (okaz ułamany). Fig. 4. Okaz od strony ujścia.

Pl. II (p. 80)

Semitextularia thomasi Miller & Carmer

Fig. 1-3. Formy megalosferyczne. Fig. 2. Prolokulus w zamkniętym pierścieniu. Fig. 3. Prolokulus w dolnej części nie osłonięty przez komorę. Fig. 4. Forma mikrosferyczna.

СТАНИСЛАВА ДУШИНЬСКА

ДЕВОНСКИЕ ФОРАМИНИФЕРЫ ВЫДРЫШОВА (СВЕНТОКРЖИСКИЕ ГОРЫ)

Резюме

Описываются семь видов фораминифер, найденных в мергелистых отложениях кувина, в местности Выдрышув. Девонские фораминиферы известны были в Польше единственно из брахиоподового сланца профиля Гржегоржовице-Скалы, в котором найдены были только три вида. В настоящей работе описываются четыре новых вида: *Hyperammina couviniana* n. sp., *Ammodiscus similis* n. sp., *Reophax wydryszowiensis* n. sp. и *Pseudopalmula polonica* n. sp. Три вида известны уже в литературе: *Semitextularia thomasi* известна из девона Польши, Чехословакии, СССР и Америки; *Pseudopalmula palmuloides* — из Америки и СССР, а *Pseudopalmula* aff. *extremitata* — из франа СССР. Среди описанных семи видов из Выдрышова, четыре были известны в более молодых слоях девона (живет, фран, фамен). Остальные три вида являются новыми и относятся к родам *Hyperammina*, *Ammodiscus* и *Reophax*. Роды *Hyperammina* и *Ammodiscus*, два вида которых описаны в настоящей работе, не приводились до сих пор в литературе по девону. Известны они были в силуре, а затем — начиная с карбона и выше. Следовательно, открытие вышеприведенных родов в девоне Выдрышова пополняет существующий пробел. Равным образом открытие *Reophax* в кувине дает возможность продвинуть нижнюю границу стратиграфического распространения этого рода, известного до сих пор только начиная с карбона.
