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LOWER EIFELIAN OSTRACODS FROM THE WEST ŚWIĘTOKRZYSKIE MOUNTAINS (POLAND)

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Twenty-two benthic ostracod species have been described from the lower Eifelian *Partitus* Zone, the *Chimaerothyris dombrowiensis* local brachiopod biozone. The species described by Gürich (1896) and Kummerow (1953) from the lower Eifelian of Dąbrowa have been revised and the following new ones described: *Sulcatiella pusilla*, *Evlanella kielcensis*, *Jefina larga*, *Cytherellina clara*, *Orthocypris magna*, *Bairdiacypris subbajasi* and *Cryptophyllus nidae*. Neotypes of the following species have been designated: *Rishona obliqua* (Gürich), *Poloniella devonica* Gürich, *Evlanella humiliformis* (Gürich) and *Bythocyproidea polaris* (Gürich).

Key words: Ostracoda, lower Eifelian, stratigraphy, Poland.

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INTRODUCTION

The present paper describes the most significant and common ostracods from the lower Eifelian of Dąbrowa [1] and Zbrza (fig. 1), and revises the species described by Gürich (1896) and Kummerow (1953). Most of the Gürich collection has been reconstructed; the original collection was destroyed during the Second World War.

Gürich described from Dąbrowa (1896: fig. 1, 2) eight new ostracod species and figured four of them: *Bythocypris polaris*, *Poloniella devonica*, *Primitia ornatissima*, *P. plana*, the remaining species i.e. *P. obliqua*, *P. humiliformis*, *P. lentiformis* and *P. fabaeformis* were briefly described without any illustrations. The present author identified two of the latter species: *Primitia obliqua* and *Primitia humiliformis*, but failed to identify two other ones — *Primitia lentiformis* Gürich and *P. fabaeformis* Gürich.

[1] locality name Dąbrowa is pronounced in Polish language as "Dombrowa"; the latter spelling was used by Gürich 1896, Kummerow 1953 and Adamczak 1968, 1976 in naming horizons, beds ets. In recent geological literature spelling Dąbrowa is in an usual usage.

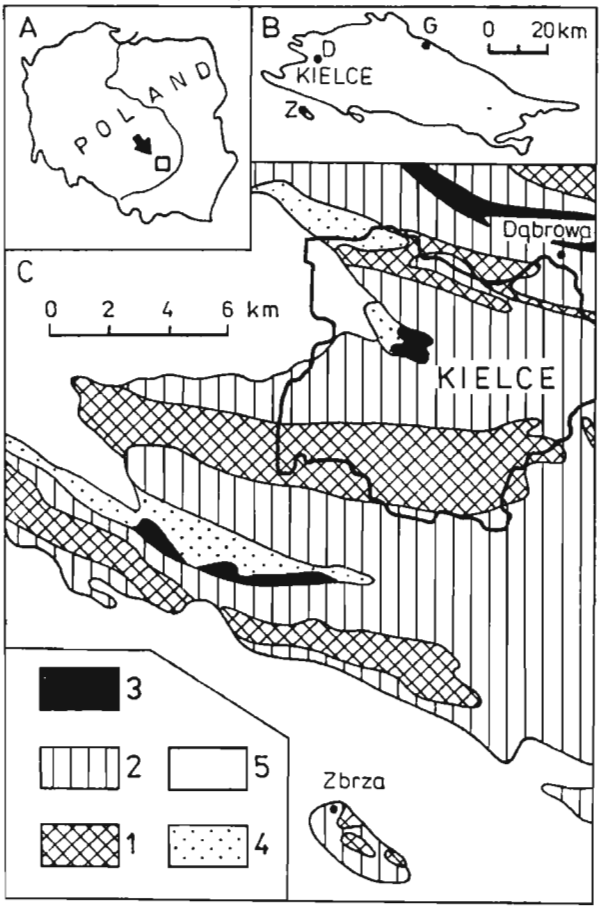

Fig. 1. Location of the sites considered: *A* situation of Świętokrzyskie Mts (the Holy Cross Mts), *B* Paleozoic of the Świętokrzyskie Mts. with sites (DGZ) marked, *C* generalized geology of the west of the Świętokrzyskie Mts. *1* Cambrian, Ordovician, Silurian; *2* Devonian; *3* Carboniferous, *4* Permian; *5* Mesozoic, *D* Dąbrowa, *G* Grzegorzowice, *Z* Zbrza.

As holotypes have been lost, neotypes of the following species have been designated: *Rishona obliqua* (Gürich), *Poloniella devonica* Gürich, *Evlanella humiliformis* (Gürich) and *Bythocyproidea polaris* (Gürich).

Kummerow (1953) described three new ostracod species from the same beds: *Jonesina polonica* Kummerow, *Aparchites pentagonalis* Kummerow, *Hallinella rhenana* Kummerow (partly under the name *Leptoprimitia plana* (Gürich)). The present author has found all Kummerow's species in the material from Dąbrowa.

Most ostracods here described from Dąbrowa, as well as Gürich's and Kummerow's material, come from limestones of the dump of "Agricola" shaft from the Włodzimierz iron-ore mine (closed before Gürich's times). A part of the material comes from the oblique borehole Dąbrowa D5, from below the bottom of "Agricola" shaft (fig. 2, 4).

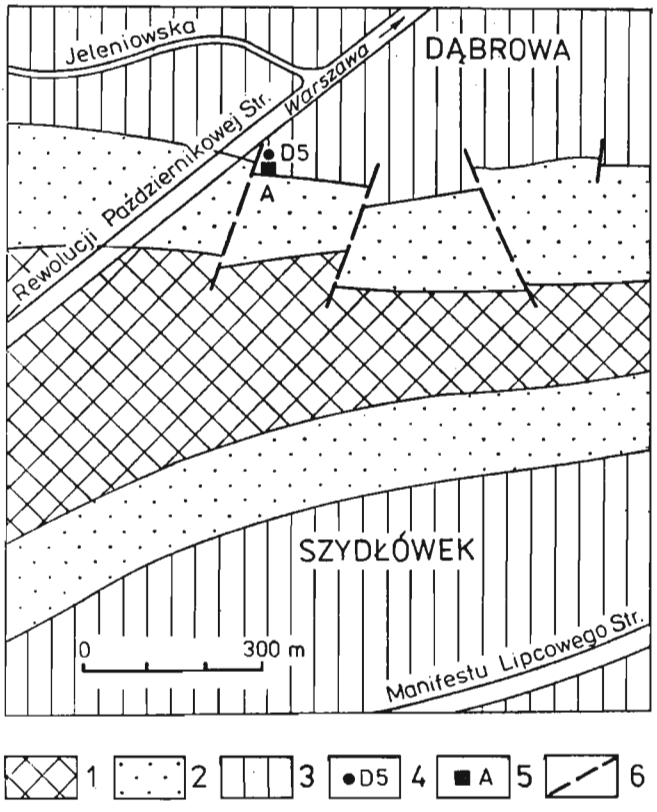

Fig. 2. Geology of the north-est part of Kielce (Czarnocki 1956 and Serwan 1968). *1* Silurian; *2* Lower Devonian, *3* Middle Devonian; *4* borehole Dąbrowa D5; *5* shaft "Agricola" in the mine "Włodzimierz" at Dąbrowa; *6* faults.

The ostracod-yielding limestones, known as Dąbrowa horizon (*sensu* Gürich 1896), are a rock sequence 5 m thick, at the top of over 30 m thick rock complex called Dąbrowa beds (*sensu* Czarnocki 1951). The beds lie between the sandstones of the upper Emsian and dolomites of the lower Eifelian. Both, Dąbrowa horizon and Dąbrowa beds, are local-range and informal lithostratigraphic units.

From limestones of the Dąbrowa horizon, apart from the ostracods, also other microfauna have been described (Pusch 1833; Gürich 1896; Studencka 1983; Tarnowska and Malec 1987). The vertical range of a brachiopod *Chimaerothyris dombrowiensis* (Gürich) determines a biostratigraphic unit in the lower Eifelian, i.e. *Chimaerothyris dombrowiensis* Zone (*sensu* Studencka 1983) of a local range in the Świętokrzyskie Mts.

From among twenty five ostracod taxa recognized in limestones of Dąbrowa horizon, seventeen species have been described in the present paper. The forms left in open nomenclature are, in general, only mentioned in Table 1 (*Antiparaparchites* sp., *Poloniella* sp., *Birdsallella* sp., *Microcheilinella* sp., *Bairdia* sp., *Bairdiocypris* sp., *Baschkirina*? sp., *Arcuaria* sp.).

The samples from Zbrza have been collected from marly limestones containing numerous micro- and macrofossils of the *Chimaerothyris dombrowiensis* Zone. The examined rocks come from a ditch situated in the floor part of the limestone complex, just over the sandstone sequence considered as Lower Devonian (fig. 1, 3). The lower Eifelian

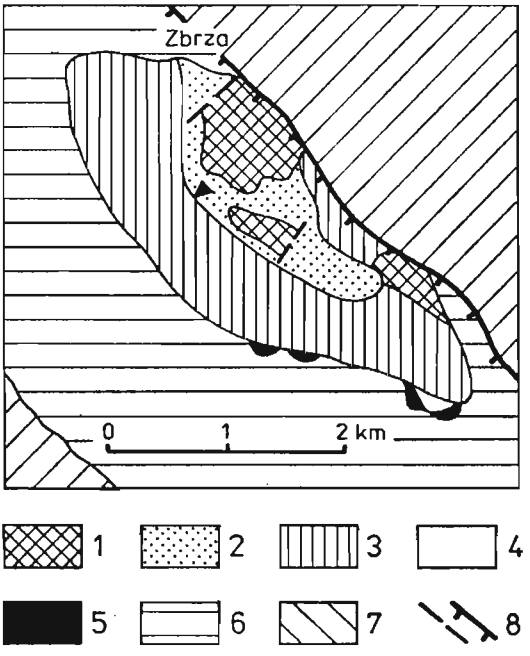

Fig. 3. Geology of Zbrza anticline (according to Filonowicz 1968); Quaternary deposits lacking. *1* Cambrian, Ordowician, Silurian; *2* Lower Devonian; *3* Middle Devonian; *4* Upper Devonian; *5* Permian; *6* Triassic; *7* Jurassic; *8* faults and the thrust line; the site where the samples were collected is marked with an arrow.

of Zbrza has been found to contain 22 ostracod taxa most of them being also common in Dąbrowa assemblage; 19 species have been described in this paper, whilst forms left in open nomenclature are, in general, only mentioned in Table 1 (*Kozlowskiella* sp., *Poloniella* sp. and *Ctenoloculina* sp.).

The ostracod collection from Dąbrowa and Zbrza comprises over 3200 valves and carapaces. The specimens from Zbrza are, in general, well preserved while almost half of the specimens from Dąbrowa have partly damaged external sufraces. Within the asemblage examined, 32 species have been distinguished. They reprsent 27 genera and 6 orders: Leperditicopida, Palaeocopida, Platycopida, Metacopida, Podocopida and Eridostraca. The present paper describes 22 species, in these 7 new ones and 6 species in the open nomenclature.

The collection is housed at the Świętokrzyski Department, State Geological Survey, Kielce (abbreviated PIG-OS).

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CHARACTERISTICS OF DĄBROWA AND ZBRZA OSTRACOD-BEARING BEDS

Dąbrowa (figs. 1, 2, 4, 5)

The Dąbrowa region, in the north-west part of the Świętokrzyskie Mts. (partly in Kielce area), is situated within the north wing of the Niewachlów anticline, whose northern part is called Dąbrowa anticline and the southern one — Szydłówek anticline, separated by Szydłówek syncline (Filonowicz 1973).

The most complete sequence of fossiliferous deposits of the Lower/Middle Devonian boundary at Dąbrowa region has been found in the borehole Dąbrowa D5 (Serwan 1968; Tarnowska and Malec 1987). The borehole is located in the northern, overturned limb of the Dąbrowa anticline (dip 75—80°). The boring was directed obliquely in relation to the axis of the shaft "Agricola" (fig. 2, 4).

The sequence is as follows:

1) Above Lower Devonian (upper Emsian) quartzite sandstones there is a 7.5 m thick complex of pale green mudstones with about 0.5 m thick intercalation of pyroclastic deposits. The latter constitutes a correlation horizon within the beds of the Lower/Middle Devonian boundary in the southern part of the Świętokrzyskie Mts. (Tarnowska in press). In the top part, scarce arenaceous foraminifera *Webbinelloidea similis* Stewart et Lampe and *Hyperammina* sp. have been found.

2) Claystone complex about 20 m thick. Its lower part is formed of black claystones with pyrite, the upper one — of yellow-grey claystones with iron-ore (siderite). The black claystones contain numerous arenaceous foraminifera *W. similis*, *Amphitremoidea* sp., *Hyperammina* sp., *Lagenammina* sp. and *Saccammina* sp. In the upper part of the complex scattered crinoid trochites, debris of bryozoans and an ophiocystoid of the genus *Cardioserra* have been found (Romanek 1984).

3) The complex passes upwards into bioclastic limestones about 5 m thick, with common and diversified micro and macro-fossils. In its top part frequent are thin layers containing Charophyta, mainly corroded oogonia of *Sycidium* and sporadic *Trochiliscus* as well as some vegetative

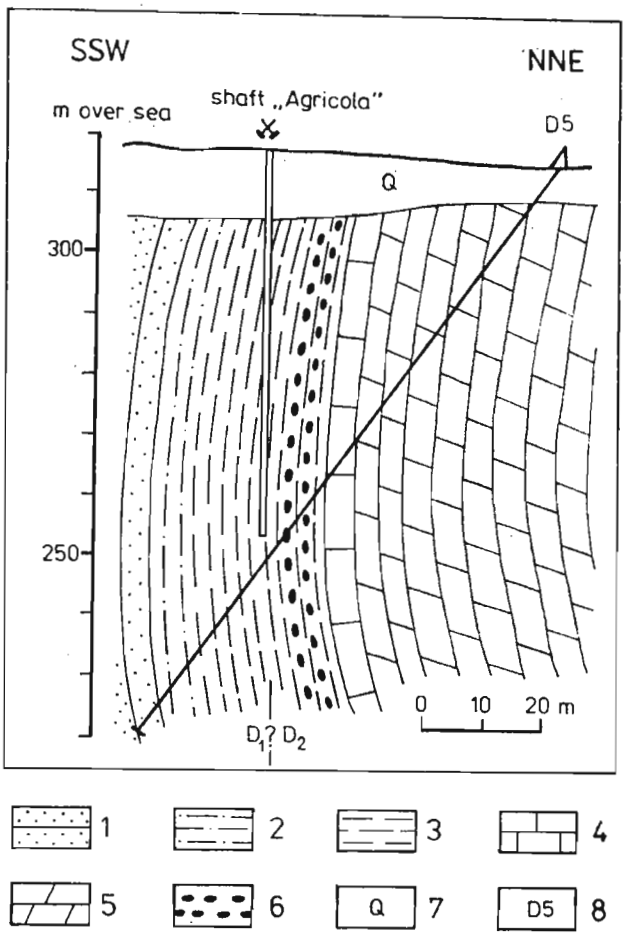


Fig. 4. A fragment of the section of iron-ore deposits in Dąbrowa at the "Agricola" shaft (after Serwan 1968). *1* sandstones, *2* mudstones, *3* claystones; *4* limestones; *5* dolomites; *6* iron-ores, *7* Quaternary, *8* oblique borehole Dąbrowa D5.

parts. Frequent are arenaceous foraminifera *Webbinelloidea similis* represented by several morphotypes (IA, IB, IIA, IIB, IIIA) distinguished according to Conkin and Conkin's criteria (1970). Conodonts are represented by scarce *Icriodus werneri* Weddige and *Polygnathus linguiformis linguiformis* Hinde. Among abundatn echinoderm debris there were recognized isolated crinoid trochites, holothurian sclerites from the genus *Eocaudina*, fragments of echinoid plates and spines as well as fragments of dental apparatus and skeleta plates of Ophiocystoidea. Common are *Tentaculites schlotheimi* Koken and *T. polonicus* Gürich and brachiopods *Chimaerothyris dombrowiensis* (Gürich) and *Athyris concentrica* (v. Buch). Trilobites are represented by *Dechenella* (*Basidechenella*) *dombrowiensis* (Gürich), bryozoans by *Rhabdomeson devonicum* (Gürich 1986). Moreover, there occur gastropods, bivalves as well as fish scales and teeth.

The limestones are overlain by dolomites with scarce trochites, bryozoan debris and rare foraminifera (*Webbinelloidea similis*).

Zbrza (figs. 1, 3)

Zbrza anticline, located in the south-west part of the region, constitutes a separate structural unit formed of Paleozoic deposits (Deczkowski and Tomczyk 1966). Here, Lower Devonian sandstones are overlain by 40 m thick Middle Devonian carbonates: marls at the bottom, limestones at the top part. These fossiliferous sediments represent a stratigraphic counterpart of Dąbrowa horizon (*sensu* Gürich 1896) or *Chimaerothyris dombrowiensis* Zone (*sensu* Studencka 1983). They contain brachiopods (*Chimaerothyris dombrowiensis* Gürich, "*Athyris*" sp., *Chonetes sarcinulatus* (Schlotheim), *Xystrostrophia umbraculum* (Schlotheim) and *Minatothyris* sp.), bivalves (*Conocardium cuneatum* Roemer, *Nucula lanceolata* Spriesterbach), gastropods (*Pleurotomaria* sp.) trilobites (*Dechenella* (*Basidechenella*) *dombrowiensis* (Gürich), *Proteus* sp.), tabulates (*Striatopora cristata* Blumenbach, *Thamnopora micropora* Lecompte), annelids (*Spirorbis omphalodes* Edwards), and bryozoans. Among microfossils, beside ostracods, there are conodonts (*Icriodus werneri* Weddige), foraminifera (*Webbinelloidea similis* Stewart et Lampe, *Hyperammina* sp.) and tentaculites (*Tentaculites schlotheimi* Koken (Filonowicz 1968, Studencka 1983, and unpublished data of the present author)).

Marls and limestones of Dąbrowa beds are overlain by dolomitic marls and platy dolomites of the lower Eifelian. In the upper part of the section there are thick-bedded dolomites with *Amphipora ramosa* Phillips recognized as upper Eifelian (Filonowicz 1968).

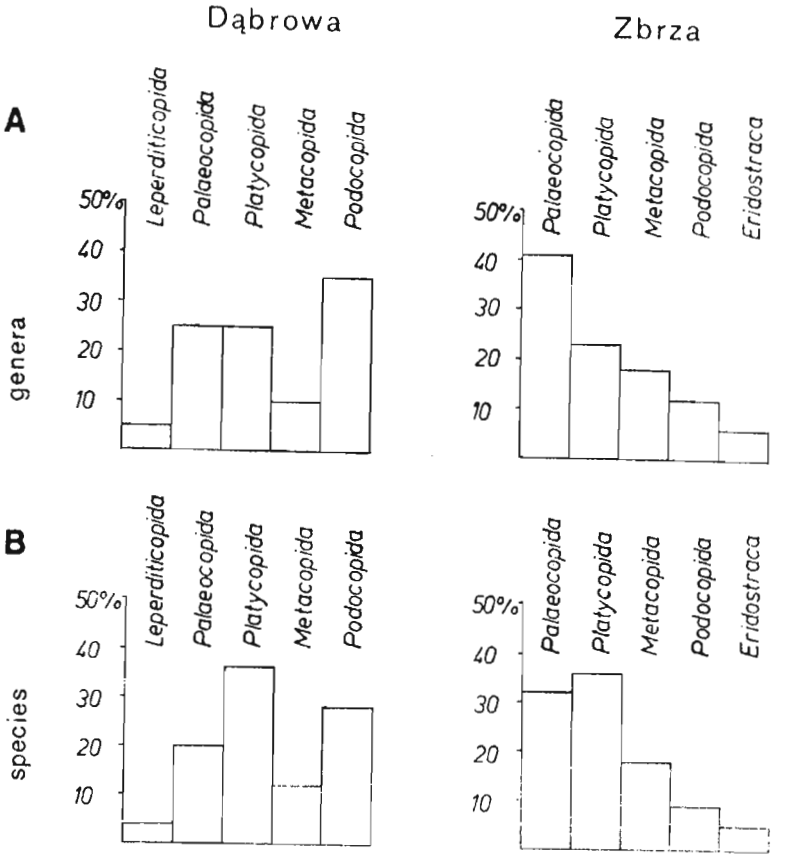
EXAMINED OSTRACOD ASSEMBLAGE AND REMARKS ON ECOLOGY

The information on the ostracods in question, concerning their frequency, size and valve ornamentation, have been presented on tables 1—3. In the assemblage examined the most numerous are genera: *Cytherellina* (44 per cent), *Poloniella* (21 per cent), *Evlanella* (10 per cent) and *Ochescapha* (9 per cent). Only 15 species out of 32 found in Dąbrowa and Zbrza have been identified as common for both sites. Specimens have been divided into size groups according to Becker (1971). He divided the Middle Devonian ostracods from the Eifel region into the following groups: small (< 0.95 mm), medium (0.95—1.4 mm) and large (> 1.4 mm). In the ostracod assemblage from the lower Eifelian of Dąbrowa and Zbrza only small (21 species) and medium (11 species) valves and carapaces have been found (tables 2, 3).

According to ornamentation of carapaces, Becker (1973) distinguished the following four ostracod groups with (1) smooth, (2) fine, (3) medium

Table 1

Proportional break-down of orders in the ostracod lower Eifelian fauna of Dąbrowa and Zbrza as represented by genera (A) and species (B)



and (4) coarse ornamentation. Most ornamented ostracods here examined have medium and coarse elements of ornamentation (tables 2, 3).

The ostracod examined co-occur with a typically off-shore marine fauna such as brachiopods, echinoderms or tentaculites. Corroded oogonia of Charophyta and vegetative plant remains were probably transported from more shallow environments (Malec 1982). On the basis of the co-occurring macrofauna and, above all, relatively numerous brachiopods, we may assume that ostracods occupied a brachiopod biotope (see Becker 1971). Unlike the ostracod assemblage from the brachiopod biotope of the Middle Devonian from the Eifel Mts. (Freilingen beds), the lower Eifelian (*Chimaerothyris dombrowiensis* Zone) of Świętokrzyskie Mts. contains no large specimens. In both areas, however, the ostracod fauna is similarly diversified and the quantitative proportion between ornamented and smooth ostracod species is alike.

Table 2

Morphological characteristics of ostracods from the lower Eifelian (*Chimaerothyris dombrowiensis* Zone) of Świętokrzyskie Mts.

	Taxa	Maximum size (length)	Ornamentation	Adults	Juveniles	Number of specimens: Dąbrowa	Number of specimens: Zbrza
PALAEOCOPIDA	*Sulcatiella pusilla* sp. n.	Sm (0.77)	0 a	♀♂	+	17	44
	Clavofabellina sp.	Me (1.08)	0 l	♀♂	+	12	10
	Ctenoloculina sp.	Sm (0.48)	0 g	—	+	—	1
	Ochescapha ornatissima (Gürich)	Sm (0.87)	0 a	♀♂	+	218	76
	Kozlowskiella sp.	Sm (0.68)	0 g	—	+	—	1
	Antiparaparchites sp.	Sm (0.55)	S	+	+	3	—
	Rishona obliqua (Gürich)	Me (1.18)	S	+	+	13	2
	Aechmina sp.	Sm (0.47)	0 g	?+	—	—	1
PLATYCOPIDA	*Poloniella devonica* Gürich	Me (1.08)	0 g	♀♂	+	127	30
	Poloniella tertia Krömmelbein	Me (1.12)	0 g	♀♂	+	12	514
	Poloniella sp.	Sm (0.88)	0 g	♀♂	+	6	8
	Eukloedenella sp.	Me (0.96)	0 l	♀♂	—	—	14
	Evlanella rhenana (Kummerow)	Sm (0.92)	0 a	♀♂	+	5	25
	Evlanella humiliformis (Gürich)	Sm (0.75)	0 a	♀♂	+	25	102
	Evlanella kielcensis sp. n.	Sm (0.77)	0 a	♀♂	+	32	140
	Knoxiella polonica (Kummerow)	Sm (0.78)	0 a	+	—	11	1
	Sulcella (*Sulcella*) sp.	Me (0.97)	0 l	+	—	1	—
	Birdsallella sp.	Sm (0.93)	0 a	+	—	3	—
METACOPIDA	*Jefina larga* sp. n.	Sm (0.57)	S	+	?+	—	150
	Cytherellina clara sp. n.	Sm (0.72)	S	+	+	171	1264
	Kummerowia sp.	Sm (0.83)	S	+	+	11	6
	Bythocyproidea polaris (Gürich)	Sm (0.82)	0 l	+	+	64	24
PODOCOPIDA	*Orthocypris magna* sp. n.	Me (1.05)	S	♀♂	+	30	—
	Microcheilinella sp.	Sm (0.62)	S	+	—	8	—
	Bairdiacypris subbafasi sp. n.	Me (1.12)	S	+	+	—	20
	Pseudorayella sp.	Sm (0.87)	S	+	+	20	1
	Bairdia sp.	Me (1.22)	S	+	—	4	—
	Bairdiocypris sp.	Me (0.96)	S	+	+	15	—
	Baschkirina? sp.	Sm (0.85)	S	+	—	6	—
	Arcuaria sp.	Sm (0.53)	S	+	?	6	—
LE.	Gen et sp. indet.	Me (1.00)	S	+	?	7	—
ER.	*Cryptophyllus nidae* sp.n.	Sm (0.70)	0 g	+	—	—	5

ER Eridostraca, *LE* Leperditicopida?, *Sm* small specimens, *Me* medium, *O* ornamented, *S* smooth, *g* coarse ornamentation, *a* medium ornamentation, *l* fine ornamentation.

Table 3

Morphological analysis of ostracod faunas Dąbrowa and Zbrza

Features	Dąbrowa		Zbrza	
Number of species	25	100%	22	100%
Ornamented species	13	52%	16	73%
Leperditicopida?	—	—	—	—
Palaeocopida	3	12%	6	27%
Platycopida	9	36%	8	36%
Metacopida	1	4%	1	5%
Podocopida	—	—	—	—
Eridostraca	—	—	1	5%
Number of species	25	100%	22	100%
Ornamentation:				
fine	2	8%	2	11%
medium	8	32%	7	31%
coarse	3	12%	7	31%
Number of ornamented valves and carapaces	534	63%	946	39%
Number of smooth valves and carapaces	310	37%	1497	61%
Number of species	25	100%	22	100%
Dimensions:				
large	—	—	—	—
medium	9	36%	6	27%
small	16	64%	16	73%

STRATIGRAPHICAL POSITION OF THE OSTRACODS

In the lower Eifelian sequences (*Chimaerothyris dombrowiensis* Zone) of Dąbrowa and Zbrza no index conodonts have been found. The chronostratigraphy of the ostracod layers has been determined, in an indirect way, by comparing them with the sediments from Grzegorzowice section (the north part of Świętokrzyskie Mts.), where index conodonts are present.

In the Devonian sequence of Grzegorzowice-Skały section, the sediments corresponding to the limestones of *Chimaerothyris dombrowiensis* Zone occur in the upper part (Dąbrowa Limestones *sensu* Sobolew 1909) of the Grzegorzowice Formation (*sensu* Adamczak 1976) in Grzegorzowice locality. They are represented by the limestone complex VIII (*sensu* Pajchlowa 1957) with numerous *Chimaerothyris dombrowiensis* (Gürich). Conodonts, such as *Icriodus corniger rectirostratus* Bultynck and *I. corni-*

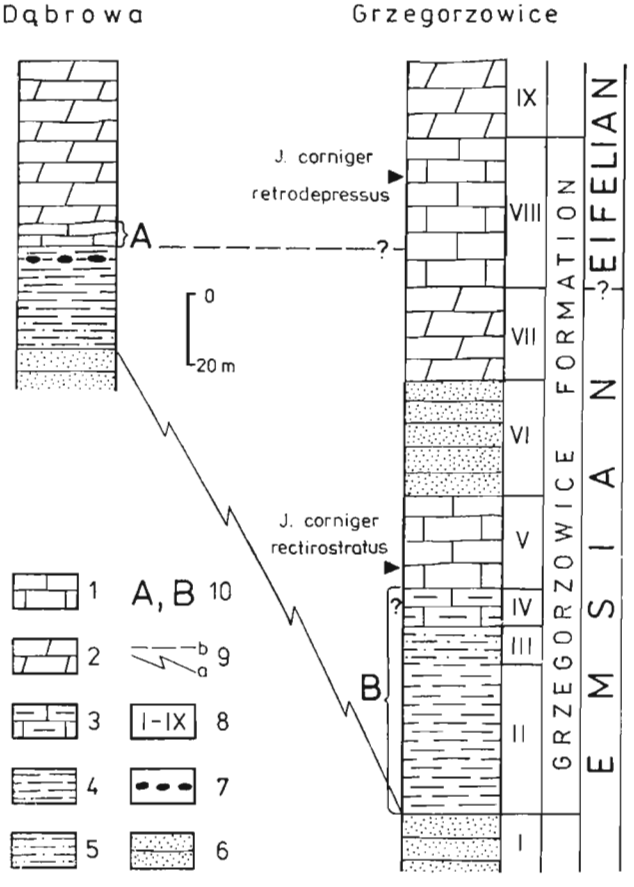


Fig. 5. Correlation of sediments from the Lower/Middle Devonian boundary of Dąbrowa and Grzegorzowice. *1* limestones, *2* dolomites, *3* marls, *4* claystones, *5* mudstones, *6* sandstones, *7* iron-ore; *8* lithological complexes (after Pajchlowa 1957), *9a* lithological correlation line, *9b* the line of probable age correlation, *10 A* a fragment of Dąbrowa profile containing ostracod fauna here described. *B* Grzegorzowice profile containing ostracods described by Adamczak (1968, 1976).

ger retrodepressus Bultynck (see Malec 1986), help to precise the age of the Grzegorzowice-Formation (fig. 5). *Icriodus corniger retrodepressus* Bultynck appears at the floor of the *Partitus* Zone, i.e. at the Lower/ /Middle Devonian boundary (Weddige *et al.* 1979; Weddige 1982; Bultynck 1985). In Grzegorzowice section, *Icriodus corniger retrodepressus* has been found in the upper part of the complex VIII (fig. 5). Analogous to Grzegorzowice sequence, the rocks of the *Chimaerothyris dombrowiensis* Zone from Dąbrowa and Zbrza may also be dated as the lower Eifelian. Thus, this part of the lower Eifelian sequence from Dąbrowa and Zbrza is, most probably, contained within the *Patrtitus* Zone.

A small ostracod assemblage has been found in the limestones of the complex VIII in the Grzegorzowice section. The following taxa have been

distinguished: *Bythocyproidea polaris* (Gürich), *Cytherellina clara* sp. n., *Clavofabellina* sp., *Eukloedenella* sp., *Evlanella rhenana* (Kummerow), *E. humiliformis* (Gürich), *E. kielcensis* sp. n., *Ochescapha ornatissima* (Gürich), *Poloniella tertia* Krömmelbein, *P. devonica* Gürich and *Sulcatiella pusilla* sp. n.

As far as the older sediments of Grzegorzowice Formation are concerned (Grzegorzowice: complex II, III, IV), a rich asemblage of ostracods was earlier described and dated as lower Eifelian by Adamczak (1968, 1976). The samples taken by Adamczak came from the lower complexes (Adamczak 1976: fig. 3), which according to the recent conodont data (Malec 1986) represent the uppermost Emsian (fig. 5). The complex VIII, i.e. uppermost one of the Grzegorzowice Formation, apparently was not examined by Adamczak and therefore the ostracod local range biozonation of this part of the formation proposed by him (1976: 276) was not founded. The present author has stated there the ostracod assemblage (see above) characteristic of the lower Eifelian *Chimaerothyris dombrowiensis* Zone and quite different from that described by Adamczak.

SYSTEMATIC PART

Abbreviations used in the text and figure explanations: C — carapace, RV — right valve, LV — left valve, L — length, H — height, W — width, ♀ — female carapace, ♂ — male carapace.

Systematics after Scott (1961)

Subclass **Ostracoda** Latreille, 1802
Order **Palaeocopida** Henningsmoen, 1953
Superfamily **Primitiopsacea** Swartz, 1936
Family **Primitiopsidae** Swartz, 1936
Genus *Sulcatiella* Polenova, 1968
Sulcatiella pusilla sp. n.
(pl. 21: 1—3, fig. 6)

Holotype: PIG-OS OII/2; pl. 21: 2.

Type horizon: lower Eifelian, limestone of the *Chimaerothyris dombrowiensis* Zone.

Type locality: Dąbrowa, Świętokrzyskie Mts., Poland.

Derivation of the name: from Latin *pusillus* — fine, thin.

Diagnosis. — *Sulcatiella* with straight-backed, subovate outline, smooth surface, shallow adductorial sulcus, and no adventral structures.

Material. — Sixty one carapaces variously preserved; Dąbrowa: PIG-OS II/1—3, 100—113, Zbrza: PIG-OS OII/114—157.

Measurements (in mm):

Specimen No.	L	H	W
PIG-OS OII/1	0.60	0.35	0.33
PIG-OS OII/2 holotype	0.72	0.45	0.39
PIG-OS OII/3	0.75	0.47	0.45

Description. — Carapace subovate in lateral outline. Dorsal margin long, straight, anterior and ventral margin broadly rounded, posteroventral margin slightly oblique.

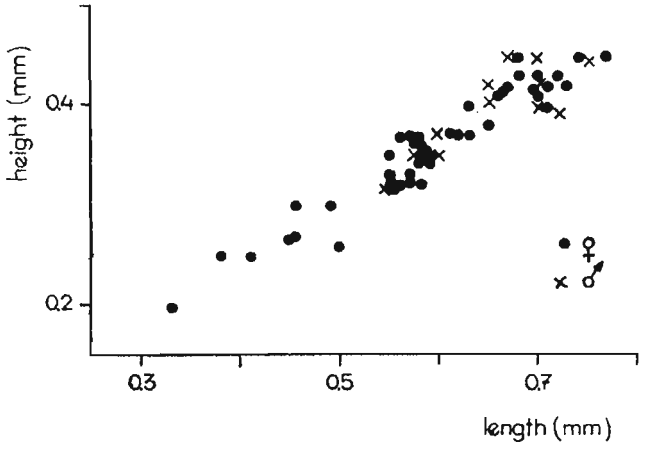


Fig. 6. Dimensions of *Sulcatiella pusilla* sp. n.; n = 51 specimens.

Adductorial sulcus above the mid-length of valve. Adventral structures absent. Carapace moderately and rather evenly inflated, in females somewhat enlarging posteriorly; in both sexes it is highest at the mid-length. Surface smoth.

Remarks. — The new species resembles most *S. crassa* Polenova from the Lower Devonian of the USSR, Salair area (Polenova 1968) though it is smaller and its adductorial sulcus is less developed.

Occurrence. — Poland. Świętokrzyskie Mts.: Dąbrowa, Zbrza — lower Eifelian (*Chimaerothyris dombrowiensis* Zone).

Genus *Clavofabellina* Polenova, 1968

Clavofabellina sp.

(pl. 21: 4)

Material. — Twenty two carapaces variously preserved; Dąbrowa: PIG-OS OII/4—7, 114—121, Zbrza: PIG OS OII/8, 9, 122—129.

Measurements (in mm):

Specimen No.	L	H	W
PIG-OS OII/4	0.97	0.57	0.57
PIG-OS OII/5	1.05	0.62	0.57
PIG-OS OII/6	0.98	0.57	0.57
PIG-OS OII/7	1.00	0.61	0.57
PIG-OS OII/8	1.17	0.72	0.70
PIG-OS OII/9	1.02	0.62	0.62

Description. — Carapace with subovate lateral outline, both ends of similar heights. Dorsal margin long, straight; ventral margin slightly convex. Males have the anterior and posterior margins rounded. Females have posteroventral margin slightly truncated. The specimens highest at the mid-length and widest just behind it, being triangular in cross-section. In the posterior part of female adventral structures in the form of marginal ridges. Sulcal pit weakly developed, perpendicular to the dorsal margin. Surface smooth.

Remarks. — *Clavofabellina* sp. resembles most *C. abunda minor* Polenova from the Lower Devonian of the USSR, Salair area (Polenova 1968). Females from Świętokrzyskie Mts. have the posteroventral margin less truncated, and males are narrower from those of Salair area. Females of *Clavofabellina* sp. are close to *C. buregiaformis* (Rozhdestvenskaya) from the Eifelian (*Calceola* layers) of West Bashkiria (Rozhdestvenskaya 1962). The species from Świętokrzyskie Mts. has, however, less wedge-like carapace when seen dorsally, with greatest width just behind the mid-length. Poorly developed adductorial sulcal pit observed in *C.* sp. suggests some relationship of this form with *C. prisca* Adamczak et Becker from the Lower Devonian of Spain (Adamczak and Becker 1983). The specimens in question most probably represent a new species which cannot be diagnosed as yet due to the poor preservation state of female specimens.

Occurrence. — Poland (Świętokrzyskie Mts.: Dąbrowa, Zbrza — the lower Eifelian (*Chimaerothyris dombrowiensis* Zone).

Superfamily **Beyrichiacea** Matthew, 1886
Family **Beyrichiidae** Matthew, 1886
Genus *Ochescapha* Becker, 1965
Ochescapha ornatissima (Gürich, 1896)
(pl. 24: 8)

1896. *Primitia ornatissima* Gürich: 383, pl. 14: 3.
1896. *Primitia plana* Gürich: 383, pl. 14: 2.
1968. *Ochescapha ornatissima* Gürich; Adamczak: 80, figs. 49—50; pl. 27: 1, 2; pl. 34: 1—11; pl. 35: 3, 4.

Material. — Over 150 carapaces and valves variably preserved; Dąbrowa: PIG-OS OII/10—12, 130—344, Zbrza: PIG-OS OII/13—15, 345—417.

Measurements (in mm):

Specimen No.	L	H	W
PIG-OS OII/10	0.87	0.67	0.60
PIG-OS OII/11	0.71	0.52	0.43
PIG-OS OII/12	0.87	0.62	0.60
PIG-OS OII/13	0.75	0.55	0.42
PIG-OS OII/14	0.82	0.57	0.45
PIG-OS OII/15	0.77	0.52	0.50

Remarks. — Most of the here examined specimens come from the lower Eifelian of Dąbrowa. Specimens from Dąbrowa and Zbrza do not differ from those described by Adamczak (1968: the neotype there designated) from the lower Eifelian of Wydryszów (uppermost Emsian according to the present author).

Occurrence. — Poland, Świętokrzyskie Mts.: Wydryszów — uppermost Emsian, Grzegoczowice Formation; Dąbrowa, Zbrza — lower Eifelian, *Chimaerothyris dombrowiensis* Zone.

Superfamily **Oepikellacea** Jaanusson, 1957
Family **Aparchitidae** Jones, 1960
Genus *Rishona* Sohn, 1960
Rishona obliqua (Gürich, 1896)

(pl. 21: 5—6; fig. 7)

1896. *Primitia obliqua* Gürich: 382.

1953. *Aparchites pentagonalis* Kummerow: 25, pl. 5: 5.

Holotype: Gürich's lost specimen from the limestones of the lower Eifelian from Dąbrowa; originally not figured.

Neotype: PIG-OS OII/16, pl. 21: 6, here designated.

Type horizon: lower Eifelian, limestone of the *Chimaerothyris dombrowiensis* Zone.

Type locality: Dąbrowa, Świętokrzyskie Mts, Poland.

Diagnosis. — *Rishona* with straight dorsal margin and abruptly truncated, straight posteroventral margin. The anterior margin widely and regularly rounded. Carapace widest medially.

Material. — Seventeen carapaces variously preserved; Dąbrowa, PIG-OS OII/16—21, 417—423, Zbrza: PIG-OS OII/423, 424.

Measurements (in mm):

Specimen No.	L	H	W
PIG-OS OII/16 neotype	1.02	0.70	0.50
PIG-OS OII/17	0.97	0.58	0.47
PIG-OS OII/18	1.00	0.62	0.50
PIG-OS OII/19	1.20	0.75	0.57
PIG-OS OII/20	0.95	0.65	0.45
PIG-OS OII/21	1.00	0.67	0.45

Description. — Carapace trapezoid in lateral outline. Dorsal margin long and straight, ventral margin short, slightly convex. Anterior margin regularly rounded, posterior one distinctly truncated. Left valve larger than the right one and over-

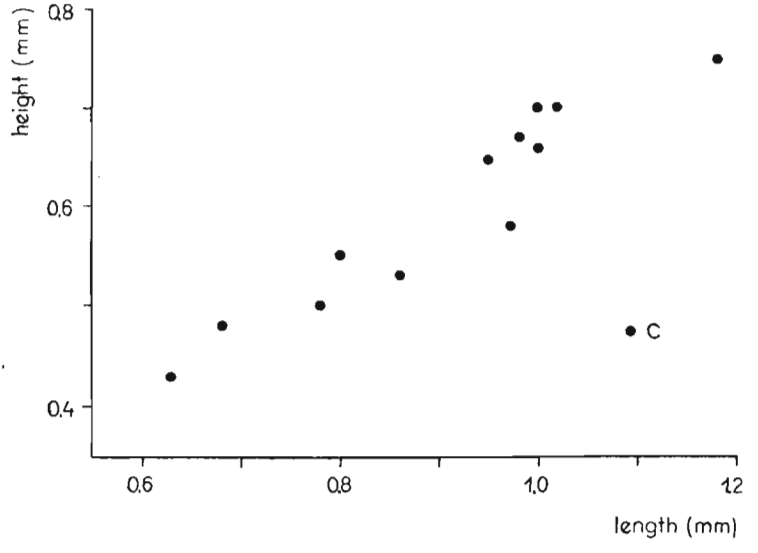


Fig. 7. Dimensions of *Rishona obliqua* (Gürich); n = 11 specimens.

lapping it in its posteroventral and ventral part. Carapace highest and widest at about its mid-length. In dorsal view carapace fusiform.

Remarks. — Gürich (1896) gave an extensive description of the species without illustrations. Such features as general lateral outline and especially, the posterior truncation of carapace indicate that the form discussed belongs to the genus *Rishona*.

From the lower Eifelian Grzegorzowice Formation from Wydryszów, Adamczak and Weyant (1973) described some specimens as *R. pentagonalis* (Kummerow). Specimens referred here to *R. obliqua* are similar to them, mostly in lateral outline, but differ in dorsal view, in being widest at about mid-length, while specimens from Wydryszów are widest anteriorly. Moreover, Wydryszów specimens have rather convex and short dorsal margin, less rounded anterior margin and larger carapace. It seems that they represent a new species.

Occurrence. — Poland, Świętokrzyskie Mts.: Dąbrowa, Zbrza, lower Eifelian (*Chimaerothyris dombrowiensis* Zone).

Superfamily **Aechminacea** Bouček, 1936
Family **Aechminidae** Bouček, 1936
Genus *Aechmina* Jones et Holl, 1896
Aechmina sp.

(pl. 24: 3)

Material. — One valve: Zbrza: PIG-OS OII/22.

Measurements (in mm):

Specimen No.	L	H
PIG-OS OII/22	0.47	0.35

Description. — Valve semicircular in lateral outline. Dorsal margin straight, ventral one convex. Anterior margin regularly, and broadly rounded, wider than the posterior one. A distinct, tiny spine of almost uniform width occurs posterodorsally, somewhat protruding from the valve outline.

Remarks. — Externally, the form described is similar to *Aechmina* sp. from the lower Eifelian of Grzegorzowice Formation (Malec 1984) and resembles *Aechmina* sp. from the lower Eifelian of Thuringia (Zagora 1968), but in comparison with the both, it is smaller and has shorter spine. The form considered is close in size to *Aechmina longioroidea* Stewart from the Middle Devonian of the USA (Stewart 1950) and *Aechmina* sp. from the boundary layers of the Lower and Middle Devonian of Spain (Becker and Sanchez de Posada 1977). The form in question has a spine shorter than the Spanish form and smaller than the American one.

Occurrence. — Poland. Świętokrzyskie Mts.: Zbrza — lower Eifelian (*Chimaerothyris dombrowiensis* Zone).

Order **Platycopida** Sars, 1866
Superfamily **Kloedenellacea** Ulrich et Bassler, 1908
Family **Kloedenellidae** Ulrich et Bassler, 1908
Genus *Poloniella* Gürich, 1896
Poloniella devonica Gürich, 1896

(pl. 22: 3—5; fig. 8)

1896. *Poloniella devonica* Gürich: 388, pl. 14: 1.

non 1961a. *Poloniella devonica* Gürich; Adamczak: 296—299, figs. 6—7, pl. 1: 1—2.

Holotype: Gürich's lost specimen from the limestone of the lower Eifelian from Dąbrowa; Gürich 1896: pl. 14: 1.

Neotype: PIG-OS OII/23; pl. 22: 3, here designated.

Type horizon: lower Eifelian limestone of the *Chimaerothyris dombrowiensis* Zone.

Type locality: Dąbrowa, Świętokrzyskie Mts., Poland.

Diagnosis. — Carapace sub-rectangular in lateral outline, dorsal margin straight and sub-parallel to the ventral one. Sulcus S_1 reaches the dorsal margin almost at the right angle and joins S_3 at the ventral side; sulcus S_2 short. Lobe L_2 widely connected with L_3 in the ventral part, while lobe L_3 connected with L_4 in dorsal part. Distinct sexual dimorphism.

Material. — 157 carapaces in various preservational states. Dąbrowa: PIG-OS OII/23—28, 425—545, Zbrza: PIG-OS OII/546—575.

Measurements (in mm):

Specimen No.	L	H	W
PIG-OS OII/23 neotype	1.02	0.48	0.40
PIG-OS OII/24	0.98	0.47	0.40
PIG-OS OII/25	0.95	0.52	0.45
PIG-OS OII/26	0.75	0.42	0.35
PIG-OS OII/27	0.87	0.47	0.40
PIG-OS OII/28	0.82	0.42	0.37

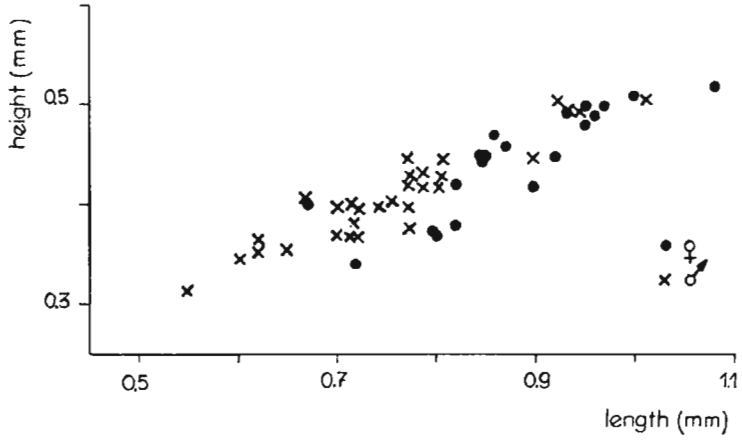


Fig. 8. Dimensions of *Poloniella devonica* Gürich; n = 50 specimens.

Description. — Female carapace: Carapace rectangularly ovate, elongated. Dorsal margin slightly convex, ventral margin somewhat concave, subparallel to the dorsal one. Anterior margin rounded, posterior one slightly truncated in its posteroventral part. Sulci of various width and depth. S_1 somewhat narrower and shallower than S_3, both being parallel and joining ventrally and subvertical to dorsal margin; S_1 reaches the dorsal margin while S_3 does not extend up to that margin. S_2 obliquely bent, in its upper part extending up to the dorsal margin and distinctly enlarging, while in its lower part disappearing near the mid-height of the carapace. Lobes distinct: ventrally L_1 joins L_4 with a narrow rib. L_3 joins L_4 just below the dorsal margin. L_4 strongly swollen occupying the whole posterior carapace part.

Male carapace: In comparison with females it has a narrow lobe L_4 which faints posteriorly and passes into flat or slightly concave surface.

Remarks. — The original documentation on the species is very poor, Gürich's original drawings being probably illustrations of specimens with much corroded surface. Adamczak (1961a) who extended *P. devonica* on specimens from the Lower/Middle Devonian boundary of the Wydryszów section and complexes II—IV (Pajchlowa 1957) of the Grzegorzowice section has chosen the neotype from among specimens from Grzegorzowice. This designation, however, cannot be maintained as the specimen comes neither from the type locality nor type horizon: the stratigraphical equivalent of the type horizon is complex VIII of the Grzegorzowice section, thus, layers occuping a higher position in the section. In such a situation, the present author annules Adamczak's decision and designates the neotype from among the topotypes coming from the *Chimaerothyris dombrowiensis* zone from the Dąbrowa locality.

Specimens described by Adamczak from Grzegorzowice as *Poloniella devonica* Gürich differ from the neotype from Dąbrowa, first of all, in more massive and swollen carapace. Though the measurements of both forms are close, the one from Dąbrowa has much smaller H : L index value, which for the neotype of *P. devonica* Gürich, is about 0.38 while for Grzegorzowice specimens about 0.55 (specimens from the present author's collection). In topotypes the S_1 sulcus is narrow and perpendicular to the dorsal margin, while in Grzegorzowice specimens it is relatively wide and semicircular. Lobe L_2 in *P. devonica* from Dąbrowa is almost perpendicular to the dorsal margin, while in specimens described by Adamczak it is strongly inclined towards the posterior margin. Thus, specimens described by Adamczak as *P. devonica* Gürich represent undoubtedly a new species of the genus *Poloniella*.

Occurrence. — Poland, Świętokrzyskie Mts. Dąbrowa, Zbrza — lower Eifelian, (*Chimaerothyris dombrowiensis* Zone).

Poloniella tertia Krömmelbein, 1953
(pl. 22: 1—2; fig. 9)

1953. *Poloniella tertia* Krömmelbein: 58, pl. 3: 3.
1961a. *Poloniella tertia* Krömmelbein; Adamczak: 303—306, fig. 10—11; pl. 4: 1—2.
1964. *Poloniella* cf. *claviformis* (Kummerow); Becker: 77, pl. 13: 5—6.
1969. *Poloniella tertia* Krömmelbein; Groos: 44, pl. 6: 13.
1983. *Poloniella tertia* Krömmelbein; Żbikowska: 41, pl. 8: 4—6.
1983. *Poloniella tertia* Krömmelbein; Milhau: 347—359, pl. 1: 28, 29.
1985. *Poloniella tertia* Krömmelbein; Coen: 15, pl. 4: 1—3.

Material. — 526 well preserved valves and carapaces. Dąbrowa: PIG-OS OII/34, 35, 576—575, Zbrza: PIG-OS OII/29—33, 576—1084.

Measurements (in mm):

Specimen No.	L	H	W
PIG-OS OII/29	1.03	0.53	0.50
PIG-OS OII/30	0.75	0.42	0.40
PIG-OS OII/31	0.90	0.50	0.45
PIG-OS OII/32	0.96	0.53	0.45
PIG-OS OII/33	1.02	0.53	0.47
PIG-OS OII/34	1.01	0.55	0.50
PIG-OS OII/35	0.87	0.48	0.41

Remarks. — Specimen examined do not differ in shape and size from the

holotype described by Krömmelbein (1953) from the lower Eifelian (Lower Nohn) of the Eifel Mts.

Occurrence. — Poland, Świętokrzyskie Mts.: Dąbrowa, Zbrza — lower Eifelian, *Chimaerothris dombrowiensis* Zone; Wydryszów — uppermost Emsian; West Pomerania — upper Givetian. West Germany: the Eifel Mts. — Eifelian and Givetian; Rhenish Slate Mts. — middle Givetian. Belgium, the Ardennes: upper Givetian.

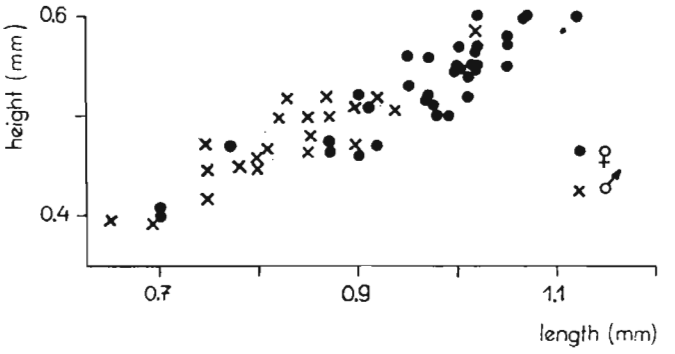


Fig. 9. Dimensions of *Poloniella tertia* Krömmelbein; n = 56 specimens.

Genus *Eukloedenella* Ulrich et Bassler, 1923

Eukloedenella sp.

(pl. 22: 7)

Material. — 14 well preserved valves and carapaces, Zbrza: PIG-OS OII/59—62, 1085—1094.

Measurements (in mm):

Specimen No.	L	H	W
PIG-OS OII/59	0.96	0.50	0.42
PIG-OS OII/60	0.92	0.48	0.39
PIG-OS OII/61	0.90	0.48	0.39
PIG-OS OII/62	0.94	0.50	0.41

Description. — Carapace subovate in outline. Dorsal margin long, straight, parallel to the straight ventral margin somewhat sloping anteriorly in right valve. Anterior margin evenly rounded, posterior one truncated in its posteroventral part. Left valve overlapping the right one along the ventral and anterior margins as well as along the anterior part of the dorsal margin. Adductorial sulcus distinct, obliquely arched in anterodorsal part of the valve. Carapace wedge-like in dorsal view, more enlarging posteriorly in females than in males.

Remarks. — *Eukloedenella* sp. resembles *E. doverensis* Turner from the Middle Devonian of the USA (Turner 1939; Kesling and Weiss 1953; Kesling and Chilman 1978), but differs in larger left than right valve, and more truncated posteroventral margin. The species differs from Lower Devonian *E. recta* Berdan et Copeland from Alaska (Berdan and Copeland 1973) in more elongated carapace, different outline in dorsal view and larger adductorial sulcus.

Occurrence. — Poland, Świętokrzyskie Mts.: Zbrza — lower Eifelian, (*Chimaerothyris dombrowiensis* Zone).

Genus *Evlanella* Egorov, 1950
Evlanella rhenana (Kummerow, 1953)
(pl. 23: 1—4, 9; fig. 10)

1953. *Hallinella rhenana* Kummerow: 30, pl. 3: 2.
1953. *Leptoprimitia plana* (Gürich); Kummerow: 32—33, pl. 7: 1.
?1965b. *Evlanella rhenana* (Kummerow); Becker: 172, pl. 5: 8; pl. 9: 6.
1969. *Evlanella rhenana* (Kummerow); Groos: 45—46, fig. 25; pl. 20: 3—5.
1971. *Evlanella rhenana* (Kummerow); Stoltidis: 21—22, pl. 3: 20—22.
1979. *Evlanella rhenana* (Kummerow); Langenstrassen *et al.*: 77, pl. 7: 2.

Material. — 30 carapaces and valves in various preservational states. Dąbrowa: PIG-OS OII/40, 41, 1095—1097, Zbrza: PIG-OS OII/36—39, 1098—1122.

Measurements (in mm):

Specimen No.	L	H	W
PIG-OS OII/36	0.83	0.53	0.30
PIG-OS OII/37	0.67	0.40	0.22
PIG-OS OII/38	0.65	0.41	0.30
PIG-OS OII/39	0.60	0.35	0.22
PIG-OS OII/40	0.62	0.36	0.27
PIG-OS OII/41	0.90	0.55	0.36

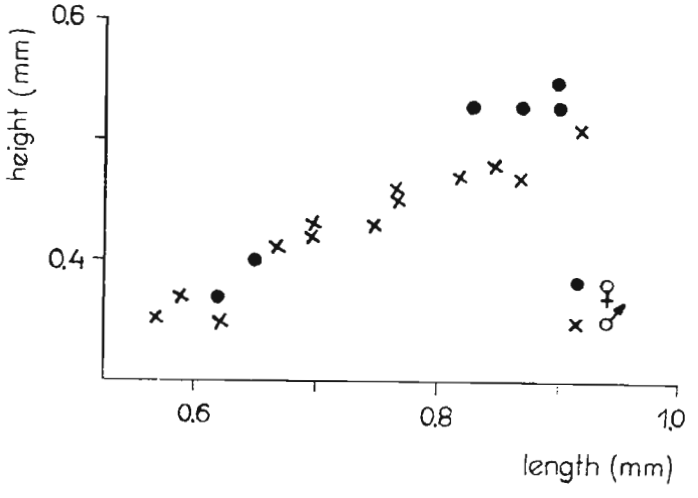


Fig. 10. Dimensions of *Evlanella rhenana* (Kummerow); n = 19 specimens.

Remarks. — Kummerow (1953) described a juvenile specimen of *E. rhenana* (Kummerow) as *Leptoprimitia plana* (Gürich). The specimen came from the same lower Eifelian layers from Dąbrowa as specimens studied by the present author. The specimens here examined resemble *E. germanica* Becker from the lower Givetian of the Eifel Mts. (Becker 1964), but they differ in carapaces less swollen medially and less thickened anterior and posterior margins.

Occurrence. — Poland, Świętokrzyskie Mts.: Dąbrowa, Zbrza — lower Eifelian, (*Chimaerothyris dombrowiensis* Zone). F.R.G.: Rhenish Slate Mts. — lower Eifelian; the Eifel Mts. — Eifelian.

Evlanella humiliformis (Gürich, 1896)
(pl. 23: 5—8; fig. 11)

1896. *Primitia humiliformis* Gürich: 382.

Holotype: Gürich's lost specimen coming from the limestones of the Lower Eifelian of Dąbrowa; originally not figured.

Neotype: PIG-OS OII/42; pl. 23: 5; here designated.

Type horizon: lower Eifelian limestone of the *Chimaerothyris dombrowiensis* Zone.

Type locality: Dąbrowa, Świętokrzyskie Mts., Poland.

Diagnosis. — *Evlanella* with elongated and subrectangular lateral outline. Anterior and posterior margins evenly rounded. Lateral carapace surface distinctly reticulated. Adductorial pit large and rounded. Stragulum poorly marked.

Material. — 127 well preserved carapaces and valves. Dąbrowa: PIG-OS OII/46, 47, 1123—1145, Zbrza: PIG-OS OII/42—45, 1146—1243.

Measurements (in mm):

Specimen No.	L	H	W
PIG-OS OII/42 neotyp	0.73	0.40	0.23
PIG-OS OII/43	0.67	0.34	0.23
PIG-OS OII/44	0.70	0.37	0.25
PIG-OS OII/45	0.67	0.37	0.22
PIG-OS OII/46	0.72	0.37	0.27
PIG-OS OII/47	0.75	0.42	0.27

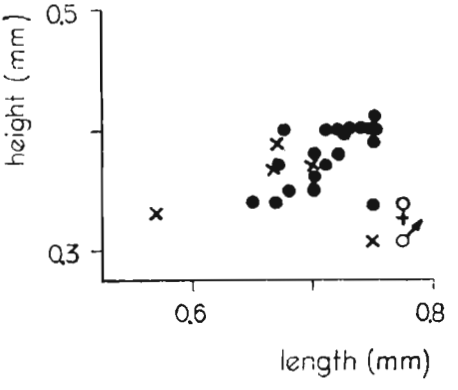


Fig. 11. Dimensions of *Evlanella humiliformis* (Gürich); n = 23 specimens.

Description. — Female carapace: Carapace subrectangular in lateral outline. Dorsal margin almost straight, slightly sloping anteriorly, parallel to the ventral margin which is concave medially. Valve surface reticulated with distinct, small polygonal meshes. Adductorial pit deep, round, in front and above mid-length of valve. Stragulum short and not wide. The right valve overlapping the left one along the entire margin. Maximum width, just behind the mid-length of carapace.

Male carapace: The lateral outline more rectangular than in females. In dorsal view males similar to females, but their posterior part is distinctly narrower.

Remarks. — Gürich's short description (1896: 382) of *Primitia* (*recte Evlanella*) *humuliformis* from the lower Eifelian (*Chimaerothyris dombrowiensis* Zone) from Dąbrowa evidences that the species belongs to the genus *Evlanella* and is not iden-

tical to *E. rhenana* (Kummerow) or to *E. kielcensis* sp. n. In comparison with the both species, *E. humiliformis* (Gürich) has more elongated carapace. From *E. rhenana* (Kummerow) it also differs in smaller adductorial pit and less distinct stragulum.

Occurrence. — Poland, Świętokrzyskie Mts.: Dąbrowa, Zbrza — lower Eifelian (*Chimaerothyris dombrowiensis* Zone).

Evlanella kielcensis sp. n.

(pl. 24: 1—2; fig. 12)

Holotype: PIG-OS OII/48; pl. 24: 1.

Type horizon: lower Eifelian, limestone of the *Chimaerothyris dombrowiensis* Zone.

Type locality: Zbrza, Świętokrzyskie Mts., Poland.

Derivation of the name: from the town Kielce in Świętokrzyskie Mts.

Diagnosis. — Evlanella with oval lateral outline, reticulated carapace surface and deep adductorial pit. Stragulum poorly developed. In dorsal view carapace wedge-like in outline.

Material. — 172 carapaces and valves variously preserved. Dąbrowa: PIG-OS OII/52, 1244—1273, Zbrza: PIG-OS OII/48—51, 1274—1409.

Measurements (in mm):

Specimen No.	L	H	W
PIG-OS OII/48 holotype	0.70	0.41	0.33
PIG-OS OII/49	0.75	0.45	0.34
PIG-OS OII/50	0.70	0.42	0.30
PIG-OS OII/51	0.70	0.42	0.32
PIG-OS OII/52	0.75	0.45	0.33
PIG-OS OII/53	0.60	0.35	0.22

Description. — Female carapace: Carapace oval in lateral outline with a slightly acute posterior end, narrowly rounded anterior margin and slightly rounded dorsal margin; widest posteriorly and highest in front. Valve surface reticulated with polygonal meshes. Adductorial pit deep, circular, situated in front and above the mid-length of the carapace. In dorsal view carapace wedge-like. Stragulum poorly marked.

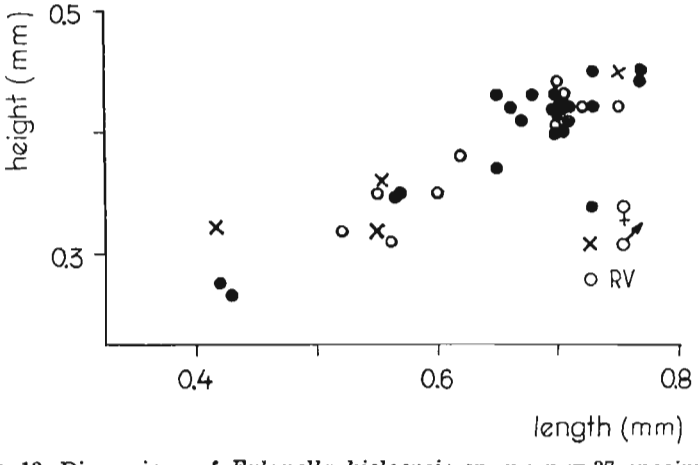


Fig. 12. Dimensions of *Evlanella kielcensis* sp. n.; n = 37 specimens.

Male carapace: Lateral outline similar to that of females. Carapace highest frontally. In dorsal view carapace wedge-like in outline with distinctly narrowing posterior end.

Remarks. — *Evlanella kielcensis* sp. n. differs from other cooccurring species of *Evlanella* in being highest frontally and having convex ventral margin and elongated posterior end. In dorsal view, both, male and female carapaces distinctly widen towards the posterior end; in females they are, however, more abruptly truncated distally.

Occurrence. — Poland, Świętokrzyskie Mts.: Dąbrowa, Zbrza — lower Eifelian (*Chimaerothyris dombrowiensis* Zone).

Subfamily **Knoxitinae** Kesling et Chilman, 1978
Genus *Knoxiella* Egorov, 1950
Knoxiella polonica (Kummerow, 1953)
(pl. 24: 6; fig. 13)

1953. *Jonesina polonica* Kummerow: 45—46, pl. 4: 13.

Material. — 12 carapaces variously preserved. Dąbrowa: PIG-OS OII/54—56, 1410—1417, Zbrza: PIG-OS OII/57.

Measurements (in mm):

Specimen No.	L	H	W
PIG-OS OII/54	0.67	0.42	0.32
PIG-OS OII/55	0.72	0.45	0.32
PIG-OS OII/56	0.63	0.40	0.28
PIG-OS OII/57	0.70	0.42	0.32

Description. — Carapace subtriangular-ovate in lateral outline. Dorsal margin a little sinuous, lowered at the middle and somewhat raising posteriorly. Ventral margin weakly rounded while posterior one acutely rounded. Valve highest and widest posteriorly. The left valve larger than the right one. Transverse sulcus in front and above the mid-length of the valve. Between the sulcus and the dorsal margin, on both valves, there is a low and bulb-like inflation. Hinge margin, in its posterior part, in a wide and deep depression. In dorsal view, carapace weakly wedge-like in outline, more enlarging posteriorly in females than in males.

Remarks. — The specimens here examined are slightly smaller than the holotype coming from Dąbrowa (Kummerow 1953). In the original illustration of the holotype

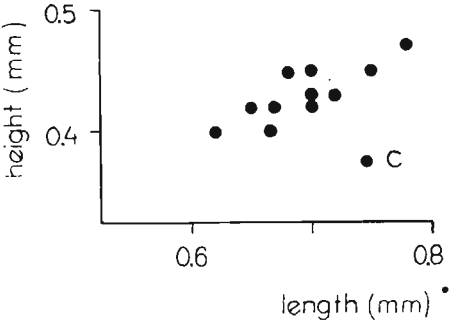


Fig. 13. Dimensions of *Knoxiella polonica* (Kummerow); n = 11 specimens.

dimensions of inflation in front of vertical sulcus are overestimated. In reality, it is developed in the form of a small, flat elevation. *Knoxiella polonica* resembles *K. sykasaensis* described from the Eifelian (*Calceola* beds) of the west slope of the South Urals and Bashkiria (Rozhdestvenskaya 1962), but it differs from the latter in smaller dimensions, a low inflation in front of the vertical sulcus, and more wedge-like carapace in dorsal view.

Occurrence. — Poland (Świętokrzyskie Mts.): Dąbrowa, Zbrza, lower Eifelian (*Chimaerothyris dombrowiensis* Zone).

Subfamily **Cavellininae** Egorov, 1950
Genus *Sulcella* Coryell et Sample, 1932
Subgenus *Sulcella* (*Sulcella*) Coryell et Sample, 1932
Sulcella (*Sulcella*) sp.
(pl. 24: 7)

Material. — One well preserved female carapace: Dąbrowa: PIG-OS OII/58.

Measurements (in mm):

Specimen No.	L	H	W
PIG-OS OII/58	0.97	0.46	0.32

Description. — Carapace elongated subrectangular in lateral outline. Dorsal margin slightly arched, subparallel to a nearly straight ventral margin. Right valve overlapping the left one along almost entire margin except its posterodorsal part. Anterior margin evenly rounded, the posterior one truncated. Adductorial pit round, in front of the mid-length and above the mid-height of carapace. Stragulum of medium length and width. Surface smooth.

Remarks. — In dorsal view, the carapace weakly and flatly swollen; in its size and shape, it is most similar to *S.* (*S.*) *elongata* Adamczak (1968) from the lower Eifelian of Grzegorzowice Formation (Świętokrzyskie Mts.). It differs from the latter, however, in narrower anterior margin, more truncated posterior margin and straight ventral margin.

Occurrence. — Poland (Świętokrzyskie Mts): Dąbrowa, lower Eifelian (*Chimaerothyris dombrowiensis* Zone).

Order **Metacopida** Sylvester-Bradley, 1961
Superfamily **Thlipsuracea** Coryell et Malkin, 1936
Family **Quasillitidae** Coryell et Malkin, 1936
Genus *Jefina* Adamczak, 1976
Jefina larga sp. n.
(pl. 24: 4—5; fig. 14)

Holotype: PIG-OS OII/63; pl. 24: 4.

Type horizon: lower Eifelian limestone of the *Chimaerothyris dombrowiensis* Zone.

Type locaity: Zbrza, Świętokrzyskie Mts, Poland.

Derivation of the name: from Latin *largus* — numerous, abundant.

Diagnosis. — Carapace small, smallest of the so far known species of that genus, in dorsal view gently rounded at both ends.

Material. — Over 150 well-preserved carapaces and valves from Zbrza: PIG-OS OII/63—68, 1418—1551.

Measurements (in mm):

Specimen No.	L	H	W
PIG-OS OII/63 holotype	0.57	0.36	0.27
PIG-OS OII/64	0.50	0.31	0.24
PIG-OS OII/65	0.57	0.35	0.30
PIG-OS OII/66	0.45	0.27	0.20
PIG-OS OII/67	0.50	0.31	0.23
PIG-OS OII/68	0.57	0.35	0.29

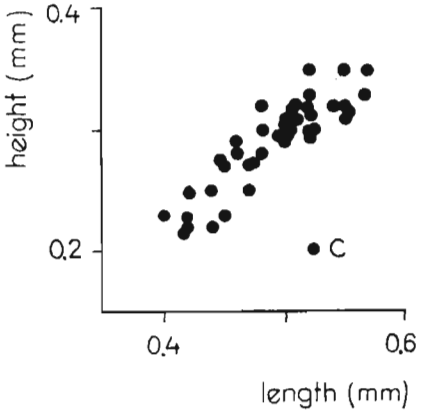


Fig. 14. Dimensions of *Jefina larga* sp. n.; n = 42 specimens.

Description. — Carapace ovate in lateral view. Dorsal and ventral margins slightly arched. Anterior and posterior margins evenly and similarly rounded. Anterior end a little higher than the posterior one. Left valve overlapping the right one along the entire margin. Carapace highest and widest medially. On the ventral side of left valve there occurs a distinct bow-shaped projection. Surface smooth.

Remarks. — The species discussed is close to *Jefina celebris* Adamczak from the lower Eifelian of Grzegorzowice Formation (Adamczak 1976). In comparison with that species, *J. larga* is somewhat smaller and has a little more truncated posteroventral margin and less convex dorsal margin. When seen dorsally, it is rather ovate than subrectangular. From *J. obtusa* Żbikowska, 1983, from the upper Givetian of Pomerania, the species in question differs in much smaller size and more oval carapce in side view. In its general shape of carapace, *J. larga* sp. n. is close to *J. kaisini* Coen from the upper Givetian (Fromelennes Formation) of the Ardennes (Coen 1985), but it is smaller and has more acute posterior end.

Occurrence. — Poland (Świętokrzysike Mts): Zbrza, lower Eifelian (*Chimaerothyris dombrowiensis* Zone).

Superfamily **Healdiacea** Harlton, 1953
Family **Healdiidae** Harlton 1953
Genus *Cytherellina* Jones et Holl, 1869
Cytherellina clara sp. n.

(pl. 24: 9—10, pl. 25: 8; fig. 15)

Holotype: PIG-OS OII/69; pl. 25: 8.

Type horizon: lower Eifelian limestone of the *Chimaerothyris dombrowiensis* Zone.

Type locality: Zbrza, Świętokrzyskie Mts., Poland.

Derivation of the name: from Latin *clarus* — bright, distinct.

Diagnosis. — *Cytherellina* with a greatest height in the middle part of valve. Left valve overlapping the right one along the free margin.

Material. — Over 700 well preserved valves and carapaces. Dąbrowa: PIG-OS OII/74, 1552—1685, Zbrza: PIG-OS OII/69—73, 1686—2250.

Measurements (in mm):

Specimen No.	L	H	W
PIG-OS OII/69 holotype	0.67	0.41	0.32
PIG-OS OII/70	0.62	0.35	0.30
PIG-OS OII/71	0.65	0.37	0.31
PIG-OS OII/72	0.72	0.47	0.37
PIG-OS OII/73	0.67	0.40	0.33
PIG-OS OII/74	0.65	0.41	0.32

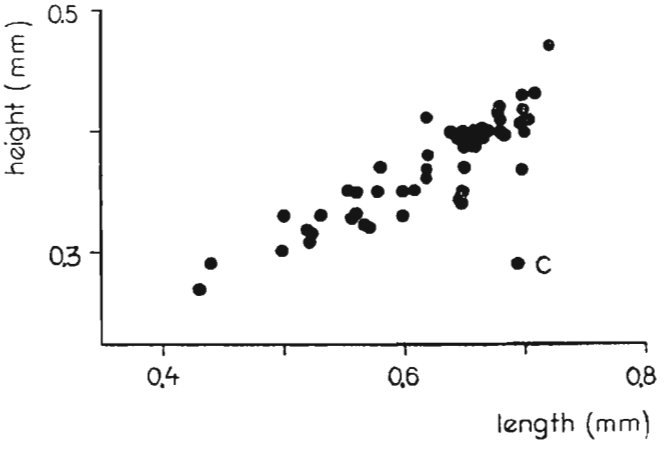


Fig. 15. Dimensions of *Cytherellina clara* sp. n.; n = 51 specimens.

Description. — Carapace close to suboval in side view. Dorsal margin arcuate, ventral one straight. Anterior and posterior margins regularly rounded, the posterior end higher than the anterior one. Left valve larger than the right one, and overlapping it along the entire free margin. Carapace highest in its middle part. In dorsal view carapace flatly swollen. Surface smooth.

Remarks. — *Cytherellina clara* sp. n. in its shape is close to *C. ?ovata* Adamczak from the uppermost Emsian (upper Eifelian of Grzegorzowice-Skały section after Adamczak 1976), from which it differs in more regularly rounded anterior and posterior margins, slightly smaller size and more convex dorsal margin.

Occurrence. — Poland (Świętokrzyskie Mts.): Zbrza, Dąbrowa, the lower Eifelian (*Chimaerothyris dombrowiensis* Zone).

Genus *Kummerowia* Adamczak, 1976

Kummerowia sp.

(pl. 22: 5, 6; fig. 16)

Material. — 17 carapaces from Dąbrowa and Zbrza.

Measurements (in mm):

Specimen No.	L	H	W
PIG-OS OII/105	0.83	0.43	0.33
PIG-OS OII/106	0.70	0.33	0.25
PIG-OS OII/107	0.68	0.33	0.27
PIG-OS OII/108	0.75	0.38	0.28

Description. — Carapace subrectangular in side view. Dorsal margin long, straight, slighty inclined anteriorly, subparallel to the ventral one. Anterior end somewhat

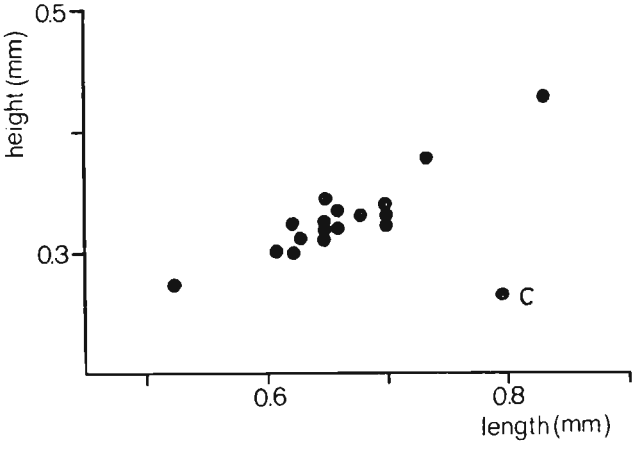


Fig. 16. Dimensions of *Kummerowia* sp.; n = 17 specimens.

elongated and slightly compressed. Anterior margin equally rounded, posterior margin arcuately truncated, somewhat angulate posteroventrally. Maximum height shifted posteriorly. Left valve larger than the right one. In dorsal view the carapace flatly and evenly swollen. Surface smooth.

Remarks. — In its general shape *Kummerowia* sp. resembles *K. prima* Adamczak (Adamczak 1976) from the uppermost Emsian in the Grzegorzowice and Wydryszów sections. It differs from the latter species in smaller size and in a slightly different carapace shape being more compressed anteriorly, and having more rounded posterodorsal margins.

Genus *Bythocyproidea* Stewart et Hendrix, 1945

Bythocyproidea polaris (Gürich)

(pl. 25: 1—2; fig. 17)

1896. *Bythocypris polaris* Gürich: 391, pl. 14: 5.
1953. *Birdsalella polaris* (Gürich); Kummerow: 61—62, pl. 2: 8.
1974. *Bythocyproidea polaris* (Gürich); Becker and Bless: pl. 2: 7—8.

Holotype: Gürich's lost specimen coming from the lower Eifelian limestones of Dąbrowa; Gürich 1896, pl. 14: 5.

Neotype: PIG-OS OII/75; pl. 25: 1, here designated.

Type horizon: lower Eifelian limestones of the *Chimaerothyris dombrowiensis* Zone.

Type locality: Dąbrowa, Świętokrzyskie Mts., Poland.

Diagnosis. — *Bythocyproidea* with three to five rows of oval pits in the posterior part of right valve and four rows of similar pits in its anterior part.

Material. — 88 carapaces and valves; Dąbrowa: PIG-OS OII/75—77, 2251—2312, Zbrza: PIG-OS OII/78, 79, 2312—2332.

Measurements (in mm):

Specimen No.	L	H	W
PIG-OS OII/75 neotype	0.72	0.45	0.37
PIG-OS OII/76	0.72	0.45	0.35
PIG-OS OII/77	0.76	0.46	0.37
PIG-OS OII/78	0.82	0.47	0.35
PIG-OS OII/79	0.72	0.43	0.32

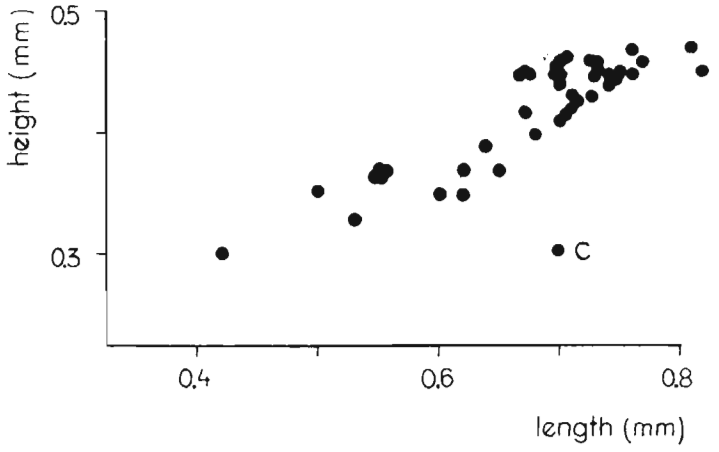


Fig. 17. Dimensions of *Bythocyproidea polaris* (Gürich); n = 42 specimens.

Description. — Carapace subtriangular in side view. Anterior and posterior margins regularly and rather narrowly rounded. Ventral margin straight, dorsal one arcuate. Left valve larger than the right one. Carapace highest in its middle part. In the posterior part of right valve from three to five vertical rows of small, oval pits, while in the anterior part of the valve four rows of similar pits occur. In the posterior part of left valve there are similar but fewer and, irregularly spaced pits. No pits in the anterior part of left valve. In the posterolateral parts of valves (especially in right ones) there are poorly marked vertical singular ridges.

Remarks. — Specimens here examined seem to be identical with those described and figured by Gürich (1896). Apart from Świętokrzyskie Mts., the species has been described only from the Eifel Mts., Schleit Horizon beds from the Lower Nohn (Becker and Bless 1974).

In its lateral outline, *B. polaris* (Gürich) resembles some of the specimens described by Feist and Gross-Uffenorde (1979: 142, 143, pl. 7: 50—52) as *Punctomosea*? sp. 29, from the upper Emsian of the Montaigne Noire (France). Our species differs from the latter form in having well expressed, vertical, posterolateral rib which is developed on the right valve only. Contrary to the typically developed *Bythocyproidea*, bearing such a rib only on right valve (Stewart and Hendrix 1945*a*), there are ribs on both valves in *Punctomosea* (Stewart and Hendrix 1945 *b*, Swartz and Oriel 1948, Stover 1956).

Occurrence. — Poland (Świętokrzyskie Mts.): Dąbrowa, Zbrza, lower Eifelian (*Chimaerothyris dombrowiensis* Zone), West Germany (Eifel Mts.), lower Eifelian.

Odrer **Podocopida** Müller, 1894
Suborder **Cypridocopina** Jones, 1901
Superfamily **Bairdiocypridacea** Shaver, 1961
Family **Bairdiocyprididae** Shaver, 1961
Genus *Orthocypris* Kummerow, 1953
Orthocypris magna sp. n.
(pl. 25: 4; fig. 18)

Holotype: PIG-OS OII/80; pl. 25: 4.
Type horizon: lower Eifelian, *Chimaerothyris dombrowiensis* Zone.
Type locality: Dąbrowa, Świętokrzyskie Mts, Poland.
Derivation of the name. — From Latin *magnus* — large.

Diagnosis. — *Orthocypris* with elongated, cigar-shaped carapace. Carapace regularly but not evenly rounded in its anterior and posterior ends, highest in the posterior part. Surface smooth.

Material. — 30 mostly well-preserved carapaces from Dąbrowa: PIG-OS OII80—83, 2333—2358.

Measurements (in mm):

Specimen No.	L	H	W
PIG-OS OII/80 holotype	1.01	0.51	0.42
PIG-OS OII/81	1.05	0.52	0.45
PIG-OS OII/82	1.00	0.50	0.42
PIG-OS OII/83	0.85	0.40	0.30

Description. — Carapace subrectangular in lateral view. Dorsal margin long, straight, gently sloping anteriorly. Ventral margin straight, long. Anterior and posterior margins regularly rounded, the posterior one wider. The greatest height in the posterior part and width behind the mid-length. In dorsal view carapace cigar-shaped. Female carapaces enlarging posteriorly. Surface smooth.

Remarks. — The species resembles most *O. perlonga* Kummerow from the Middle Devonian of Rhenish Slate Mts. and Eifel Mts. (Kummerow 1953, Becker 1965*a*,

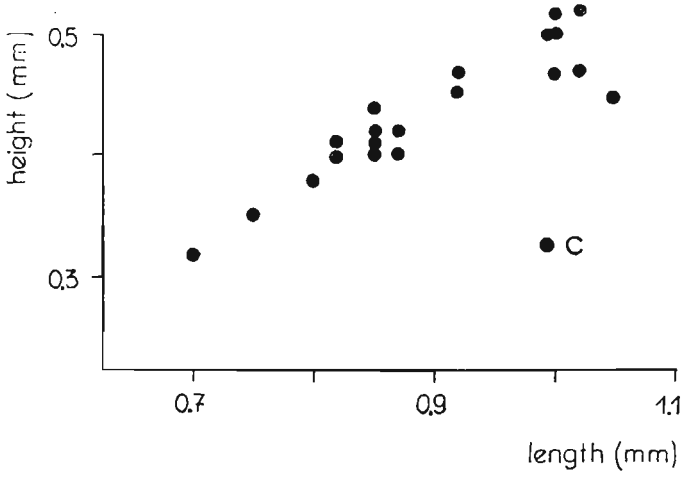


Fig. 18. Dimensions of *Orthocypris magna* sp. n.; n = 20 specimens.

Groos 1969). It differs in long and straight dorsal margin and more broadly rounded anterior margin.

Occurrence. — Poland (Świętokrzyskie Mts.): Dąbrowa, the lower Eifelian (*Chimaerothyris dombrowiensis* Zone).

Superfamily **Bairdiacea** Sars, 1888
Family **Bairdiidae** Sars, 1888
Genus *Bairdiacypris* Bradfield, 1933
Bairdiacypris subbafasi sp. n.

(pl. 25: 6; fig. 19)

Holotype: PIG-OS OII/84; pl. 25: 6.

Type horizon: lower Eifelian, *Chimaerothyris dombrowiensis* Zone.

Type locality: Zbrza, Świętokrzyskie Mts., Poland.

Derivation of the name: *subbafasi* — corresponding to *Bairdiacypris bafasi* Adamczak, to stress the relationship of these two taxa.

Diagnosis. — *Bairriacypris* with kidney-like carapace in side view. Dorsal margin arcuate but angulate posteriorly; ventral margin concave. Anterodorsal margin long and gently sloping, posterodorsal one shorter and more abruptly sloping. Maximum height posteriorly, at one fourth of the length.

Material. — 20 well-preserved carapaces from Zbrza: PIG-OS OII/84—88, 2358—2373.

Measurements (in mm):

Specimen No.	L	H	W
PIG-OS OII/84 holotype	0.75	0.42	0.21
PIG-OS OII/85	1.10	0.56	0.35
PIG-OS OII/86	0.85	0.40	0.30
PIG-OS OII/87	0.80	0.40	0.26
PIG-OS OII/88	0.77	0.40	0.27

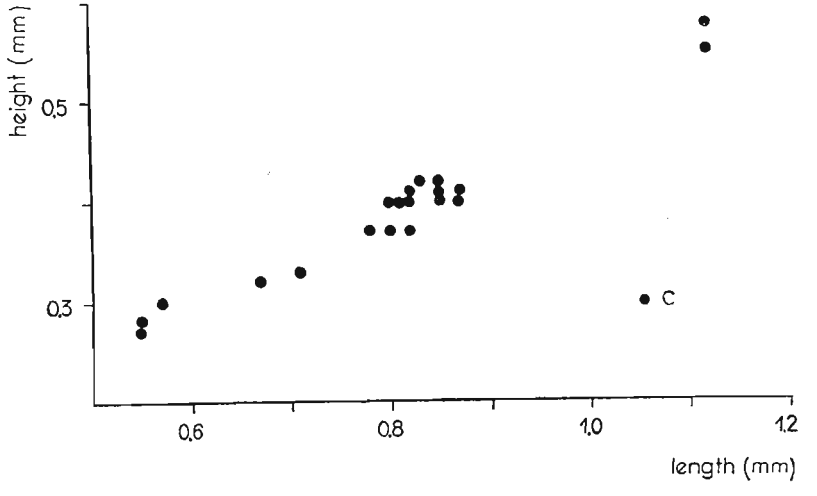


Fig. 19. Dimensions of *Bairdiacypris subbafasi* sp. n.; n = 18 specimens.

Description. — Carapace kindney-like in lateral view, and fusiform in dorsal view. Dorsal margin arcuate but distinctly angulate posteriorly, ventral one slightly concave. Anterior end rather narrowly rounded and somewhat elongated downwards, posterior end distinctly truncated, angulate near the ventral margin. The greatest height posteriorly in one fourth of the lenght of the carapace. Left valve larger than the right one and overlapping it along the entire margin. Hinge margin relatively long. Surface smooth.

Remarks. — *Bairdiacypris subbafasi* sp. n., in side view is closest to *B. bafasi* Adamczak from the uppermost Emsian (Grzegorzowice Formation) of Świętokrzyskie Mts (Adamczak 1976). The new species differs from the latter in smaller size, less bent dorsal margin, longer hinge margin, shorter and less sloping anterodorsal margin and steeper posterodorsal margins.

Occurrence. — Poland (Świętokrzyskie Mts): Zbrza, lower Eifelian (*Chimaerothyris dombrowiensis* Zone).

Genus *Pseudorayella* Nyetskaya, 1960

Pseudorayella sp.

(pl. 25: 5; fig. 20)

Material. — 21 carapaces in various preservational states, Dąbrowa: PIG-OS OII/89—93, 2374—2388, Zbrza: PIG-OS OII/2389.

Measurements (in mm):

Specimen No.	L	H	W
PIG-OS OII/89	0.85	0.41	0.32
PIG-OS OII/90	0.70	0.36	0.28
PIG-OS OII/91	0.61	0.28	0.20
PIG-OS OII/92	0.87	0.40	0.32
PIG-OS OII/93	0.72	0.35	0.27

Description. — Carapace subtrapezoid in lateral outline. Dorsal margin slightly sloping posteriorly, ventral margin nearly straight. Anterior margin narrowly rounded, the posterior one narrow, acutely ended. Carapace highest in its anterior part. Left valve larger than the right one. Seen from above carapace fusiform.

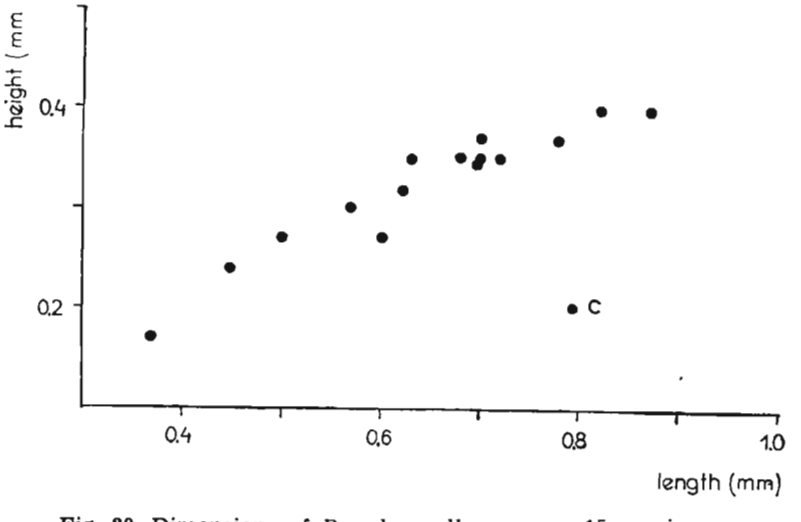


Fig. 20. Dimensions of *Pseudorayella* sp.; n = 15 specimens.

Remarks. — In its carapace lateral outline, the form is closest to *Pseudorayella lambda* Adamczak from the uppermost Emsian (Grzegorzowice Formation) of Świętokrzyskie Mts. (Adamczak 1976). It is, however, smaller, with less broadly rounded anterior margin, and with maximum height in its anterior part.

Occurrence. — Poland (Świętokrzyskie tMs.): Dąbrowa, Zbrza, lower Eifelian (*Chimaerothyris dombrowiensis* Zone).

Order **Leperditicopida** ?
Family unknown
Gen. et sp. indet.
(pl. 25: 7; fig. 21)

Material. — 7 well-preserved carapaces and valves from Dąbrowa: PIG-OS OII/94—96, 2390—2393, and some poorly preserved specimens.

Measurements (in mm):

Specimen No.	L	H	W
PIG-OS OII/94	0.91	0.50	0.51
PIG-OS OII/95	1.00	0.52	0.57
PIG-OS OII/96	0.78	0.43	0.45

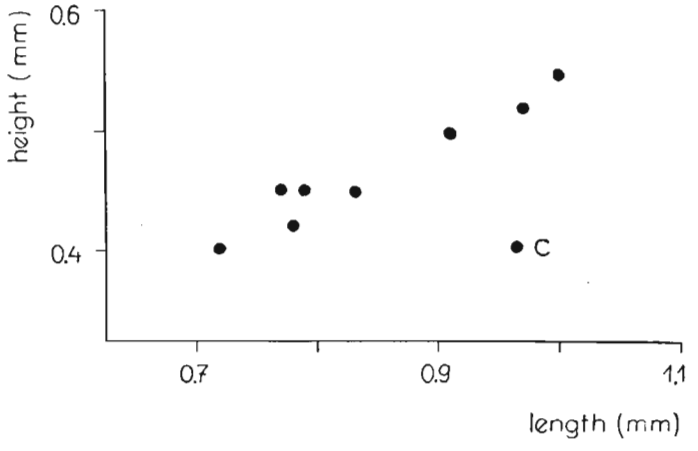


Fig. 21. Dimensions of some undeterminable taxonomically ?leperditiocopids; n = 8 specimens.

Description. — Carapace elongated, oval in lateral view. Dorsal and ventral margins nearly straight, the dorsal one slightly sloping anteriorly. Anterior and posterior margins rounded. Maximum height in posterior part, being only a little smaller than width. Left valve larger than the right one. Large circular muscle fields at the middle of the valves. In dorsal view carapace cigar-shaped. Surface smooth.

Remarks. — The external appearance does not allow to assign unequivocally the form discussed to Leperditiocopida. Ratios of the diameter of adductor muscle field and the length and width of carapace have been compared with the standard data presented by Adamczak (1976: 306—308, tabl. 2). The adductor muscle index (AMI) for the form examined is 14, and the distance factor — 39. The value of both

indices (AMI and distance factor) is close to the indices characteristic of the both orders: Leperditicopida and Podocopida, however, being closest to the order Leperditicopida.

Occurrence. — Poland (Świętokrzyskie Mts.): Dąbrowa, lower Eifelian (*Chimaerothyris dombrowiensis* Zone).

Order **Eridostracea** Adamczak, 1961
Family **Eridoconchidae** Henningsmoen, 1953
Genus *Cryptophyllus* Levinson, 1951
Cryptophyllus nidae sp. n.

(pl. 25: 3)

Holotype: PIG-OS OII/98; pl. 25: 3.

Type horizon: the lower Eifelian, *Chimaerothyris dombrowiensis* Zone.

Type locality: Zbrza, Świętokrzyskie Mts, Poland.

Derivation of the name: from the river Nida running near Zbrza.

Diagnosis. — Valve oval in side view, composed of six growth blades, separated by distinct concentric furrows.

Material. — 5 well-preserved carapaces from Zbrza: PIG-OS OII/97—99, 2394, 2395.

Measurements (in mm):

Specimen No.	L	H	W
PIG-OS OII/97	0.61	0.45	0.27
PIG-OS OII/98 holotype	0.62	0.47	0.27
PIG-OS OII/99	0.70	0.47	0.28

Description. — Carapace oval in side view. Anterior and posterior margins regularly and similarly rounded. Umbo situated symmetrically between the anterior and posterior margins. Hinge margin straight, in a distinct depression. Valves consisting of six concentric growth blades bordered by distinct rims. Smooth surface between rims.

Remarks. — *Cryptophyllus nidae* sp. n. has the same number of growth blades as *Cryptophyllus* sp. A from the lowermost Eifelian of Spain (Becker and Sánchez de Posada 1977). It differs, however, in smaller size and more elongated horizontally shape of carapace.

Occurrence. — Poland (Świętokrzyskie Mts.): Zbrza, lower Eifelian (*Chimaerothyris dombrowiensis* Zone).

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JAN MALEC

MAŁŻORACZKI Z DOLNEGO EIFLU ZACHODNIEJ CZĘŚCI GÓR ŚWIĘTOKRZYSKICH

Streszczenie

W pracy przedstawiono zespół dolnoeifelskich małżoraczków z wapieni lokalnej biozony ramienionogowej *Chimaerothyris dombrowiensis* z Dąbrowy i ze Zbrzy (fig. 1). W utworach tych wyróżniono 32 gatunki małżoraczków należących do 27 rodzajów (Tablica 1). Opisano 22 gatunki w tym 7 jako nowe (pl. 1—5): *Sulcatiella pusilla* sp. n., *Evlanella kielcensis* sp. n., *Jefina larga* sp. n., *Cytherellina clara* sp. n., *Orthocypris magna* sp. n., *Bairdiacypris subbafasi* sp. n. i *Cryptophyllus nidae* sp. n. Spośród okazów topotypowych wyznaczono neotypy gatunków: *Rishona obliqua* (Gürich), *Poloniella devonica* Gürich, *Evlanella humiliformis* (Gürich) i *Bythocyproidea polaris* (Gürich). Na podstawie konodontów występujących w wapieniach poziomu *Chimaerothyris dombrowiensis* profilu Grzegorzowic, w sposób pośredni określono wiek osadów z Dąbrowy i ze Zbrzy, zawierających zbadane małżoraczki, na dolny eifel. W przybliżeniu odpowiada on konodontowemu poziomowi *partitus*, będąc najprawdopodobniej wiekowym ekwiwalentem osadów formacji Lauch z Gór Eifel.

EXPLANATION OF PLATES 21—25

All specimens come from the lower Eifelian, *Chimaerothyris dombrowiensis* Zone, Świętokrzyskie Mts.; all figures approx. ×50.

Plate 21

Sulcatiella pusilla sp. n.

1. Heteromorph carapace, *a* right lateral view, *b* dorsal view; PIG-OS OII/1.
2. Holotype, heteromorph carapace, *a* right lateral view, *b* dorsal view; PIG-OS OII/2.
3. Heteromorph carapace, *a* right lateral view, *b* dorsal view: PIG-OS OII/3.

Clavofabellina sp.

4. Tecnomorph carapace, *a* right lateral view, *b* dorsal view; PIG-OS OII/4.

Rishona obliqua (Gürich)

5. *a* right lateral view, *b* dorsal view; PIG-OS OII/17.
6. Neotype; *a* right lateral view, *b* dorsal view; PIG-OS OII/16.

1—*6* Dąbrowa — dump of the "Agricola" shaft

Plate 22

Poloniella tertia Krömmelbein

1. Tecnomorph carapace, *a* right lateral view, *b* dorsal view; PIG-OS OII/30.
2. Tecnomorph carapace, *a* right lateral view, *b* dorsal view; PIG-OS OII/29.

Poloniella devonica Gürich

3. Neotype; heteromorph carapace, *a* right lateral view, *b* dorsal view; PIG-OS OII/23.
4. Tecnomorph carapace, *a* right lateral view, *b* dorsal view; PIG-OS OII/24.

Kummerowia sp.

5, 6. Specimens in *5* right lateral and *6* dorsal views; PIG-OS OII/106 and 107.

Eukloedenella sp.

7. Heteromorph carapace, *a* right lateral and *b* dorsal views; PIG-OS OII/59.

1, *5*, *6* Dąbrowa — dump of the "Agricola" shaft; *2*—*4*, *7* Zbrza

Plate 23

Evlanella rhenana (Kummerow)

1. Heteromorph carapace, *a* right lateral view, *b* dorsal view; PIG-OS OII/40.
2. Heteromorph carapace, *a* left lateral view, *b* dorsal view; PIG-OS OII/38.

3. Heteromorph carapace, *a* left lateral view, *b* dorsal view; PIG-OS OII/36.
4. Tecnomorph carapace, *a* left lateral view, *b* dorsal view; PIG-OS OII/37.
9. Tecnomorph carapace, *a* right lateral view, *b* dorsal view; PIG-OS OII/39.

Evlanella humiliformis (Gürich)

5. Neotype; heteromorph carapace, *a* left lateral view, *b* dorsal view; PIG-OS OII/42.
6. Tecnomorph carapace, *a* left lateral view, *b* dorsal view; PIG-OS OII/44.
7. Heteromorph carapace, *a* left lateral view, *b* dorsal view; PIG-OS OII/43.
8. Tecnomorph carapace, *a* left lateral view, *b* dorsal view; PIG-OS OII/45.

1, *7*, *8* Dąbrowa — dump of the "Agricola" shaft; *2*—*6*, *9* Zbrza.

Plate 24

1. *Evlanella kielcensis* sp. n.: holotype; heteromorph carapace, *a* left lateral view, *b* dorsal view; PIG-OS OII/48.
2. The same species: tecnomorph carapace, *a* left lateral view, *b* dorsal view; PIG-OS OII/49.
3. *Aechmina* sp.: right lateral view; PIG-OS OII/22.
4. *Jefina larga* sp. n.: holotype; *a* right lateral view, *b* dorsal view; PIG-OS OII/63.
5. The same species: *a* right lateral view, *b* dorsal view; PIG-OS OII/64.
6. *Knoxiella polonica* (Kummerow): heteromorph carapace, *a* right lateral view, *b* dorsal view; PIG-OS OII/54.
7. *Sulcella* (*Sulcella*) sp.: *a* left lateral view, *b* dorsal view; PIG-OS OII/58.
8. *Ochescapha ornatissima* (Gürich): tecnomorph carapace, *a* left lateral view, *b* dorsal view; PIG-OS OII/10.

Cytherellina clara sp. n.

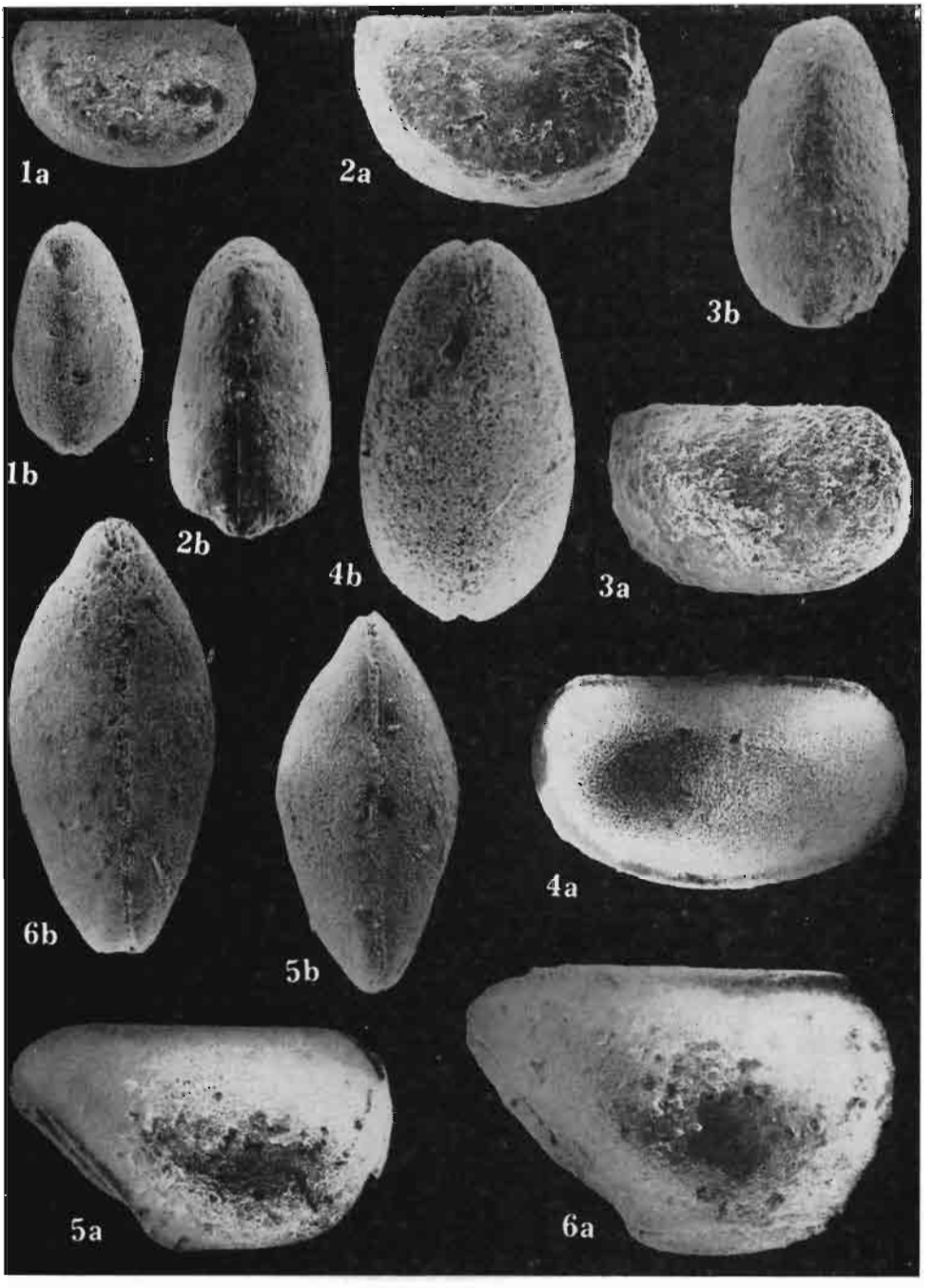
9. *a* right lateral view, *b* dorsal view; PIG-OS OII/70.
10. *a* right lateral view, *b* dorsal view; PIG-OS OII/71.

1—*5* Zbrza; *6*, *9*, *10* borehole Dąbrowa D5, depth 67.5 m; *7*, *8* Dąbrowa — dump of the Agricola shaft.

Plate 25

1. *Bythocyproidea polari* (Gürich). Neotype; *a* right lateral view, *b* dorsal view; PIG-OS OII/75.
2. The same species: *a* right lateral view, *b* dorsal view; PIG-OS OII/76.
3. *Cryptophyllus nidae* sp. n.: holotype, *a* right lateral view, *b* dorsal view; PIG-OS OII/98.
4. *Orthocypris magnus* sp. n.: holotype; heteromorph carapace, *a* right lateral view, *b* dorsal view; PIG-OS OII/80.
5. *Pseudorayella* sp.: *a* right lateral view, *b* dorsal view; PIG-OS OII/89.
6. *Bairdiacypris subbafasi* sp. n.: holotype; *a* right lateral view, *b* dorsal view; PIG-OS OII/84.
7. Gen. et sp. indet.: *a* right lateral view, *b* dorsal view; PIG-OS OII/94.
8. *Cytherellina clara* sp. n.: holotype; *a* right lateral view, *b* dorsal view; PIG-OS OII/69.

1, *3*, *4*, *7* Dąbrowa — dump of the "Agricola" shaft; *2*, *5*, *6*, *8* Zbrza.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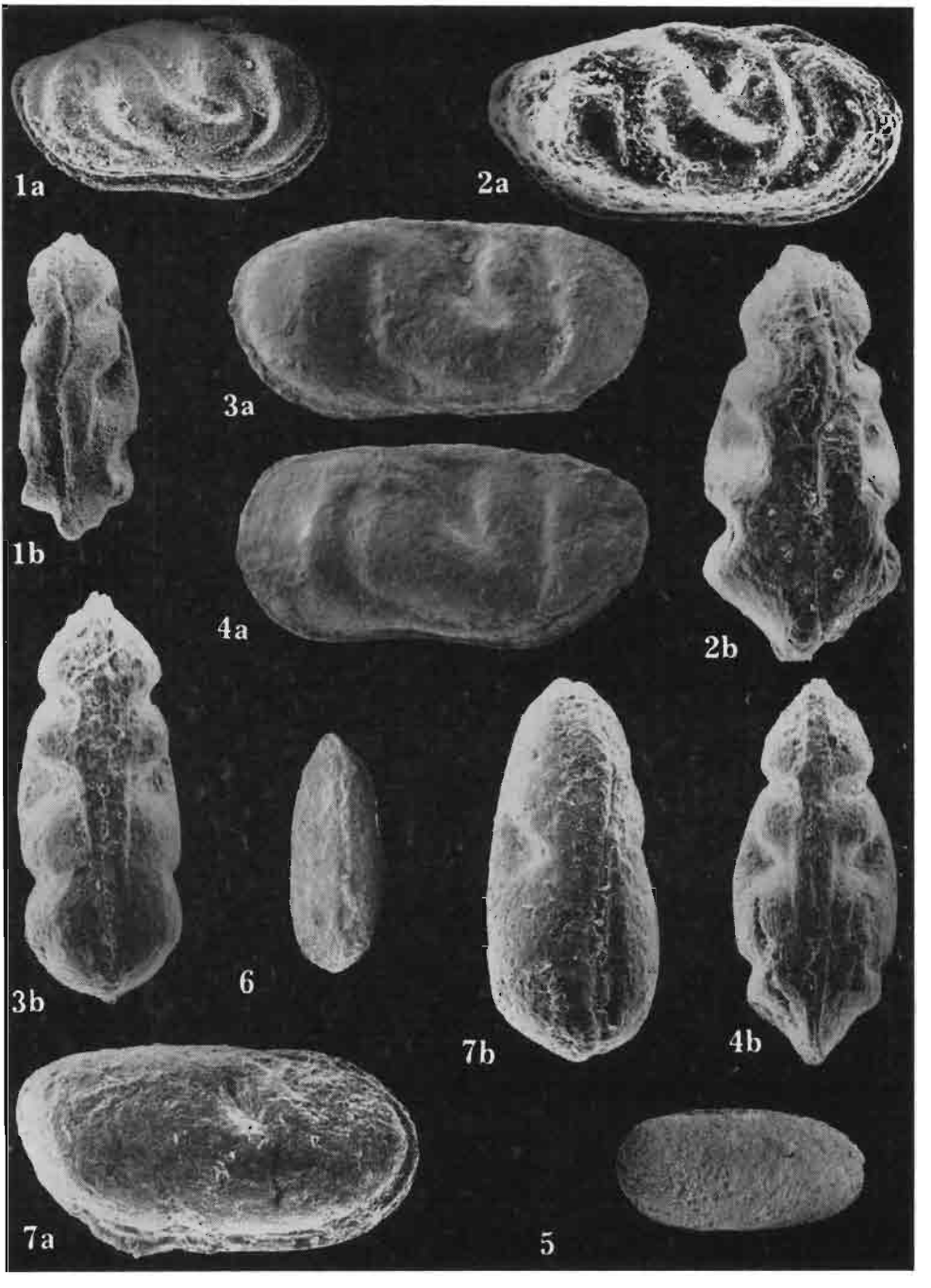
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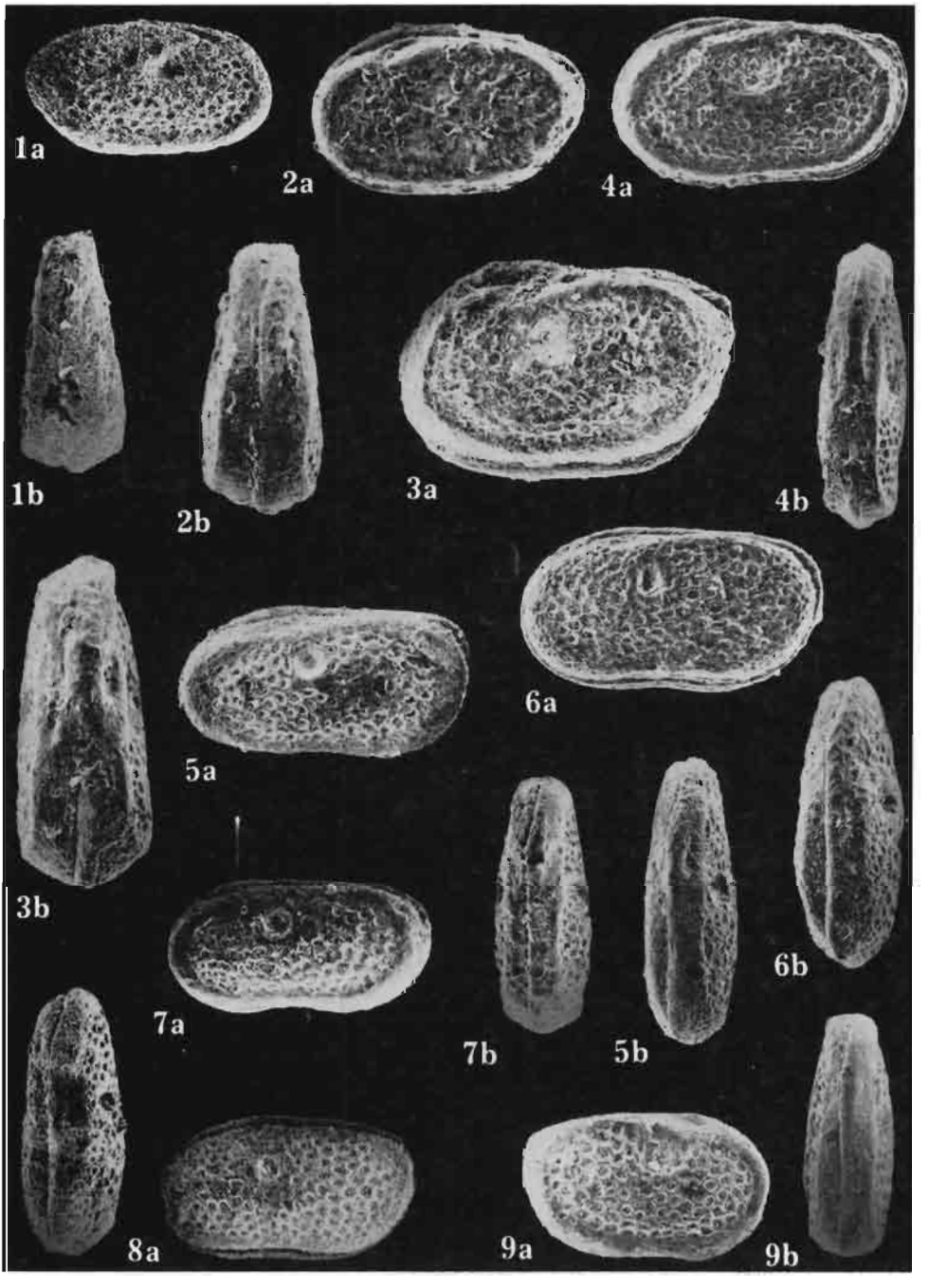
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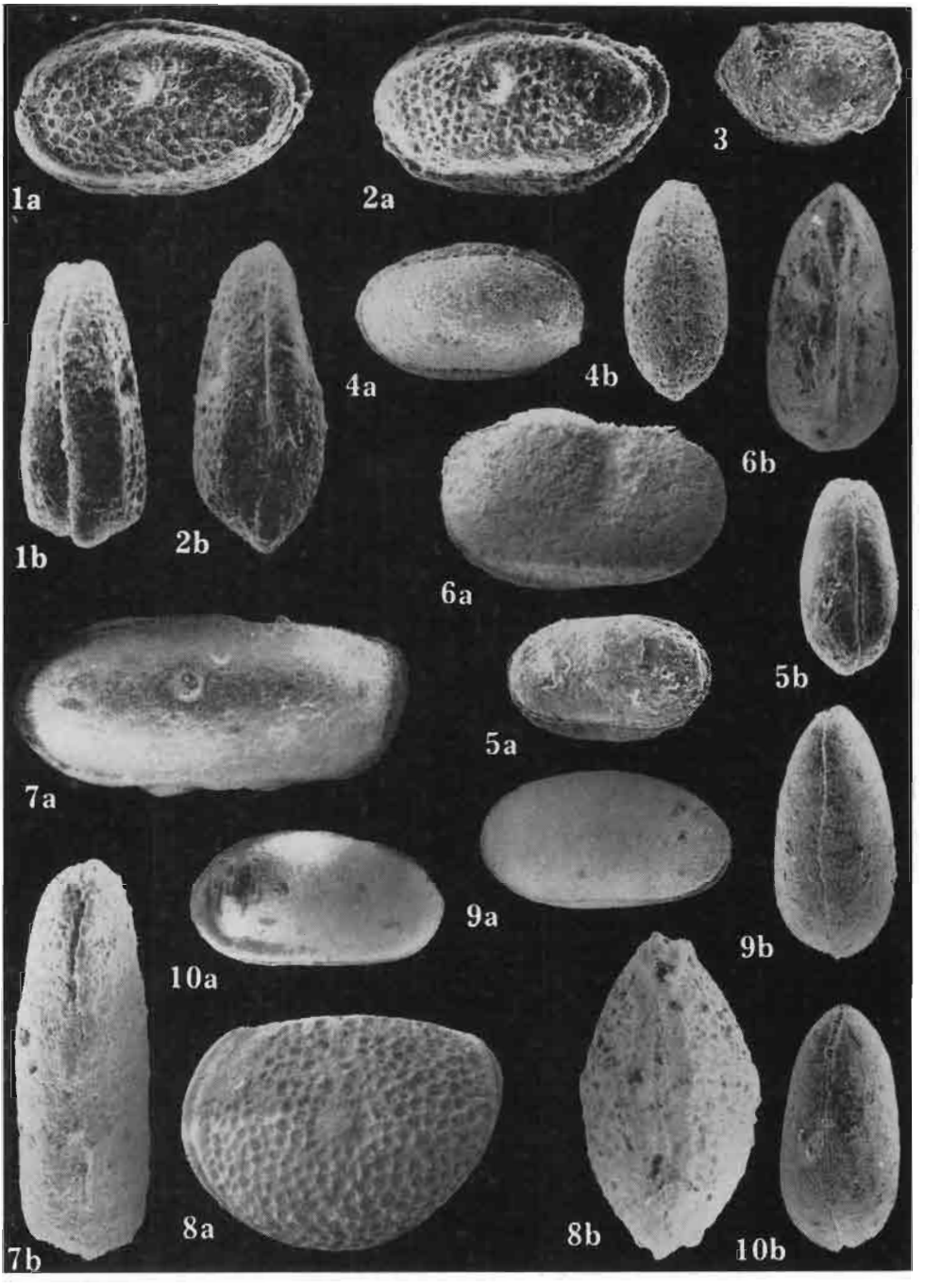
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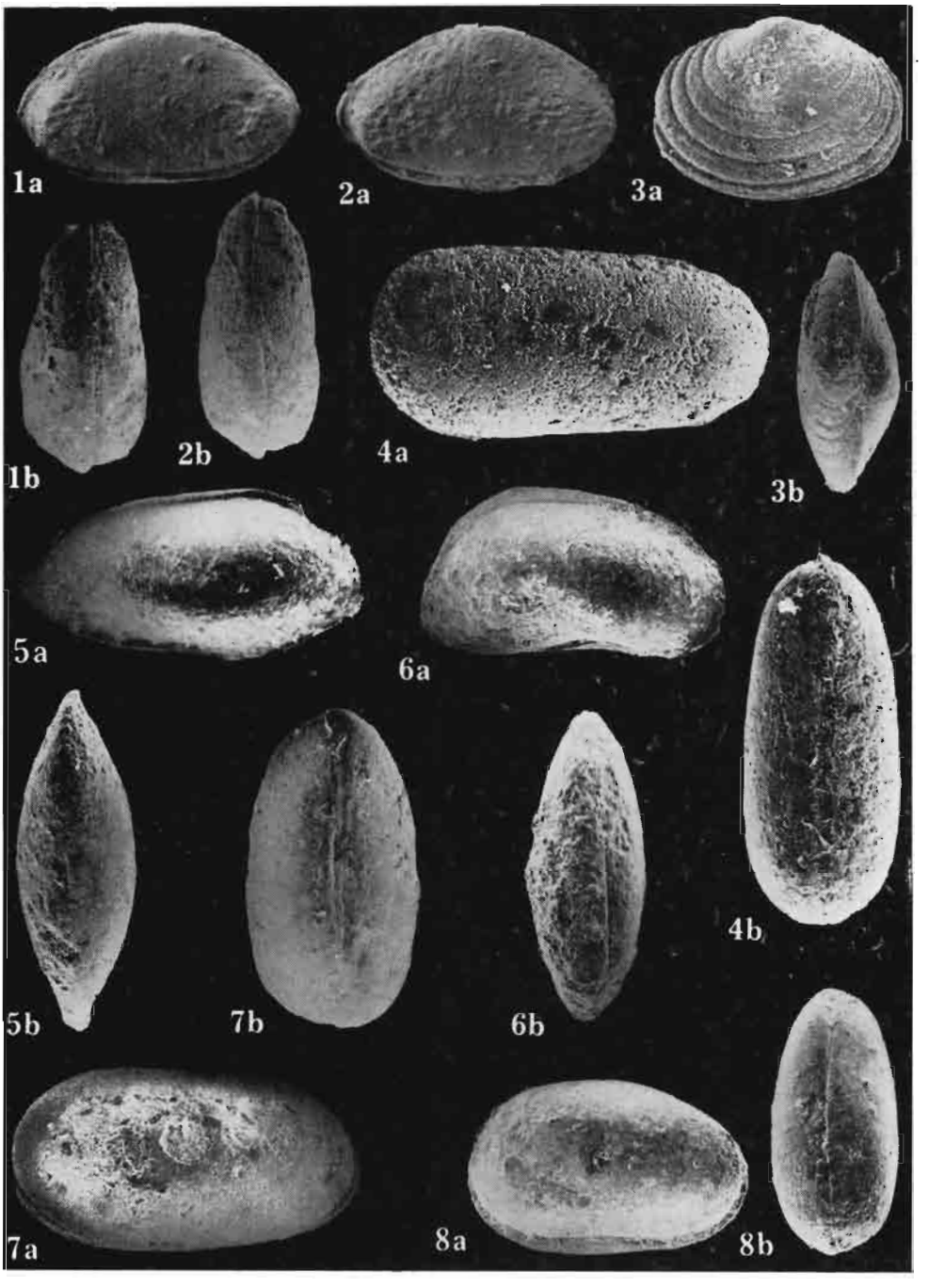
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