A C T A P A L A E O N T O L O G I C A P O L O N I C A

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TWO NEW BATHONIAN OSTRACODS OF THE GENUS *PROGONOCYTHERE*

Abstract. — Two new Upper Bathonian species: *Progonocythere polonica* n. sp. and *Progonocythere ogrodzieniecensis* n. sp. are described from the *Clydoniceras discus* zone in Ogrodzieniec near Zawiercie, Poland. The ontogeny and development of the hinge in the successive instars of the species *P. polonica* n. sp. have been studied. The presence there has been ascertained of a sieve plate closing up the lumen of straight pore canals.

INTRODUCTION

This paper gives the results of the investigation of two new Upper Bathonian ostracod species of the genus *Progonocythere* Sylvester-Bradley, from the *Clydoniceras discus* zone. The studied material was collected by the writer in 1958 at Ogrodzieniec near the town of Zawiercie, from

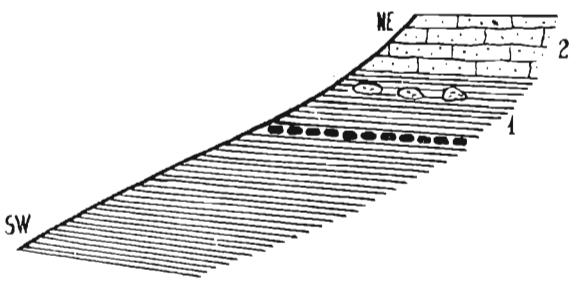

Fig. 1. — Part of a cuesta slope at Ogrodzieniec, after S. Z. Różycki (1953): *1* dark grey Upper Bathonian clays, *2* Lower Callovian limestones. Scale 1 : 3000.

Bathonian clays. The *Clydoniceras discus* zone is there developed as dark grey clays with oolithic concretions of a total thickness of approx. 5 m. The Zawiercie Jurassic sedimentation area has been described in detail by S. Z. Różycki (1953). Dogger and Malm outcrops occur there. Within a score of kilometres from Zawiercie there are some isolated hills with

slopes built of Dogger rocks, while the hill tops are covered by limestone belonging to the Lower Callovian (fig. 1).

The present paper has been prepared in the Palaeozoological Laboratory of the Polish Academy of Sciences in Warsaw. The author is indebted to the following persons for the assistance they have given: Professor Roman Kozłowski for his constant advice and valuable suggestions; Dr M. J. Mandelstam from the Leningrad Petroleum Institute — for discussing the systematic position of the here considered species; Mr F. Adamczak for checking up the terminology used in this work.

METHODS

The examined specimens were macerated in Glauber's salt. Besides mature individuals, the material also contains numerous young specimens enabling the study of the ontogenetic development. A diagram has been plotted (fig. 2) to illustrate the writer's working methods on the ontogeny of *Progonocythere polonica* n. sp. Points indicated there correspond to the true dimensions of the carapace examined for each given instar. The writer has ascertained that between two successive moults of *P. polonica* n. sp. the length increase of the carapace follows a certain approximately constant per cent ratio, in conformity with Brooks' law concerning ostracod ontogeny. In *Progonocythere polonica* n. sp. this constant length increase ratio is 1.26.

In plotting diagrams of the various stages of ontogeny the writer used a circle with the circumference divided up into 36 parts, each equal to approx. 0.028 mm. The scale values are marked on the last but one circumference zone, counting from the centre outwards. In the central circumference zone thick black triangles correspond to carapace dimensions representing the particular instars. Their numerical values are indicated in the inner circumference zone. In the outer circumference zone figures indicate the supposed moult periods. These values are computed on the per cent growth ratio. Stages I-VI have been marked inside the circle by brackets delimiting the particular instars.

DESCRIPTIONS

Family **Cytheridae** Baird, 1850
Subfamily **Progonocytherinae** Sylvester-Bradley, 1948
Genus *Progonocythere* Sylvester-Bradley, 1948

P. C. Sylvester-Bradley (1948), when establishing the subfamily Progonocytherinae, gave the following diagnosis of the genus *Progonocythere:* "Progonocytherinae with hinge characteristic of the subfamily,

smooth or ornamented with transverse, longitudinal, or both transverse and longitudinal wrinkles or ridges, giving an irregular reticulate pattern" (*l. c.*, p. 189).

The examination of *Progonocythere polonica* n. sp. and *P. ogrodzieniecensis* n. sp. has revealed certain morphological features thus far never

Fig. 2. — Diagram of ontogenetic stages in *Progonocythere polonica* n. sp.

described in representatives of the genus *Progonocythere*. The writer believes them to be of some significance as generic characters too. They are:

1) *shape of carapace* — all species of the genus *Progonocythere* are with the hinge line bent, extending to the posterior carapace region at an angle of 40°;

2) *pore canals* — occur throughout the carapace and as radial pore canals in the marginal part; in *P. polonica* n. sp. and *P. ogrodzieniecensis*

n. sp. the canal apertures of the central portion of the carapace are covered up with an external sieve plate.

In an analysis of the hinge structure of the superfamily Cytheracea, consisting of the anterior, median and posterior elements, Sylvester-Bradley (1956) demonstrates that they may have derived from a type of hinge noted in the Middle Devonian Ropolenellidae, described by H. N. Coryell and D. S. Malkin (1936), most likely so from the genera *Ropolenellus* and *Euglyphella*. In shape these two genera differ fundamentally from other Palaeozoic ostracods, but they display good many similarities with some cytherid genera. In *Euglyphella* the hinges are likewise tripartite: the anterior, the median and the posterior. The fundamental difference between *Euglyphella* and representatives of the Cytheridae concerns muscle scars. The Ropolenellidae are recorded from the Middle Devonian only. The Quasillitidae are another group well represented in Middle Devonian strata of North America. In structure they come very near to Ropolenellidae. G. Henningsmoen (1953) postulates that the Quasillitidae and the Ropolenellidae are subfamilies of the Quasillitidae. Sylvester-Bradley (1956) suggests that, in great probability, the first representatives of the Cytheracea have descended from one or more representatives of the Quasillitacea at the close of the Palaeozoic.

Six species of the genus *Progonocythere* have thus far been recorded: *Progonocythere stilla* Sylvester-Bradley, 1948 (type species), *P. blakeana* (Jones, 1884), *P. juglandica* (Jones, 1884), *P. catephracta* (Mandelstam, 1950), *P. attalica* (Mandelstam, 1950) and *P. memorabilis* Liubimova, 1956.

Two new species, here described, are included into this genus.

Progonocythere polonica n. sp.

(pl. I, fig. 5 *a-f*; pl. II, fig. 5 *a-b*; pl. III; pl. IV, fig. 2 *a, b*; text-fig. 3)

Holotypus: pl. I, fig. 5; left and right valves (complete carapace; Cat. No. Z.P.I. 1).
Stratum typicum: Upper Bathonian, *Clydoniceras discus* zone.
Locus typicus: Ogrodzieniec near Zawiercie, Poland.
Derivatio nominis: polonica — species for the first time described from Poland.

Material. — 400 left and right valves, including 100 well preserved carapaces.

Diagnosis. — Outline ovally elongate. Hinges straight, consisting of three parts. Seven dentate ridges and loculate grooves present in the anterior and posterior hinge part, twenty in the median. Surface of valves smooth, with numerous inner and outer funnel-shaped pits corresponding to the pore-canal foramens.

Description. — Carapace elongate, strongly inflated, anteriorly

rounded. End of posterior area strongly constricted from the termination of hinges. Large pore canals dispersed over the whole surface. Surface smooth. In adductor muscles area there are crescentic pits, their convex side directed towards the posterior end of the carapace. Pores concentrically arranged over the anterior and posterior regions. This is seen clearly in older individuals. Centrally pores dispersed at random. Groups of three pores sometimes observable in the centre of carapace, arranged to produce diversely shaped triangles, when straight lines are drawn between them. Owing to the concentric arrangement of the pore canals, the grooves and ridges produce a kind of ornamentation in the anterior and posterior regions of the carapace. Pore canals are placed in a row within grooves. The maximum diameter of the pore canals is noted in the anterior area, where grooves and ridges are most conspicuous. Otherwise the pore canals are smaller and the ornamentation gradually disappears. Ventrally pore canals are not placed in grooves and here the lack of ornamentation is most striking.

Among normal pore canals, developed as straight unbranched tubules, other canals occur provided with funnel-shaped apertures. The outer aperture is larger than the inner, the bottom of the outer funnel is closed

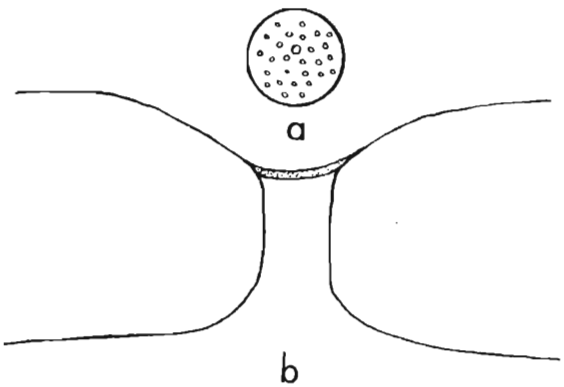

Fig. 3. — *a* Sieve plate covering up a pore canal, *b* vertical section of pore canal.

up by a sieve covering the whole lumen of the pore canal (fig. 3). The sieve has a central opening of greater diameter than the others, probably providing a passage for setae. In 1896, a similar structure was observed by G. W. Müller in living representatives of the genera: *Loxoconcha, Eucythere, Cytheridea, Cythereis, Paracytheridea* and *Xestoleberis.* Several suggestions have been advanced by that author with regard to the probable function of this element.

In *Progonocythere polonica* n. sp. canals provided with a sieve occur in the central portion of the carapace, while its marginal areas bear straight pore canals without funnel-shaped foramens and lacking the sieve. The ventral margin is concave, the left valve overlaps the right. The dorsal margin is straight with the exception of the terminal hinge elements which are strongly swollen. The swellings are associated with the presence of strongly dentate ridges in the right valve and of loculate grooves in the left valve. The median part of hinge consists of a finer denticulate ridge and locellate groove in the left valve than in the right valve, and the anterior element of the median part is larger than the posterior element.

Ontogeny. — Six instars can be recognized in the ontogeny of *Progonocythere polonica* n. sp., but stage I. has not been observed in the writer's material. The youngest stages are represented by fewer individuals than the following ones. Plate II, fig. 1-5 show hinge development in ontogenetic succession. The number of dentate ridges in hinges and of the pore openings over the whole surface increases with the succeeding stages.

Instar II (pl. I, fig. 1 *a, b*; pl. II, fig. 1).

Dimensions of right valve (in mm):

Total length	0.233
Inside length	0.181
Height	0.138

This stage is represented by one right valve only, just before moulting (see diagram — fig. 2). It is slightly damaged. Its structure is extremely delicate. Under 900 magnification it has the appearance of being covered by a network of straight pore canals. Anteriorly the valve is uniformly rounded, posteriorly it is narrower from the end of hinges, its posterior margin being rounded. The valve is convex, unornamented. The hinges are of the lophodontoid type (Sylvester-Bradley, 1956, p. 4-7), with ends slightly expanded. The ventral side is interiorly bent. The anterior and posterior marginal areas are distinctly emphasized.

Instar III (pl. I, fig. 2 *a-d*; pl. II, fig. 2 *a, b*).

Dimensions (in mm):

	Right valve	Left valve
Total length	0.354	0.359
Inside length	0.255	0.287
Height	0.200	0.217

Right valve smooth, convex. Anterior border rounded; the posterior strongly narrowing from the middle of the posterior dentate ridge.

A small central depression observable on the outer surface. The entire surface covered with pore-canal apertures, approx. 55 in number. Inside surface of valve smooth, with readily discernible pore canals. A crescentic elevation corresponding to the adductor muscle attachment observable in the centre of valve. The ventral junction of the right valve with the left is slightly interiorly bent and somewhat raised. The anterior and posterior areas of radial pore canals well developed, without discernible pore canals. Hinge border tripartite. Six well developed dentate ridges present in the anterior and posterior hinge parts of the right valve; in the median part there is a groove-like depression.

Morphologically the right and left valves are identical, though the left is slightly larger in the ventral region than the right one and overlaps it. There are approx. 55 pore canals on the left valve. The hinges consist of three parts, with 6 loculate grooves in the anterior and posterior part. The median hinge element of the left valve is a ridge. In stage III the hinge is of the merodont type (E. Triebel, 1950, p. 313-316).

Instar IV (pl. I, fig. 3 *a-d*; pl. II, fig. 3 *a, b*).

Dimensions (in mm):

	Right valve	Left valve
Total length	0.446	0.456
Inside length	0.350	0.353
Height	0.258	0.270

Valves very thin, in shape analogous to the preceding stage. Differences between instars III and IV consist in greater dimensions of carapace, greater number of pore canals (70), but foremost in structure of hinge. In the right valve there are 6 dentate ridges in the anterior hinge part, 7 — in the posterior. In this instar the median hinge part for the first time bears denticles (16). In this stage we may also note a faintly indicated separation of the median hinge part into the antero-median and postero-median elements. The denticulate ridges of the median part are uniform. The hinge border nearly straight. The median hinge part of the right valve consists of 16 locellate grooves.

The anterior hinge part of the left valve consists of 6 loculate grooves, the posterior — of 7 analogous grooves. The median hinge part bears 16 uniform denticulate ridges. Both the denticulate ridges and the locellate grooves of the median part are three-fourths the size of the dentate ridges and loculate grooves of the anterior and posterior parts. Hinge of the merodont type (Sylvester-Bradley, 1956, p. 4-7). The ridge paralleling the hinge is faintly marked on the outer side of the right and left valves. Ventrally the valves are slightly interiorly bent. The left valve is somewhat larger than the right and overlaps it ventrally.

Instar V (pl. I, fig. 4 *a-d*; pl. II, fig. 4 *a, b*).

Dimensions (in mm):

	Right valve	Left valve
Total length	0.532	0.534
Inside length	0.425	0.428
Height	0.291	0.319

In stage V the shape of the carapace does not change, but there is a tendency for elongation. Moreover, the valves are still thin, with thickening only about the adductor muscle attachment and in the dorsal region. The depression, formerly noted on the outer surface in the adductor muscle attachment area, decreases. This instar differs from the preceding one in dimensions and in greater number of pore canals (80). The anterior and posterior hinge parts of the right valve consist each of seven dentate ridges. The median part of right valve has 18 semicircular locellate grooves; on the ground of these grooves, it may be subdivided into the antero-median and postero-median elements. In the antero-median element the short, wide loculate grooves are larger and slightly inclined towards the centre of the carapace. The inner list of the antero-median hinge element is raised slightly above that element. This is a structure reinforcing the depressed area occupied by the short, wide loculate groove. In the left valve the list fits into a special depression near to the raised short, dentate ridge. The postero-median hinge element is straight and made up of numerous, long, narrow locellate grooves, smaller than the short, wide loculate grooves of the antero-median element. The orientation here is straight.

The anterior and posterior hinge parts of the left valve are each made up of 7 loculate grooves. The median hinge part consists of 18 subglobose denticles, the anterior ones in the form of a short dentate ridge, slightly raised and gently inclined to the centre of valve, and the posterior ones made up of smaller, straight, long denticulate ridges. The hinge here is of the merodont-entomodont type (Sylvester-Bradley, 1956, p. 4-7).

Muscle scar impressions, typical for the family Cytheridae, are readily discernible on the inner side of valve. They occur in the anterior part of the carapace, slightly shifted ventrally. Moreover, there is a well developed internal marginal area bearing pore canals, both in the anterior and the posterior end of the carapace. Straight ventral pore canals are observable on the anterior marginal area. The left valve is larger and ventrally slightly overlaps the right. The ventral junction line of valves is gently bent towards the centre of carapace.

Instar VI, mature (pl. I, fig. 5 *a-f*; pl. II, fig. 5 *a, b*; pl. IV, fig. 2 *a, b*).

Dimensions (in mm):

	Right valve	Left valve
Total length	0.673	0.680
Inside length	0.552	0.556
Height	0.357	0.383

The carapace, though translucent, is of robust structure. The depression on the inner surface of valve near the muscle attachment is conspicuously shifted towards the antero-median part. Moreover, it is strongly constricted. A strong swelling occurs on the inside near the muscle scar impressions. It is in the form of a ridge arcuately stretched to the dorsal surface, uniformly involving the whole hinge and reinforcing it.

Stage VI differs from stage V in dimensions and in more numerous pore canals (92). A well developed marginal area with translucent parallel pore canals is seen anteriorly and posteriorly, both from inside and outside. Depressions at the beginning of canals are particularly clear in the antero-marginal area, producing a sinuous line of the inner margin. Muscle scar impressions conspicuous in transmitted light. The chief difference between this stage and the preceding one lies in structure of hinge. Anterior and posterior hinge parts of the right valve each consists of 7 oval dentate ridges. The ridges are placed on the convex surface so that the anterior and posterior denticles are strongly raised above the whole hinge. The two hinge parts are gently inclined to the outside. The median part consists of 20 subglobular locellate grooves arranged in a furrow. An antero-median and a postero-median elements are here readily discernible. The antero-median element is made up of 8 larger, short, wide loculate grooves, on the inside reinforced by a protruding list. Together with all that hinge area the list is directed to the centre of the carapace. The postero-median element consists of 12 smaller, long, narrow locellate grooves; it gently bends towards the outer side of the carapace and reaches to the beginning of the posterior hinge part.

Arcuate depressions enclosing 7 large, oval loculate grooves occur at both hinge ends of the left valve. Distinct semicircular denticles are present in the median hinge part, comprising 8 larger, short dentate ridges anteriorly, and 12 smaller, long denticulate ridges posteriorly, the latter bend towards the outer side of the carapace. On the inner side of the postero-median hinge part there is a depression to receive the internal list of the right valve. The left valve is larger than the right and overlaps

it both ventrally and dorsally, as is shown in serial thin sections of mature specimens (pl. III).

The junction of both valves is swollen. Besides the hinges, a ridge is developed in the right valve fitting into the corresponding groove of the left valve (pl. III).

Progonocythere ogrodzieniecensis n. sp.

(pl. IV, fig. 1 *a-j*; pl. V)

Holotypus: pl. IV, fig. 1*a-f* and 1*i-j*: right and left valves (complete carapace of mature individual; Cat. No. Z. P. I, 2).

Stratum typicum: Upper Bathonian, *Clydoniceras discus* zone.

Locus typicus: Ogrodzieniec near Zawiercie, Poland.

Derivatio nominis: ogrodzieniecensis — after the locality Ogrodzieniec.

Material. — 300 right and left valves in the mature stage only, including 100 complete carapaces.

Diagnosis. — Carapace elliptic in outline, dorsally and ventrally concave. Anterior end uniformly rounded, the posterior truncated. Hinges tripartite, with the median part incurved. Anterior and posterior hinge parts consisting each of 7 denticles and 7 grooves, the median part — of 16. Surface smooth. Funnel-shaped depressions present on the inside and the outside, pierced by apertures of straight pore canals.

Dimensions (in mm):

	Right valve	Left valve
Total length	0.532	0.537
Inside length	0.381	0.384
Height	0.318	0.361

Description. — Valves elongate, inflated, anteriorly uniformly rounded, posteriorly truncated. Owing to the curvature of the ventral and dorsal regions towards the centre of carapace, the valves from inside are in the shape of an irregular ellipse. Valves relatively thick, but translucent, additionally reinforced by a thickening in the adductor muscle and hinge areas. Left valve larger than the right, overlapping it both dorsally and ventrally, as is shown by serial thin sections in pl. V. Marginal areas of pore canals readily discernible on the inside of valves. Unbranched, straight pore canals transpire in the anterior marginal part of both valves, not observed in the posterior marginal part. Funnel-shaped depressions, corresponding to the apertures of the pore canals, present on both the inside and the outside of the right and left valves. Each valve bears approx. 70 pore canals. A crescentic ridge occurs antero-centrally on the inside of valves, with adductor muscle scars, typical for the

family Cytheridae; they are clearly seen in transmitted light. A narrow furrow present on the outside of carapace at the point of adductor muscle attachment. Valves smooth. Hinges distinctly tripartite, with the median part clearly differentiated into two elements (pl. IV, fig. 1*i* and 1*j*). The hinge line is sinuous owing to the strong differentiation of denticles and grooves, and their arrangement pattern. This type of structure provides additional reinforcement of the whole hinge border.

Anterior and posterior hinge parts of the right valve consists each of 7 large dentate ridges. The median hinge part is gently curved towards the inside of valve; it is made up of an antero-median element with 6 large, short, wide loculate grooves, and a postero-median element with 10 smaller, long, narrow locellate grooves. Grooves in the median hinge part are semicircular. The antero-median hinge element is delimited from the inside by an extensive internal list, arcuately curved and strongly protruding above the grooves which are arranged in a furrow. The list disappears gradually in the postero-median hinge element.

The anterior and posterior hinge parts of the left valve consists each of 7 large loculate grooves, placed in a deep furrow. The antero-median hinge element of the left valve consists of 6 large, semicircular, short dentate ridges. This part of the hinge is raised and directed somewhat to the centre of the carapace. Ten smaller semicircular, long denticulate ridges occur in the postero-median hinge element, placed slightly lower down in relation to the antero-median element. This element is gently inclined away from the valve. A furrow has developed on the inner side, along to the antero-median hinge element, to receive the inner list of the antero-median hinge element of the right valve. Both the anterior and posterior dentate ridges and loculate grooves of the hinge in the two valves are twice the size of the ridges and grooves in the median hinge part.

Affinities and differences

The hinge in *Progonocythere ogrodzieniecensis* n. sp. differs from that in *P. polonica* n. sp. in smaller number of elements in the median part. Moreover, hinges in *P. ogrodzieniecensis* n. sp. have a sinuous line, while in *P. polonica* they are straight. Mature carapaces of *P. ogrodzieniecensis* n. sp. are smaller than those of *P. polonica* n. sp.

From *Progonocythere stilla* Sylvester-Bradley (1948) our species differ in less rounded posterior end. From *P. blakeana* (Jones, 1884) they differ in ornamentation, and from *P. juglandica* (Jones, 1884) — in absence of process protruding above the dorsal margin. *Progonocythere catephracta* (Mandelstam in Liubimova, 1955) and *P. memorabilis* Liubimova (Liubimova, 1956) have an ornamentation consisting of three ribs parallel

to the carapace. Additional longitudinal ribs occur in *P. attalica* (Mandelstam in Liubimova, 1955) too.

Progonocythere ogrodzieniecensis n. sp. displays a certain similarity to *Cytheridea compressa* Terquem (Terquem, 1886). It is, however, difficult to estimate the correctness of Terquem's figures, since their description is very brief and cursory. *Progonocythere ogrodzieniecensis* approaches *C. compressa* Terquem in general internal outline of carapace. In *Cytheridea compressa* Terquem, on the other hand, the median hinge part lacks denticles, a feature very typical, in spite of the fact that the examined individual is mature. In *P. ogrodzieniecensis* n. sp. the posterior end of the carapace is truncated, while in *C. compressa* Terquem it is pointed in a wedge-like fashion.

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JANUSZ BŁASZYK

O DWÓCH NOWYCH OSTRAKODACH BATOŃSKICH Z RODZAJU *PROGONOCYTHERE*

Streszczenie

Praca przedstawia wyniki badań nad *Progonocythere polonica* n. sp. i *P. ogrodzieniecensis* n. sp. z górnego batonu, z poziomu *Clydoniceras discus*. Materiał zebrany został przez autora w Ogrodzieńcu koło Zawiercia. Duża liczba osobników dorosłych i młodych gatunku *P. polonica* n. sp. pozwoliła prześledzić jego rozwój ontogenetyczny, który graficznie przedstawiony jest na wykresie (fig. 2). Obwód koła podzielono na 36 części, z których każda równa się ok. 0,028 mm. Czarne prostokąty odpowiadają wielkości skorupek w poszczególnych stadiach rozwojowych. Obok po stronie wewnętrznej są ich wartości liczbowe. Na zewnętrznym pasie podano wartości, w których powinna była nastąpić wylinka. Wartości te są wynikiem. uzyskanym na podstawie procentowego współczynnika wzrostu. U *Progonocythere polonica* n. sp. skorupka od jednego stadium do następnego powiększa swoje wymiary w przybliżeniu o stały współczynnik procentowy (1,26), co jest potwierdzeniem prawa Brooksa rozwoju osobniczego ostrakodów. Wewnątrz koła, przy pomocy nawiasów, wydzielono odcinki (od 1 do VI), odgraniczające poszczególne cykle rozwojowe.

Przeprowadzone obserwacje nad *P. polonica* n. sp. i *P. ogrodzieniecensis* n. sp. pozwoliły na wykrycie nowych szczegółów morfologicznych, nie opisanych u dotychczas znanych przedstawicieli rodzaju *Progonocythere*. Są to:

1) *kształt skorupki* — u wszystkich gatunków rodzaju *Progonocythere* linia brzegu zawiasowego, przechodząc na tylny odcinek skorupki, zagina się pod kątem 40°;

2) *kanaliki porowe* — występują na całych skorupkach i widoczne są również w strefie brzeżnej; ujścia tych kanalików u *P. polonica* n. sp. i *P. ogrodzieniecensis* n. sp. w części centralnej skorupki nakryte są płytką sitowatą od strony zewnętrznej.

CHARAKTERYSTYKA OPISANYCH GATUNKÓW

Progonocythere polonica n. sp.

(pl. I-III; pl. IV, fig. 2 *a*, *b*)

Zarys skorupki owalny, wydłużony. Zawiasy trójdzielne, proste. Liczba ząbków i dołków w części przedniej i tylnej zawiasów wynosi 7, a w części środkowej — 20. Powierzchnia gładka, z licznymi lejkowatymi wgłębieniami od strony zewnętrznej i wewnętrznej, odpowiadającymi ujściom kanalików porowych. Kanaliki te w części centralnej skorupki od zewnątrz przykryte są płytką sitowatą. W rozwoju onto-

genetycznym zaznacza się tendencja do wydłużania się skorupki, przesuwania śladów po odciskach mięśniowych z części centralnej na część przednią, pogrubiania się skorupek i umacniania okolicy przyczepu mięśni zamykających i brzegu zawiasowego. Zwiększa się również liczba kanalików porowych. Szczególnej zmianie podlegają zawiasy, realizując typ budowy od lofodontowych (Sylvester-Bradley, 1956, p. 4-7), poprzez merodontowy (Triebel, 1950, p. 313-316) do merodontowo-entomodontowego (Sylvester-Bradley, *l. c.*).

Progonocythere ogrodzieniecensis n. sp.
(pl. IV, fig. 1*a*-1*j*; pl. V)

Zarys skorupki eliptyczny, wklęsły po stronie grzbietowej i brzusznej. Część przednia równomiernie zaokrąglona, część tylna zakończona tępo. Zawiasy trójdzielne, z częścią środkową wgiętą do środka skorupki. Liczba dołków i ząbków w części przedniej i tylnej zawiasów po 7, w części środkowej — 16. Część środkowa wyraźnie podzielona na odcinek przedni i tylny. Powierzchnia skorupki gładka. Od strony zewnętrznej i wewnętrznej znajdują się lejkowate wgłębienia, w których mają swe ujścia proste kanaliki porowe.

OBJAŚNIENIA DO ILUSTRACJI

Fig. 1 (p. 431)

Wycinek zbocza kuesty pod Ogrodzieńcem, według S. Z. Różyckiego (1953): *1* ciemnoszare iły górnego batonu, *2* wapienie dolnego keloweju. Skala 1:3000.

Fig. 2 (p. 433)

Wykres graficzny stadiów rozwojowych u *Progonocythere polonica* n. sp.

Fig. 3 (p. 435)

a Płytka sitowata nakrywająca kanalik porowy, *b* przekrój poprzeczny przez kanalik porowy.

Pl. I

Progonocythere polonica n. sp.

Fig. 1. Stadium II — Skorupka prawa: *a* od zewnątrz, *b* od wewnątrz.

Fig. 2. Stadium III — Skorupka prawa: *a* od zewnątrz, *b* od wewnątrz. Skorupka lewa: *c* od zewnątrz, *d* od wewnątrz.

Fig. 3. Stadium IV — Skorupka prawa: *a* od zewnątrz, *b* od wewnątrz. Skorupka lewa: *c* od zewnątrz, *d* od wewnątrz.

Fig. 4. Stadium V — Skorupka prawa: *a* od zewnątrz, *b* od wewnątrz. Skorupka lewa: *c* od zewnątrz, *d* od wewnątrz.

Fig. 5. Stadium VI — Skorupka prawa: *a* od zewnątrz, *b* od wewnątrz. Skorupka lewa: *c* od zewnątrz, *d* od wewnątrz. Pancerz: *e* od strony dorsalnej, *f* od strony wentralnej (*vide* również pl. IV, fig. 2 *a*, *b*).

Wszystkie okazy × 60.

Pl. II

Progonocythere polonica n. sp.

Fig. 1. Stadium II — Brzeg zawiasowy skorupki prawej.
Fig. 2. Stadium III — Brzeg zawiasowy skorupki: *a* prawej, *b* lewej.
Fig. 3. Stadium IV — Brzeg zawiasowy skorupki: *a* prawej, *b* lewej.
Fig. 4. Stadium V — Brzeg zawiasowy skorupki: *a* prawej, *b* lewej.
Fig. 5. Stadium VI — Brzeg zawiasowy skorupki: *a* prawej, *b* lewej.
Wszystkie okazy × 100.

Pl. III

Progonocythere polonica n. sp.

Przekroje poprzeczne przez pancerz osobnika dorosłego w odstępach ok. 0,022 mm; × 60. Przerwy na szlifach seryjnych odpowiadają prostym kanalikom porowym.

Pl. IV

Fig. 1. *Progonocythere ogrodzieniecensis* n. sp., okaz dorosły. Skorupka prawa *a* od zewnątrz, *b* od wewnątrz. Skorupka lewa: *c* od zewnątrz, *d* od wewnątrz. Brzeg dorsalny skorupki: *e* lewej, *f* prawej. Pancerz: *g* od strony dorsalnej, *h* od strony wentralnej; × 60. Brzeg zawiasowy skorupki: *i* prawej, *j* lewej; × 100.

Fig. 2. *Progonocythere polonica* n. sp. Stadium VI — Brzeg dorsalny skorupki: *a* lewej, *b* prawej; × 60.

Pl. V

Progonocythere ogrodzieniecensis n. sp.

Przekroje poprzeczne przez pancerz dorosłego osobnika w odstępach ok. 0,023 mm; × 60. Przerwy na szlifach seryjnych odpowiadają prostym kanalikom porowym.

ЯНУШ БЛАШИК

О ДВУХ НОВЫХ БАТСКИХ ОСТРАКОДАХ РОДА *PROGONOCYTHERE*

Резюме

Работа содержит описание результатов исследований над *Progonocythere polonica* n. sp. и *P. ogrodzieniecensis* n. sp. из верхнего бата, горизонта с *Clydoniceras discus*. Материал собран автором в местности Огродзенец, в окрестности гор. Заверце. Большое число взрослых и молодых особей вида *P. polonica* n. sp дало возможность проследить его онтогенетическое развитие, изображенное на графике (фиг. 2), где окружность разделена на 36 отрезков, каждый длиной примерно 0,028 мм. Черные прямоугольники соответствуют величине створок отдельных стадий развития. Рядом, на внутренней стороне, отмечены их числовые значения. В наружном поясе даны величины, при которых должна была происходит вылинка. Эти величины получены на основании процентного коэфициента роста. У *P. polonica* n. sp. переход от одной стадии к следующей сопровождается увеличением размеров створки на постоянный процентный коэфициент (1,26), что является подтверждением закона Брукса (Brooks), касающегося развития особей остракод. Внутри круга выделены скобками отрезки (от I до VI), соответствующие отдельным циклам развития. Наблюдения над *P. polonica* n. sp. и *P. ogrodzieniecensis* n. sp. дали возможность обнаружить новые морфологические детали, не описанные у известных до сих пор представителей рода *Progonocythere*, а именно:

1) форма створок — у всех видов рода *Progonocythere* характерна изгибом замочного края, продолжающегося к задней части створки под углом 40°;

2) канальцы пор — находятся на всей протяженности створок и заметны также в краевой зоне; устья этих канальцев у *P. polonica* n. sp. и *P. ogrodzieniecensis* n. sp. в центральной части створки прикрыты с наружной стороны сеткой.

ХАРАКТЕРИСТИКА ОПИСАННЫХ ВИДОВ

Progonocythere polonica n. sp.

(пл. I-III; пл. IV, фиг. 2*a*, *b*)

Очертание створки овальное, удлиненное. Замок тройной, прямой. Число зубов и ямок в передней части замка 7, а в средней — 20. Поверхность гладкая, с многочисленными воронкообразными углублениями с наружной и внутренней стороны, соответствующими устьям поровых канальцев. Поровые канальцы в центральной части створки прикрыты с наружной стороны тонкой сеткой. В онтогенетическом развитии проявляется стремление к: удлинению створки,

перемещению мускульных отпечатков из центральной части в переднюю, утолщению створки и усилению области прикрепления мускулов закрывающих створки и мускулов замочного края. Увеличивается также число поровых канальцев. Особенному изменению подвергается замок, осуществляя поочередно разные типы строения, начиная с лофодонтного (Sylvester-Bradley, 1956, p. 4-7), через меродонтный (Triebel, 1950, p. 313-316), до меродонтно-энтомодонтного (Sylvester-Bradley, *l. c.*).

Progonocythere ogrodzieniecensis n. sp.
(пл. IV, фиг. 1*a-j*; пл. V)

Очертание створки эллиптическое, вогнутое со спинной и брюшной стороны. Передняя часть округлена равномерно, задняя тупо окончена. Замочная система трехдельная, со срединной частью вогнутой к середине створки. Число углублений и зубов — по 7 в задней и передней части замка, а в средней — 16. Срединная часть ясно разделена на участки — передний и задний. Поверхность створки гладкая. С наружной и внутренней стороны имеются воронкообразные углубления, в которых открываются устья прямых поровых канальцев.

EXPLANATIONS OF PLATES

Pl. I

Progonocythere polonica n. sp.

Fig. 1. Instar II — Right valve: *a* outer view, *b* inner view.
Fig. 2. Instar III — Right valve: *a* outer view, *b* inner view. Left valve: *c* outer view, *d* inner view.
Fig. 3. Instar IV — Right valve: *a* outer view, *b* inner view. Left valve: *c* outer view, *d* inner view.
Fig. 4. Instar V — Right valve: *a* outer view, *b* inner view. Left valve: *c* outer view, *d* inner view.
Fig. 5. Instar VI — Right valve: *a* outer view, *b* inner view. Left valve: *c* outer view, *d* inner view. Carapace: *e* dorsal view, *f* ventral view (see also pl. IV, fig. 2 *a, b*).

All specimens × 60.

Pl. II

Progonocythere polonica n. sp.

Fig. 1. Instar II — Hinge border in right valve.
Fig. 2. Instar III — Hinge border: *a* right valve, *b* left valve.
Fig. 3. Instar IV — Hinge border: *a* right valve, *b* left valve.
Fig. 4. Instar V — Hinge border: *a* right valve, *b* left valve.
Fig. 5. Instar VI — Hinge border: *a* right valve, *b* left valve.

All specimens × 100.

Pl. III

Progonocythere polonica n. sp.

Transverse sections of mature carapace at intervals of approx. 0.022 mm; × 60. Interruptions in sections correspond to straight pore canals.

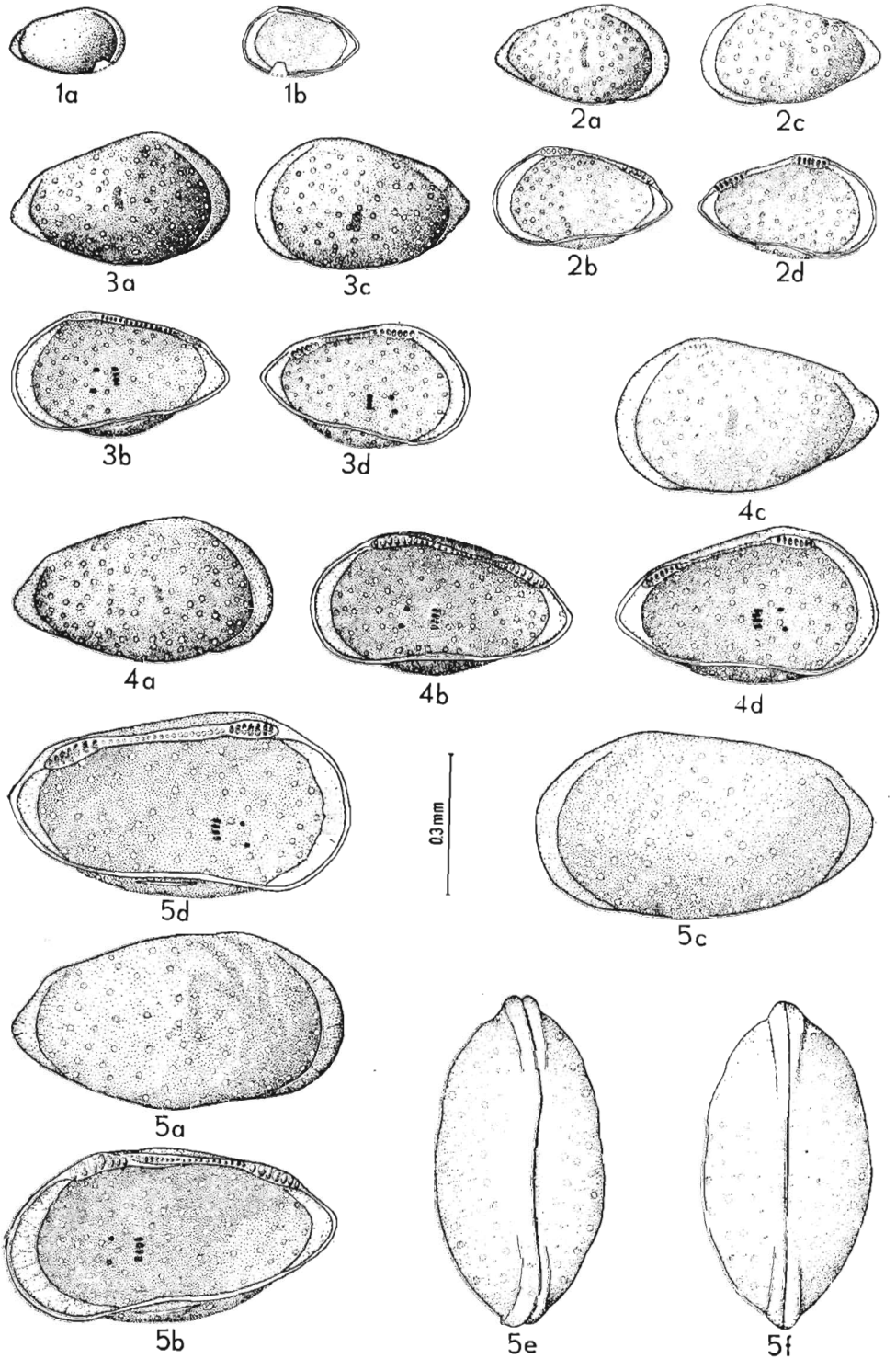
Pl. IV

Fig. 1. *Progonocythere ogrodzieniecensis* n. sp. mature individual. Right valve: *a* outer view, *b* inner view. Left valve: *c* outer view, *d* inner view. Dorsal margin: *e* left valve, *f* right valve. Carapace: *g* dorsal view, *h* ventral view; × 60. Hinge border: *i* right valve, *j* left valve; × 100.
Fig. 2. *Progonocythere polonica* n. sp. Instar VI — Dorsal margin: *a* left valve, *b* right valve; × 60.

Pl. V

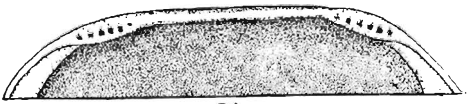
Progonocythere ogrodzieniecensis n. sp.

Transverse sections of mature carapace at intervals of approx. 0.023 mm; × 60. Interruptions in sections correspond to straight pore canals.

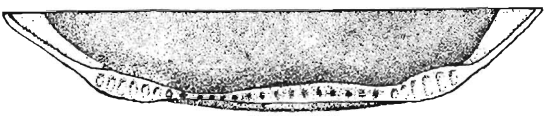

1a
1b
2a
2c
3a
3c
2b
2d
3b
3d
4c
4a
4b
4d
0.3mm
5d
5c
5a
5b
5e
5f

1

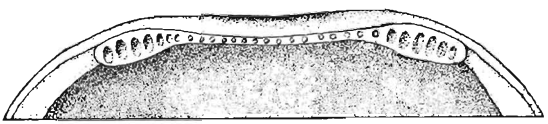
2a



2b

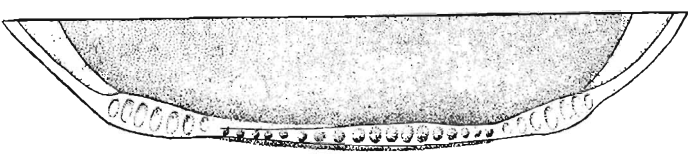


3a



0.1 mm

3b



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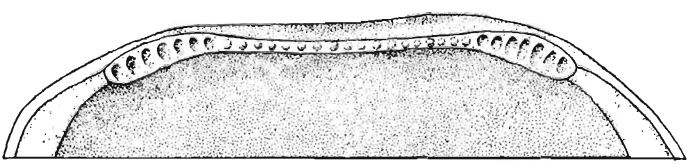

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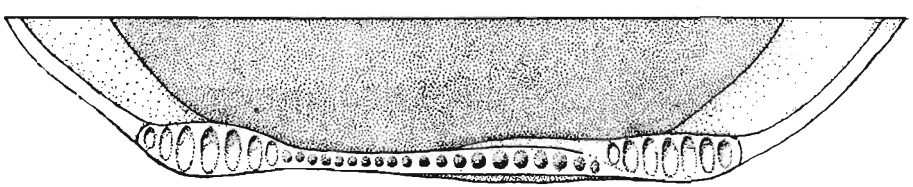

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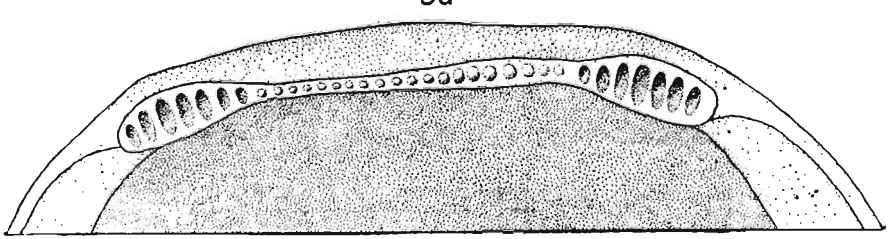
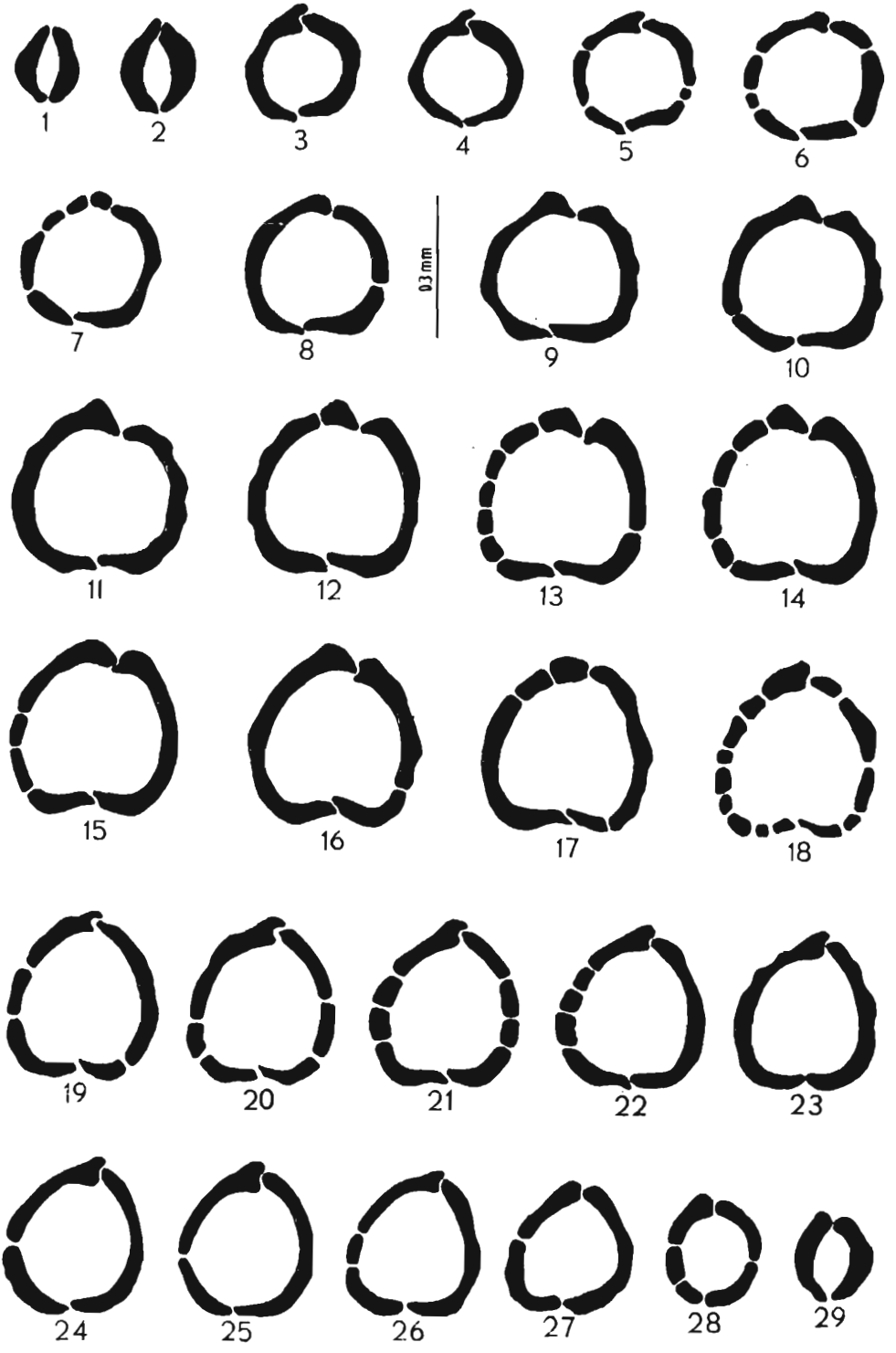


5b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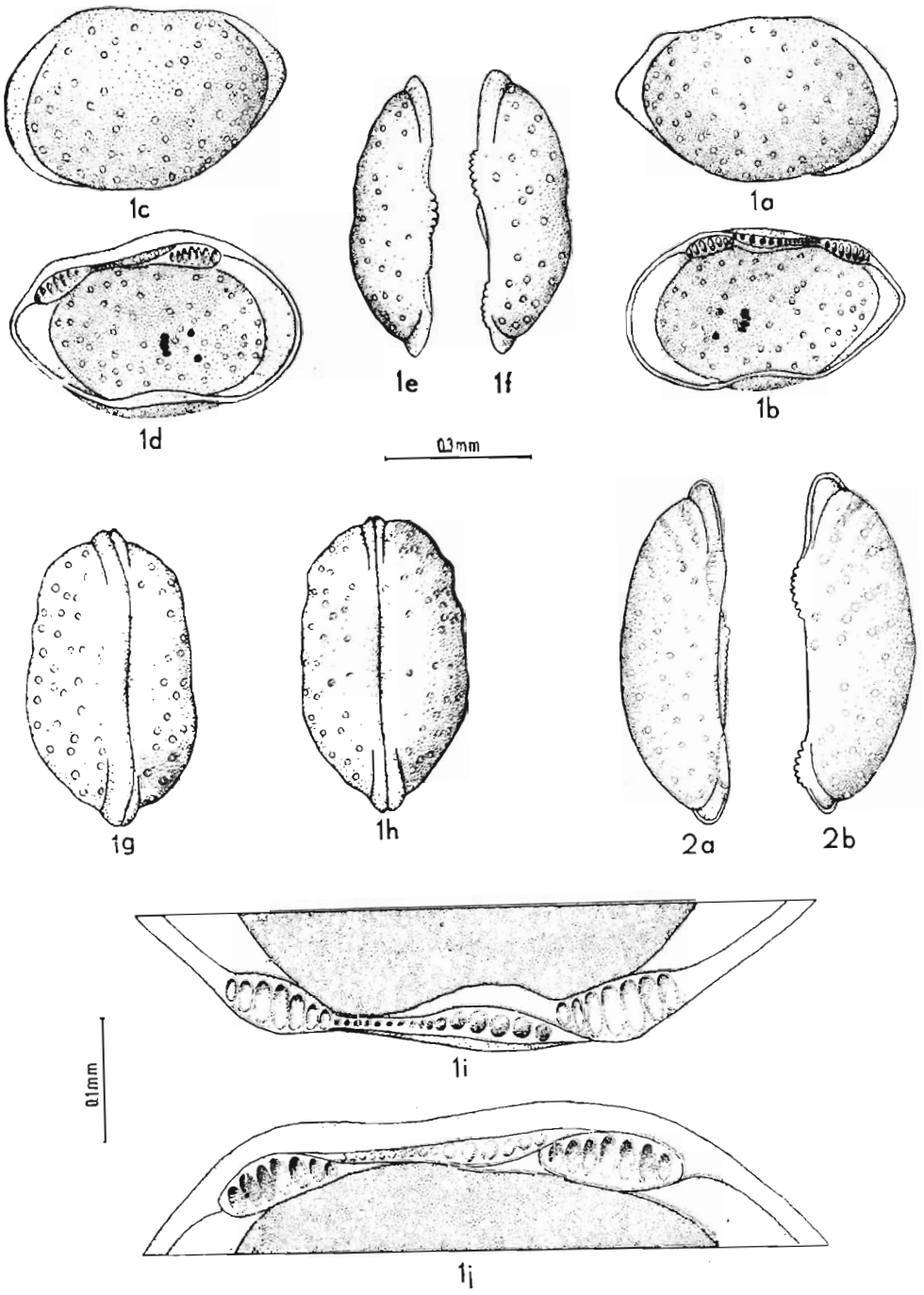
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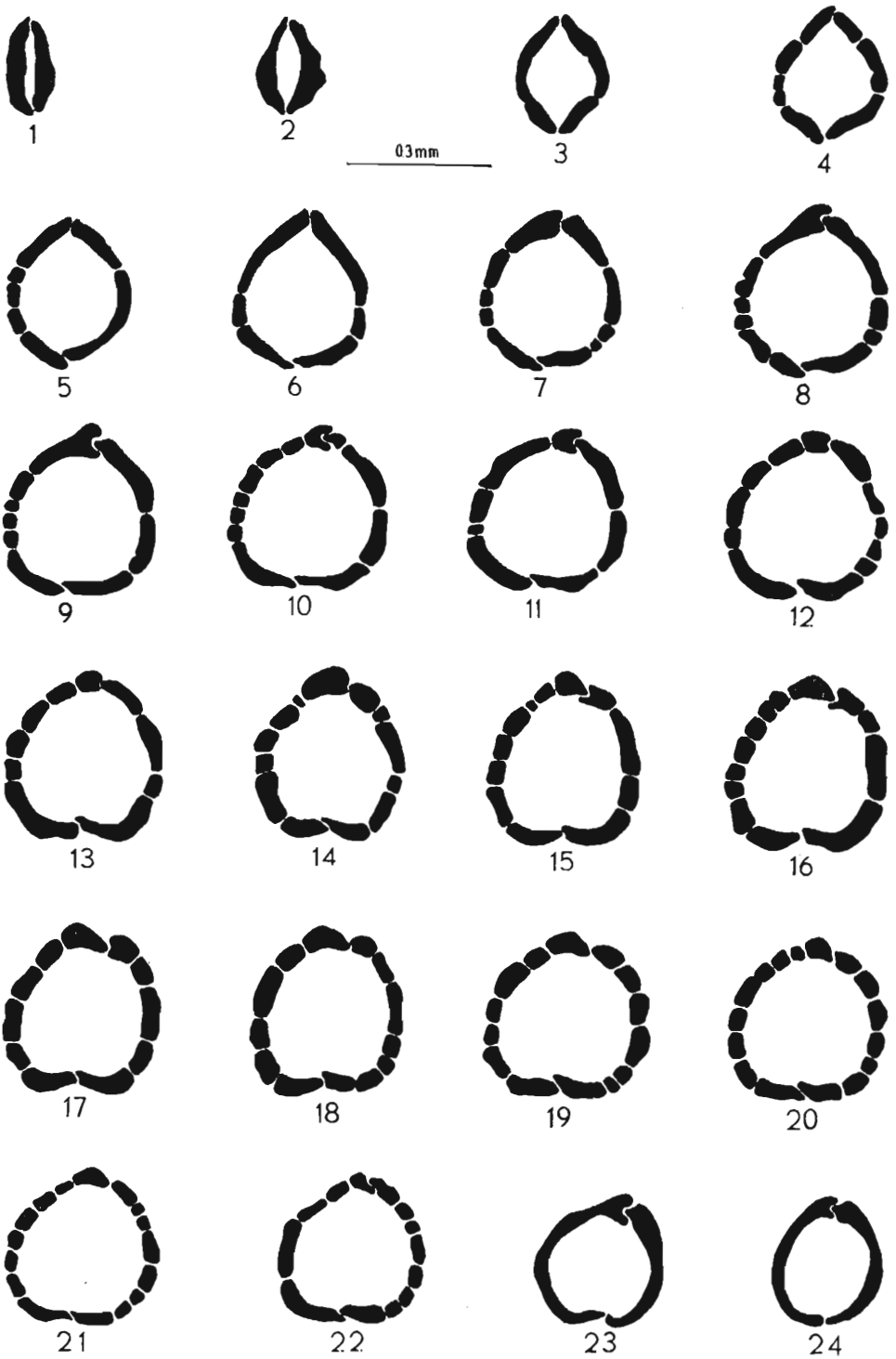
1j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