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NEW DATA ON THE GENUS *DZIEDUSZYCKIA* SIEMIRADZKI, 1909
(BRACHIOPODA)

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Abstract. — The Upper Devonian genus *Dzieduszyckia* Siemiradzki is revised. On the base of a detailed study of the specimens from the newly discovered locality Ruda Strawczyńska (vicinity of Kielce) the systematic range of this genus is changed; it is removed from spiriferoids family Athyrisinidae Grabau, 1931, and assigned to rhynchonelloids. The familial assignment of the genus *Dzieduszyckia* Siemiradzki remains uncertain until a revision of the Moroccan and Russian species of this genus is completed. *Dzieduszyckia kielcensis* (F. Roemer) is redescribed.

INTRODUCTION

The taxonomic position of the Upper Devonian genus *Dzieduszyckia* Siemiradzki, 1909, is up to now uncertain and has for a long time required detailed revision. This problem, however, has received little attention until recent years because of the lack of available material.

From G. Pusch's original and rich collection of *Dzieduszyckia kielcensis* (F. Roemer, 1866) from the Kadzielnia quarry in Kielce, Holy Cross Mountains (Góry Świętokrzyskie), Poland, only a few specimens have been preserved at Warsaw University. These specimens have been saved from the ruins of the Warsaw University by Professor Roman Kozłowski just after the last world war.

Judging from literature, Pusch offered many of his "unusual" specimens to other interested palaeontologists, e.g. L. v. Buch, F. Roemer, and others. It is quite possible that some of them still exist abroad, overlooked in old collections.

Since Pusch's finding, i.e. since 1825, specimens of *Dzieduszyckia kielcensis* (F. Roemer) have never been found in the Holy Cross Mountains. At present, in the Ruda Strawczyńska boring, in the vicinity of Kielce, Prof. St. Pawłowski and his wife, Mrs. K. Pawłowska M. Sc., recorded a very fossiliferous layer, filled with large brachiopods, recognized by the author as belonging to the genus *Dzieduszyckia* Siemiradzki. All this material has been made available to the present author for the making of a detailed restudy of this very interesting genus. The here studied collection from Ruda Strawczyńska is deposited at the Geological Institute in Warsaw, for which the abbreviation I. G. 1100.II is used. All specimens of the Pusch's collection are deposited at the Palaeozoological Institute of the Polish Academy of Sciences, for which the abbreviation Z. Pal. Bp. X/... is used.

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Further acknowledgement is made to: Dr. H. S. Rozman, Geological Institute, Academy of Sciences of USSR, Moscow, for kindly providing the author with specimens of "*Leiorhynchus*" *baschkiricus* (Tschernyschew) from her personal collection; Miss S. Willefert, Service Géologique du Maroc, Rabat, Morocco, for supplying some literature that was lacking, and Miss M. Czarnocka for taking the photographs.

HISTORICAL REVIEW OF THE SPECIES *DZIEDUSZYCKIA KIELCENSIS* (F. ROEMER)

In 1825, during field works in the Kadzielnia quarry in Kielce, in the Holy Cross Mountains, G. Pusch found an Upper Devonian "lumachelle" filled with brachiopods. It yielded several hundreds specimens of one species. The shells were of various sizes, the largest being about 100 mm long, 154 mm wide and 75 mm thick. The brachiopods were extremely

characteristic in their external morphology, namely: large shell dimensions, asymmetric shell outline, bisulcation and comparatively thick surface radial costae. Pusch first made a short mention of his interesting find (1833, p. 124), describing the specimens as a new species *Terebratulites lacunoides*. However, having some doubts as to his identification, he sent part of his collection to v. Buch. This latter author, in 1834, by external appearance only, assigned all Pusch's specimens to *Terebratula amphitoma* Bronn (recte *Halorella amphitoma*), a species already described and restricted to the Alpine Triassic limestone (Rhaetic?) around Hallein, Dürrenberg, Austria. The specimen of *Terebratula amphitoma* Bronn figured by v. Buch indicated, however, not the Triassic species from Hallein, but the Devonian one from the Kadzielnia quarry in Kielce, so *T. amphitoma* sensu Bronn does not correspond to *T. amphitoma* sensu v. Buch (v. Buch, 1834, Pl. 3, fig. 45; 1839, p. 199, Pl. 18, fig. 12).

In 1837, Pusch following v. Buch shortly redescribed the specimen in question as *Terebratula amphitoma* Bronn. Pusch mentioned that one of specimens, figured by him and showing the spiral brachidium, did not belong to the Devonian species from Kadzielnia quarry (Pusch, 1837, Pl. 3, fig. 10c). As the internal structure of the species from the Holy Cross Mountains was unrecorded by Pusch because of its very recrystallized interiors, the brief description and illustration of the internal structure was unfortunately based upon a single brachial valve interior of a Carboniferous species from Maas (see Text-fig. 1A). This foreign brachial valve had been in the Pusch's collection together with Devonian specimens and was assigned by v. Buch to the Devonian species from Kadzielnia (on the base of its external similarity). As a result of this erroneously indicated internal structure of the Kadzielnia species, its systematic position has been misinterpreted up to the present day.

Roemer (1866, p. 671), on the base of 2 specimens from the Kadzielnia quarry (one received from Pusch, the other seen at the Mineral.-Palaeontological Museum of Warsaw University) and the illustrations of this species in Pusch's and v. Buch's papers (1837, Pl. 3, fig. 10; 1839, Pl. 18, fig. 12), stated that *Terebratula amphitoma* sensu Bronn is quite different from *T. amphitoma* sensu v. Buch, and that they represent two separate species, so Roemer erected a new species — *Terebratula? kielcensis* for specimens from Kadzielnia.

Roemer was the most critical in his approach to the systematic range of his species, stating that it was difficult to resolve this problem so long as the internal structure of the specimens from the Kadzielnia quarry remained unknown.

Gürich (1896, p. 294) mentioned the great similarity of *Terebratula? kielcensis* to: 1) *Rhynchonella inconstans* Sowerby in the asymmetrical shell; 2) the representatives of Nucleospiridae in the similar pattern of radial ornamentation, in the opposite sinuses of shell, observing some

analogy to the genus *Trematospira* Hall or *Kayseria* Davidson. This author considered the species from Kadzielnia to be unusual within palaeozoic rhynchonelloids in its radial ornamentation and suggested the necessity of erecting a new genus for it.

Remnants of Pusch's collection from the Kadzielnia quarry including also the foreign brachial valve of the Carboniferous species from Maas,

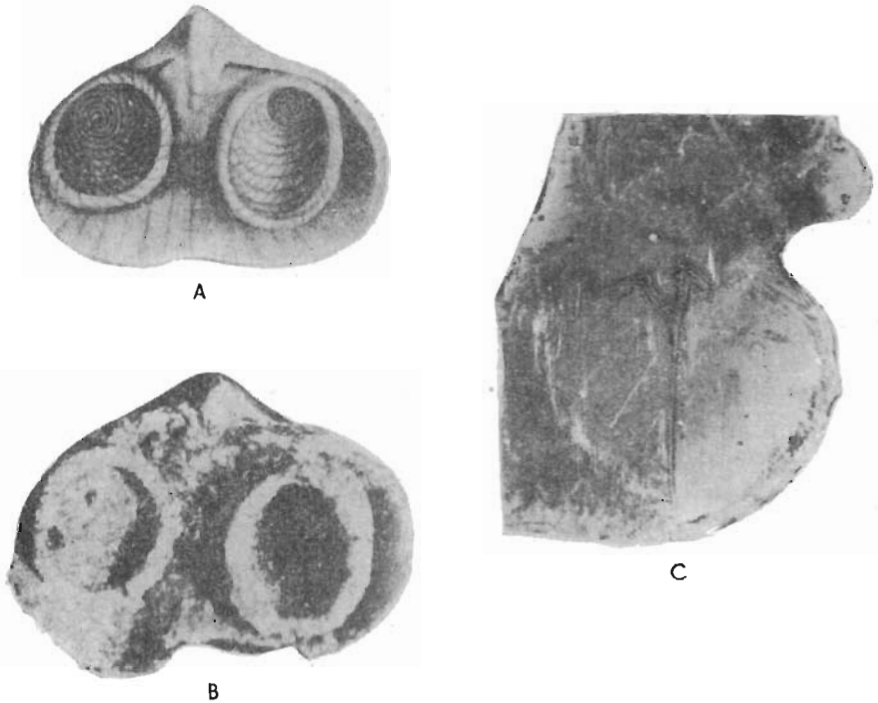


Fig. 1. — A Brachial valve interior (drawing) of a brachiopod from Carboniferous of Maas (Belgium), assigned to *Terebratula amphitoma* Bronn by Pusch (1837, Pl. 3, fig. 10c) and identified by this author with the Kadzielnia species; nat. size. B The same specimen (photograph), figured erroneously by Siemiradzki (1909, Pl. 3, fig. 3b) as *Dzieduszyckia kielcensis* (F. Roemer); nat. size. C *Dzieduszyckia kielcensis* (F. Roemer) from Ruda Strawczyńska: a thin section (peel) showing septalium; approx. $\times 3.5$.

were accidentally found by Siemiradzki in the collections of Zeuschner. In 1909, Siemiradzki redescribed all these specimens as one species (erecting for them a new genus *Dzieduszyckia*), namely *Dzieduszyckia kielcensis* (F. Roemer). In addition, he included in his illustrations the problematic Carboniferous brachial valve (see Text-fig. 1B), adding to the confusion by stating that the latter came from Kadzielnia (Siemiradzki, 1909, p. 86, Pl. 3, fig. 3b). Siemiradzki also mentioned, observing in sections of two other recrystallized specimens from Kadzielnia, certain slight traces of a probable spiral brachidium.

Since Siemiradzki, the species has not been further investigated.

Only short mentions of the genus and species *Dzieduszyckia kielcensis* have been made in more recent literature, e.g. *Traité de Paléontologie* (1952, p. 99), *Osnovy Paleontologii* (1960, p. 261, Pl. 54, fig. 10), *Treatise on Invertebrate Paleontology, Part H, Brachiopoda* (1965, p. 654).

OTHER REPRESENTATIVES OF THE GENUS *DZIEDUSZYCKIA* SIEMIRADZKI

Genus *Dzieduszyckia* is a valid genus and is judged to be one of the most characteristic and distinctive within the palaeozoic rhynchonelloids. Its features of external morphology (see p. 143) together with the internal elements (see pp. 141, 149; Text-fig. 1C), which are clearly of rhynchonelloid type, make this genus immediately distinguishable from the others.

Dzieduszyckia is not a monospecific genus as was thought for a long time. Its representatives, apart from the type species *Dzieduszyckia kielcensis* (F. Roemer), are known to occur also outside Poland, throughout the Famennian of the Urals and in Morocco, but are listed under different generic names. In this paper they are referred to the genus *Dzieduszyckia* Siemiradzki. The placing of the above mentioned species in the genus *Dzieduszyckia* is based essentially on the very distinctive external and internal features, common to the Polish, Russian and Moroccan forms (see pp. 137—138).

In the Urals, one representative of the genus *Dzieduszyckia* Siemiradzki was described by Tschernyschew from the Famennian as *Trematospira baschkirica* (Tschernyschew, 1887, p. 55, Pl. 10, figs. 8-12), later mentioned by Nalivkin (1947, p. 91, Pl. 10, figs. 9-11), and more recently redescribed by Rozman as *Leiorhynchus baschkiricus* (Tschern.) (Rozman, 1962, p. 113, Pl. 8, figs. 1-7; Pl. 9, figs. 1-9). Although this species is internally like the genus *Leiorhynchus* Hall, there are some differing features, as shown by Rozman (1962, pp. 114-115), which can separate the Uralian species from the other members of the genus *Leiorhynchus*. These are: 1) internally much thicker dental plates and hinge plates, septalium and dorsal septum in the Russian species; 2) the dorsal septum longer, attaining one-fourth or even one-third of the shell length of the brachial valve; 3) dental plates shorter, usually not attaining one-sixth of the pedicle valve's length; 4) hinge plates more arched in comparison with those of *Leiorhynchus*, which are linear or almost linear. There are also great differences in the external appearance between *L. baschkiricus* (Tschern.) and the other representatives of the genus *Leiorhynchus* Hall. *L. baschkiricus* (Tschern.) is extremely close to *Dzieduszyckia kielcensis* (F. Roemer), showing an extremely great analogy to the latter, especially in the external morphology, as also in the internal structure. Without doubt, the Uralian species must be included in the genus *Dzieduszyckia* and interpreted as a real member of it.

In Central Morocco, also in the Famennian, there occur several species described by H. Termier and G. Termier (1948) under the generic name of *Halorella* Bittner. They are, however, considered here as members of the genus *Dzieduszyckia* Siemiradzki on the base of the great internal and especially external resemblance, e.g. small dental plates, hinge plates separate, septalium and dorsal septum (comp. Termier & Termier, 1952, Pl. 100, fig 17). Externally, the Moroccan species are almost identical with the Polish one, showing well developed morphological features, considered here as highly diagnostic for the genus *Dzieduszyckia* (see p. 143). The generic status of the Moroccan species of *Halorella* was discussed by Termier and Termier (1938, 1949). They mentioned the close external similarity existing between the Moroccan species and the Uralian *Trematospira baschkirica* Tschern., suggesting that the latter species was more close to the genus *Halorella* Bittner than to *Trematospira* Hall (see H. Termier, 1938).

As to *Dzieduszyckia kielcensis* (F. Roemer), Termier and Termier (1949) stated that a great morphological resemblance exists to their species from Morocco, but the internal structure is quite different (*Halorella* being of rhynchonelloid type, *Dzieduszyckia* with spires-of spiriferoid type), so the above two forms must be treated separately.

Boucot, Johnson *et al.* (1965), in all probability, influenced by the external analogy between *Dzieduszyckia* and the Moroccan *Halorella*, included one of the Moroccan species — *H. intermedia* H. Termier — to the genus *Dzieduszyckia* Siemiradzki. In this, the above authors were correct, however, in their diagnosis of the genus *Dzieduszyckia* (the genus included by them to the family Athyrisinidae Grabau, 1931), they mention the presence of a "spiral brachidium" which, as shown by Termier and Termier (1952, Pl. 100, fig. 17), does not exist in the Famennian *Halorella* from Morocco.

Unquestionably, the Moroccan *Halorella* is congeneric with the genus *Dzieduszyckia* and must be included to the synonymy of the latter. Also, the new name *Eoperegrinella*, proposed by Ager for the Moroccan *Halorella* (communication by letter from Dr. Ager, October 1966), is invalid.

To sum up, genus *Dzieduszyckia* comprises a variable and very prolific group of species of large rhynchonelloids which, however, possesses a number of constant features common to all the species assigned here to the above genus.

MATERIAL

Genus *Dzieduszyckia* Siemiradzki has been recorded up to now, in Poland, only in two localities: Kadzielnia in Kielce and Ruda Strawczyńska (about 20 km W from Kielce) in the Holy Cross Mountains. The layer

containing shells of *Dzieduszyckia kielcensis* (F. Roemer) are highly fossiliferous, representing a "lumachelle". Both places yielded great numbers of shells of this species.

There are many known instances of the brachiopod-rich fossil beds, that means whole banks of one species populations with specimens of different shell dimensions and individual age, e.g. Middle Devonian *Bornhardtina* Schulz, which occurs abundantly in the limestone (see Biernat, 1953), and *Peregrinella* Oehlert, the known Lower Cretaceous genus (see Biernat, 1957).

A core sample of fossiliferous limestone from the Ruda Strawczyńska boring (95 cm diameter by 20 m long) supplied very numerous shells of different dimensions and individual age, small specimens (= younger individuals) being rare. However, the obtained collection of *Dzieduszyckia*, although very rich, was not entirely satisfactory as it mostly consisted of very destroyed shells. While, in the layer, shells with both valves closed occupy different positions in relation to each other, isolated, usually fragmentary valves, on the other hand, show even great regularity in their arrangement. This could suggest that the shells were subjected to some movement by currents or wave action causing their breakage, with some sorting action during transportation, probably not for a great distance after death.

The specimens from the Ruda Strawczyńska boring are preserved as: 1) incomplete and usually very badly crushed shells, often only their posterior parts preserved, with ventral beaks usually broken; 2) a great number of separate and incomplete valves, mostly pedicle ones, arranged in the layer, either one on the top of the other, or side by side; 3) a mixture of very numerous but highly fragmentary shells or isolated valves. In addition, there are also numerous, badly damaged shells. Some of this damages are judged to have occurred during the life of the animal. This is evidenced by: 1) traces of arrested growth as shown by the irregularity of the distribution of the concentric growth lines; 2) abnormal valve thickness at the site of damage, shown by accumulated concentric lines, probably as a result of the temporary arrest of normal growth; only in the damaged place did the valves grow in thickness very intensively. These irregularities are observed on both valves, in counterpart places.

In the collection at hand, the shells have not or only partly preserved shell substance. As a result, no observations could be made on the microsculpture of specimens, so important from the point of view of taxonomy. The interior of shells being recrystallized, made the study of the internal structure rather difficult.

A very similar state of preservation is seen in the few remaining specimens of Pusch's collection from Kadzielnia quarry. Some of them are also partly without shell substance, preserved as moulds, deformed and having recrystallized interiors.

The collection of *Dzieduszyckia kielcensis* from the Ruda Strawczyńska boring was too fragmentary or mechanically deformed to be used for statistics.

Shells were detached from the rock in a mechanical way. A number of fragments of shells or separate valves were, however, well enough preserved to show the pattern of radial ornamentation, appearance of the hinge line, elevation of the ventral beak, the general shell outline and some variability in those features.

To study the internal structure, serial sections and peels were made.

SOME REMARKS ON STRATIGRAPHY

The age of *Dzieduszyckia kielcensis* (F. Roemer) in the Kadzielnia quarry has not been, up to now, precisely determined. The layers in the Kadzielnia quarry at Kielce have been extensively explored during the last century, however, the layer with *Dzieduszyckia kielcensis* was never again found. It is difficult therefore to state where exactly was this unique layer or lense with *Dz. kielcensis* found by Pusch in 1825.

In the Kadzielnia quarry there are Frasnian as well as Famennian layers and at present it is rather impossible to decide where Pusch's "lumachelle" was found, all the more as Pusch does not give any concrete data as to localization of his finding (Pusch, 1933, p. 125; 1837, p. 17).

From the recently found layer with *Dzieduszyckia* in the Ruda Strawczyńska boring, at a depth of 882—916 m, Famennian age is suggested. This being based mainly on the conodonts found together with the shells of *D. kielcensis*. The prevailing species as identified by Dr. T. Kościelniakowska (Inst. of Geol. Sci., Polish Acad. of Sci.) are of Famennian age (the conodonts were obtained at a depth of 913.15 m). They are: *Acodina lirata* Stauffer, *Palmatolepis glabra* Ulrich & Bassler, *P. gracilis* Branson & Mehl, and *Spathognathodus inornatus* Branson & Mehl. In addition, the limestone with *Dzieduszyckia kielcensis* in Ruda Strawczyńska overlies black-marly shales with sporadic valves of *Lingula* sp. and the shales in turn overlie limestone with *Amphipora* sp., *Alveolites* sp. and *Actinostroma* (*Actinostroma*) *crassum* Lecompte, as identified by Mr. J. Kaźmierczak (Palaeozoological Institute, Polish Academy of Sciences, Warsaw).

The Famennian age is supported by the data from literature concerning the age of other species of the genus *Dzieduszyckia* (from Morocco and U.S.S.R.—Urals, Kazakhstan) where they are reported from the Famennian. In the Urals, *Dz. baschkirica* (Tschernyschew) occurs throughout the *Cheiloceras*, *Prolobites* and *Laevigites* zones.

To sum up, *Dzieduszyckia kielcensis* (F. Roemer) from Poland is an Upper Devonian species and, in all probability, of the Famennian age.

The genus *Dzieduszyckia* is considered as a useful index genus, valuable because of its limited stratigraphical range — Famennian — and wide geographical distribution.

TAXONOMIC POSITION OF THE GENUS *DZIEDUSZYCKIA* SIEMIRADZKI

The taxonomic status of the above genus is a controversial matter, and during the last 100 years some propositions of the familial assignment have been put forward. The chief reason for this is that the internal structure of the type species *Dz. kielcensis* (F. Roemer) from the Kadzielnia quarry in Kielce has never been restudied. Due to the wrong assignment of the "spiral brachidium" to the genus *Dzieduszyckia* by Pusch (1837), v. Buch (1834, 1839) and subsequently by Siemiradzki (1909), this genus was treated as an eventual spiriferoid (Pusch, 1837) or terebratuloid (v. Buch, 1839), and more recently as a member of the family Atrypidae Gill. For instance, it was included to the family Atrypidae Gill, subfamily Dayiinae Waagen, by Roger (1952, p. 99) and by Rzonnickaja (1960, p. 261).

In 1965, Boucot, Johnson *et al.* have classified the genus *Dzieduszyckia* Siemiradzki as an athyrisinid and included it in the family Athyrisinidae Grabau, 1931, on the base of its "well developed spiral brachidium" (Boucot, Johnson *et al.*, 1965, p. 654). According to the above authors, this family comprises 5 impunctate genera of brachiopods, ranging from the Middle Devonian to Triassic.

The present interpretation

In connection with this paper, 2 original shells of Pusch's and 8 of Ruda Strawczyńska collection were sectioned. As a result, the present author was able to state that *none of the sections showed any traces of a spiral brachidium*, which for so long has been ascribed to the genus. It should be added that although the interiors of the studied and sectioned shells were badly recrystallized, some internal important structural details, such as: small teeth supported by small dental plates, septalium, crura, dorsal septum, were preserved and distinctly recognized on sections (Text-fig. 2 and 3). It seems certain that if there had been a brachidium, the possibility of its being preserved existed, at any rate some weak traces of it. Thus, the absence of this structure and the preserved internal details of rhynchonelloid type are the main evidences of the close affinity of *Dzieduszyckia* to rhynchonelloids, and not to atrypids or athyrisinids. This is supported by the features of external morphology, also of rhynchonelloid type, present in the genus *Dzieduszyckia*: shape and

shell outline, elevation of the ventral beak, weakly developed ventral area and radial surface ornamentation. Hence, the genus *Dzieduszyckia* is here considered as belonging to Rhynchonellida. This is in agreement with the opinion of Termier and Termier (1938, 1948, 1949, 1952) and Rozman (1962) who assigned the Moroccan and Uralian species, here placed in the genus *Dzieduszyckia*, to rhynchonelloids.

At present, it is difficult to state the precise familial assignment of *Dzieduszyckia* Siemiradzki. Resolving of this problem will be probably possible when a more complete picture of the internal structure within all known species of the genus in question is obtained.

CHARACTERISTIC OF KNOWN SPECIES OF THE GENUS *DZIEDUSZYCKIA* SIEMIRADZKI

General remarks on Dz. kielcensis (F. Roemer) from Poland

The specimens of *Dzieduszyckia* from the Ruda Strawczyńska boring, in spite of their bad state of preservation, show undoubtedly much individual variation. This variability is observed chiefly in the radial surface ornamentation and to a lesser extent in the shell outline and shape. The external shell outline ranges gradually from subrounded or nearly pentagonal — to forms with a distinct subtransverse or even transverse elongation of the shell. The shape of the shell varies only a little and proportionally to the shell convexity, this latter feature changing only slightly. There are also some differences in shell dimensions, not always connected with individual age, as well as some anomalies in shell size. The thickness and number of radial costae are the most varying features. In general, the thinner costae start at a distance of about 2—3 mm from both beaks; the thinner ones, observed in the posterior shell half, start at about 6 mm from beaks. There are also shells in the collection with costae developed in the anterior half of shell, along the antero-lateral commissure. It is probable that the growth ratio was not equal for all the animals being related also to some specific environmental conditions (the degree of movement of the sea water and limited living space on the bottom). Although externally *Dzieduszyckia kielcensis* shows considerable variation, the details of internal structure remain more constant. Within certain limits, some unimportant internal variation is confined to the degree of development, of the hinge plates and dental plates; in the latter it applies to the length and degree of their convergence, thickness of the dorsal septum and appearance of septalium.

From the point view of morphological comparison, the specimens of *Dzieduszyckia kielcensis*, recorded in the Ruda Strawczyńska boring, do not differ in their general aspect from those of Pusch's collection, and thus can be regarded as conspecific with them. It is worth mentioning

that shells from Ruda Strawczyńska attain a larger size, on an average one-fourth of the shell length, and have thicker radial costae (see e.g. Pl. II). Also, the range of variation in the thickness of radial costae is correspondingly much wider. In other morphological features, the range of individual variability in the specimens of Pusch's collection is more or less the same as in shells from Ruda Strawczyńska (based on author's own observations of a few original specimens of Pusch's collection and some data from old literature, e.g. Pusch, 1837; v. Buch, 1839; F. Roemer, 1866; Gürich, 1896; Siemiradzki, 1909).

In general, all specimens from both mentioned localities in the Holy Cross Mountains can be divided into two groups, chiefly on the base of shell outline and appearance of radial ornamentation. They are: 1) shell outline roundly pentagonal, shells with finer costae, covering almost all shell surface; 2) shells subtransversely outlined prevail, shells with thicker and correspondingly less numerous costae, usually observed at a distance of about one-third of the shell length from both beaks. There are also intermediate specimens between these two groups.

To sum up, all mentioned specimens have several and highly characteristic morphological features in common which underline their specific homogeneity. These are: 1) shell bisulcation along midline always present; both opposite sinuses are shallow and can be more distinct or less, sometimes developed as a linear trace; this latter concerns especially the brachial valve (Pl. I, fig. 1); 2) to a different degree asymmetrically outlined anterior commissure, this latter with a median incision (Pl. I, figs. 1c—3c); 3) the arrangement of costae in sinuses, being a little different from that on the rest of the shell surface; 4) subpentagonal to subtransverse or even transverse shell outline; 5) large size of shells in comparison with other members of palaeozoic rhynchonelloids.

The above external features are judged to be essentially important, possessing diagnostic value on the generic level. They appear to be so characteristic and distinctive that the placing of some species of the genus *Dzieduszyckia* Siemiradzki can be based solely on them.

Comparison with foreign materials

The data from literature show that the representatives of the genus *Dzieduszyckia* were also found in great abundance in the Urals and Morocco, and likewise show a great deal of variation in external morphology (Termier & Termier, 1948; Rozman, 1962). It is necessary to mention that they all have in common the above listed diagnostic features, evidence of their close affinity with the type species *Dzieduszyckia kielcensis* (F. Roemer) from Poland.

Dzieduszyckia baschkirica (Tschern.), as stated by Rozman, abundantly found in the Famennian of Urals and Kazakhstan, is very variable in its

external characters (in agreement with the specimens from the Holy Cross Mountains). This variation is observed especially in: 1) the external shell outline, from roundly trigonal to transversely oval; 2) the degree of convexity of shell and particular valves; 3) the length and thickness of radial costae; 4) the degree of distinctness of shell bisulcation; 5) the appearance of radial costae which in opposite sinuses are not of the same thickness and height. All these variable specimens have been treated by Rozman (1962, p. 114) as belonging to one species *Leiorhynchus baschkiricus* (Tschern.). This opinion of Rozman's is judged to be correct and the above variability in *L. baschkiricus* can be easily interpreted as a good example of intrapopulation variability within a single but large species.

The Moroccan specimens, known under the generic name of *Halorella* Bittner, collected by Termier and Termier, in a number of specimens also display extensive morphological variability. All specimens, found in four localities not far from each other, were allocated by the above authors to new species and subspecies: *Halorella crassicostata* H. G. Termier; *H. intermedia* H. Termier with four varieties: α , β , *alta*, *globosa*; *H. tenuicostata* H. Termier and *H. semialata* H. Termier. H. and G. Termier, on the base of biometry (200 specimens measured), have shown some distinction between the mentioned forms in such characters as: 1) the ratio of shell length/shell width; 2) shell thickness/shell width; 3) the number of radial costae in relation to shell width (Termier & Termier, 1948). In addition, the appearance of radial ornamentation, e.g. costae single or dichotomous, were thought by these authors to be a valuable diagnostic features for the species. Reviewing the graphs included by Termier and Termier (1948), concerning the wide variation of a few species of Moroccan *Halorella*, only one feature could be considered as an eventual diagnostic one, i.e. the number of costae in relation to the shell width. The radial costae density does not grow proportionally to the growing shell width, hence, it is not connected with it. The measured specimens on the Fig. 1 (see Termier & Termier, 1948) are grouped into two very distinct units (the third being less distinct): 1) by far the majority of specimens are densely grouped in the limits of about 20—80 mm of shell width, showing approximately 20—30 costae along the anterolateral commissure; *Halorella crassicostata* dominates, *H. intermedia* being much less numerous; 2) not so numerous and loosely dispersed shells, about 20—60 mm in width, having about 20—45 radial costae; *H. intermedia* with its varieties is chiefly represented here; 3) specimens about 20—60 mm in width, having 50—120 radial costae, are represented by *H. tenuicostata*. This last species differs the most from *H. crassicostata* and *H. intermedia*. Species of the second group, comprising *H. intermedia* with its varieties, can be considered as intermediate between *H. crassicostata* and *H. tenuicostata*.

Other features such as: height in relation to shell width, and thickness to shell width, grow proportionally to the enlarging shell width or shell thickness. Hence, these features are judged not to have a diagnostic value for species.

In general, the distinction between some of the species of "*Halorella*" such as: *H. intermedia* with its varieties, *H. crassicostata* or *H. semialata*, is weakly drawn. It rests on features which appear to the present author to be not very decisive and the above differences cannot be taxonomically very important. A revision of Moroccan forms is needed.

It is interesting to add that all members of the genus *Dzieduszyckia* Siemiradzki, reported from the Upper Devonian of Poland, Urals and Morocco, are characterized by extreme similarity in their wide morphological variability. The collection from Ruda Strawczyńska includes specimens which completely correspond to the Moroccan forms (except "*H. tenuicostata*"). There are also shells very similar in their asymmetry (except unpaired elongation of the hinge line) to "*H. semialata*", this latter being interpreted by Termier and Termier (1948) as a teratological form, a result of geographical isolation. The collection from the Holy Cross Mountains suggests that this kind of asymmetry can be related to e.g. limited space during the life of animals and also can indicate some mechanical deformation.

Finally, it is very interesting that in three distant geographical regions, in layers of almost the same age (and facial conditions), members of the genus *Dzieduszyckia* Siemiradzki occur. But even more interesting is the fact that all the species show such a considerable variation in their external morphology. This latter is obvious evidence of their very close affinity. All regarded species are, generally speaking, inseparable morphologically (externally and internally) and constitute a morphologically compact group limited in its stratigraphic range to the Upper Devonian.

DESCRIPTION

Genus *Dzieduszyckia* Siemiradzki, 1909

Terebratulites Pusch, 1833; *Terebratula* v. Buch, 1834; *Terebratula*? F. Roemer, 1866; *Dieduszyckia* Siemiradzki, 1909 (?=*Zigania* Nalivkin, 1937, p. 117).

The generic name of *Dzieduszyckia* was proposed by Siemiradzki in recognition of Włodzimierz Dzieduszycki's very great efforts in the field of Polish culture during XIX century.

Type species: *Terebratula*? *kielcensis*, by subsequent designation of F. Roemer, 1866; Upper Devonian, Kadzielnia quarry in Kielce, Holy Cross Mountains, Poland.

Diagnosis (emend.). — Biconvex, bisulcate, large shell, to different degree transversely elongated; anterior commissure like zigzag, asymme-

trically deflected, medially incised; radial costae of different degree of coarseness with acute backs, simple or dichotomous; ventral beak moderately prominent, slightly incurved, ventral beak ridges scarcely marked; internally: small teeth and thin dental plates, parallel or slightly converging; septalium, dorsal septum, crura although rather thin, well developed; hinge divided.

Remarks. — Siemiradzki's brief diagnosis (1909, p. 85) was based on a very limited number of specimens and no emended description based on specimens from the type locality has ever been published. Emendation of the original diagnosis here mainly concerns the internal shell structure. The original material available to Siemiradzki was insufficient and too badly preserved to determine correctly the internal details of the shell. The interior was wrongly represented by him on the base of a carboniferous brachiopod from Maas, pertaining to Pusch's collection (Text-fig. 1 A, B).

Species assigned here to the genus *Dzieduszyckia*:

Dzieduszyckia kielcensis (R. Foerster, 1866); Upper Devonian, Poland

Leiorhynchus baschkiricus (Tschernyschew, 1887); Upper Devonian, Famennian, Urals, USSR

Halorella intermedia H. Termier, 1948; Upper Devonian, Famennian, Morocco

Halorella crassicostata H. G. Termier, 1948; Upper Devonian, Famennian, Morocco

Halorella tenuicostata H. Termier, 1948; Upper Devonian, Famennian, Morocco

Halorella semialata H. Termier, 1948; Upper Devonian, Famennian, Morocco

Stratigraphic and geographical range. — *Dzieduszyckia* is a short ranging genus, being restricted in its vertical extent to the Upper Devonian — Famennian. It occurs in Poland: Holy Cross Mountains, at Kielce in the Kadzielnia quarry and in the vicinity of Kielce in Ruda Strawczyńska; in Morocco (central part of Morocco): at Bou Nebedou and in the vicinity of Bou Nebedou (Broua Ahelal between Ziar and Jebel Aouaz, Jebel Zrahina (= Tazerhount), Irzer ben Slimane), in the layers of all these localities of Famennian age; in U.S.S.R., the Urals: in south of Urals, in south of Kazakhstan, Famennian, from the layers with *Cheiloceras*, *Prolobites* to *Laevigites* layer.

Dzieduszyckia kielcensis (F. Roemer, 1866)

(Pl. II; Text-fig. 1C-3)

1833. *Terebratulites lacunoides* Pusch; G. Pusch, Geognostische Beschreibung..., p. 124.

1834. *Terebratula amphitoma* Bronn; L. v. Buch, Über Terebrateln, p. 90, Pl. 3, fig. 45.

1837. *Terebratula amphitoma* Bronn; G. Pusch, Polens Paläontologie, p. 16, Pl. 3, fig. 10 a-b, non 10c.
 1839. *Terebratula amphitoma* Bronn; L. v. Buch, Essai..., p. 199, Pl. 18, fig. 12.
 1866. *Terebratula(?) kielcensis* F. Roemer (*Terebratula amphitoma* L. v. Buch (pars), non Bronn); F. Roemer, Geognostische Beobachtungen..., p. 671.
 1896. *Terebratula? Kielcensis* F. R.; G. Gürich, Das Paläozoicum..., p. 294.
 1909. *Dzieduszyckia kielcensis* F. Römer; J. Siemiradzki, Zbiory L. Zeuschnera..., p. 85, Pl. 3, fig. 3 a, c-g, non 3b.

Neotype: Bp. X/17, Pl. I, fig. 1; Upper Devonian, Kadzielnia quarry in Kielce, Holy Cross Mountains, Poland.

No type specimen was named or indicated by illustration in the F. Roemer's paper (1866) and the correct stratigraphic range was not given by Pusch in 1833 and 1837. Roemer mentions v. Buch's (1834, Pl. 3, fig. 45) and Pusch's (1837, Pl. 3, fig. 10 a-b) illustration of his *Terebratula? kielcensis* which could indicate a type specimen of the above species. None of the named and illustrated specimens of *T.? kielcensis* were preserved in the fragmentary Pusch's collection available to the present author.

The specimen, figured on Pl. I, fig. 1 (Bp. X/17), here selected as a neotype of *Dzieduszyckia kielcensis* (F. Roemer), is one of six original specimens of Pusch's collection, found by him in the Kadzielnia quarry in Kielce, in 1825, from an Upper Devonian recrystallized "lumachelle" in reddish-green "transitional" limestone; the correct age undefined (see p. 140).

Dimensions of the neotype (in mm):

Z. Pal. Cat. No.	Length	Width	Thick-ness	No. of radial costae	
				pedicle valve	brachial valve
Bp. X/17	40.0	44.4	20.6	28	29

Diagnosis (emend.). — Shell large, biconvex or moderately ventri-biconvex, bisulcate, the opposite median sulcuses shallow but recognized; anterior commissure with asymmetrical incision, one of the characteristic features; hinge angles rounded; umbo small, beak elevated, ventral area indistinctly marked; radial costae of variable thickness and number, single, some of them dichotomous, starting from the posterior half of the shell.

Approximate dimensions of specimens (in mm):

a) from Pusch's collection:

Z. Pal. Cat. No.	Length	Width	Thick-ness	No. of costae	
				pedicle valve	brachial valve
Bp. X/18	39.3	50.5	20.9	26	28
Bp. X/40	37.0	46.0	—	17	16
Bp. X/9	—	250.0	—	26	—

b) from Ruda Strawczyńska:

I. G. Cat. No.	Length	Width	Thick- ness	No. of radial costae	
				pedicle valve	brachial valve
1100.II ³⁰	52.9	59.5	20.9	?22	—
1100.II ³¹	?39.0	?48.0	18.7	?16	?20
1100.II ³²	44.0	54.0	24.5	?	?
1100.II ³³ , brachial valve	51.0	?80.0	—	?20	—
1100.II ³⁴	46.0	54.0	27.0	16	16
1100.II ³⁵ , brachial valve	?58.0	88.0	—	—	28
1100.II ³⁶ , pedicle valve	51.0	—	—	?24	—

Description. — *Exterior* (Pls. I, II). Shell, as a rule, subquadrate in outline, slightly ventri-biconvex to equally biconvex, bisulcate; medium sulcuses on opposite valves of the shell being shallow and narrow, starting from the posterior shell half, dividing the shell into two distinct parts; in some shells sulcuses marked on the anterior part of the shell only, their presence and the degree of distinctness depending upon the state of shell preservation and the degree of shell deformation; sulcation and incision of the anterior commissure not always distinct but always present; shell slightly shorter medianly than at both shell flanks; antero-lateral margins widely rounded; hinge line short, hinge angles rounded.

Pedicle valve slightly larger than the brachial valve and in some shells a little deeper; beak acute, small, moderately incurving; pedicle foramen not preserved, in all probability — as it can be judged from moulds with badly preserved or fragmentary ventral apexes, it was minute, round and apical; deltidial plates not preserved; ventral area scarcely developed, seen under the incurved beak; ventral beak ridges not very distinctly marked.

Brachial valve as deep as or a little less than the pedicle valve; beak indistinct or faintly marked; median sulcus as developed as that on the pedicle valve, sometimes not well marked, depending on the state of shell preservation and degree of its convexity.

Radial surface ornamentation is very characteristic, consisting of numerous radial costae, which in different specimens vary in number and thickness. This variability in ornamentation has been mentioned by Pusch (1837, p. 16) and Gürich (1896, p. 294). In general, it is possible to differentiate, in all specimens in hand, two kinds of radial costae, with transitions between them: 1) finer and slightly lower costae with a little rounded backs, up to about 35 on each valve, very fine posteriorly (to some degree being like striae), gradually widening anteriorly; shells are

in general more subtransverse or even transverse in outline; 2) thicker and larger costae with rather acute backs, to about 24 on each valve, narrower and more delicate posteriorly, considerably widening anteriorly; the shells are rather subtransverse, in some cases almost transverse or even subpentagonal in outline.

As a rule, the costae are single, sometimes bifurcating on both flanks of the shell. In both opposite sulcuses of the shell usually two median costae bifurcate, and occasionally one is intercalating between them. In consequence, the costae in sulcuses are often a little finer than those on the shell's flanks. In smaller specimens (younger individuals), about 8–15 mm in length, the costae are observed at the antero-lateral commissure, at the distance of about 3.3 mm from the beaks, the umbonal portions of the shell being smooth posteriorly. The first, 8–10 costae appear in the region of both sinuses and with growth new ones are added on the flanks of the shell.

Judging from the better preserved parts of the shell surface, both valves were ornamented also by fine, concentric lines, usually regularly spaced, numbering 5–7 in 1 mm of the valve surface.

Interior. Pedicle valve: dental plates short of moderate thickness, somewhat variably disposed, that means, being more convergent or less; teeth small.

Brachial valve: hinge line divided, dental sockets of moderate depth with well and widely rounded bottom; medium septum thick, showing a distinct medium rod calcite, septum reaching to half valve length; crural plates short and thin, septalium distinct (Text-fig. 1C–3).

Some remarks on growth. — The material was not sufficient to obtain a full picture of the process of growth. Some changes in the external morphology have been observed on the preserved shells of different individual age. Young specimens were very few and unfortunately defor-

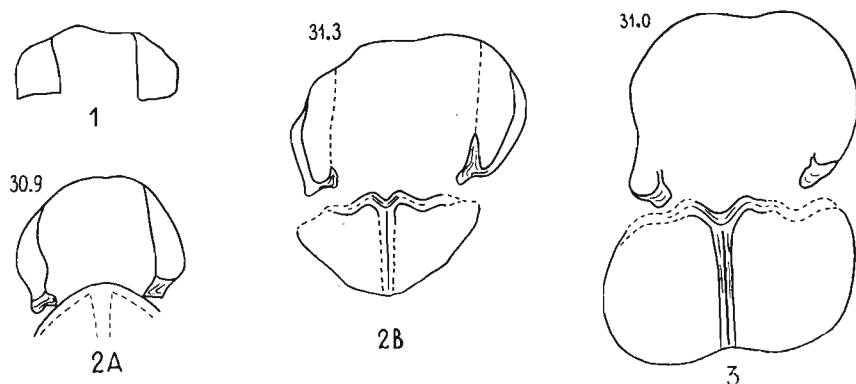


Fig. 2. — Cross sections of three different specimens of *Dzieduszyckia kielcensis* (F. Roemer) from the Kadzielnia quarry (specimens from Pusch's collection); approx. $\times 12$.

med. The observations on younger growth stages were completed by studies on the umbonal parts of shells of adult specimens.

Specimens, with both valves closed, never have valves quite equal in outline, size or degree of convexity at any growth stage, especially in the juvenile one.

The growth changes in outline, size and convexity are in general simple. Young individuals at about 2.4—5.0 mm long, usually are roundly outlined, changing gradually into a more quadrate outline at about 10—15 mm in length; with further growth, the outline may become distinctly subtransverse or even transversely oval (shell width exceeds greatly shell length about a half, to one and a half times). The pedicle valve in immature stages is always slightly larger and more convex, having an elevated ventral beak and pentagonal to subpentagonal valve outline in comparison with the brachial valve. The brachial valve slightly departs from the pedicle valve in being rather more quadrate, having a slight median sulcus, greater umbonal convexity and indistinct beak. An elevated ventral beak is a fairly common feature of young individuals and is probably due to the settlement condition of the animal, attached by pedicle to the sea bottom. These small just mentioned differences, marked in both valves of a shell, become gradually, with growth, less distinct, being obliterated in adult stage. The small ventral beak in shells of adult individuals and the very thin transverse shell outline could be evidence of a rather thin pedicle which had atrophied with progressing age.

The radial costae are observed at a distance of about 2.4—3.2 mm from both apices of beaks, in general about 8 on the pedicle valve, and 10 on the brachial valve. Bisulcation of the shell is present in specimens of about 15 mm long, the ventral sulcus being rather late in development. Specimens ranging from about 17—30 mm in length only slightly change in their outline, convexity and number of radial costae. Shells of the above dimensions appear to be inseparable from the shells of completely adult individuals. No observations of changes in the internal structure due to the growth could be made, no material was available.

Remarks. — *Dzieduszyckia kielcensis* (F. Roemer) agrees with the Uralian species *Dz. baschkirica* (Tschernyschew) in all external features, those being evident from the illustrations given by Rozman (1962, Pl. 8; Pl. 9, figs. 2—6). As is indicated by fig. 1 on Pl. 8 (*l.c.*), *Dz. baschkirica* differs slightly in having a much more thickened ventral umbo, which is also more incurved. The other differences are judged to be very small, as far as can be showed by illustrations. The pattern of radial ornamentation is almost identical, also the outline of valves and their profile are very similar to specimens from the Holy Cross Mountains.

The Moroccan representatives of the genus *Dzieduszyckia* also correspond in their morphology to the type species *Dz. kielcensis* (F. Roemer).

The species from the Upper Devonian of Morocco show all the features which characterize our species. The nearest appears to be *Dz. intermedia* (H. Termier) (comp. Termier & Termier, 1952, Pl. 100, fig. 8). Differing

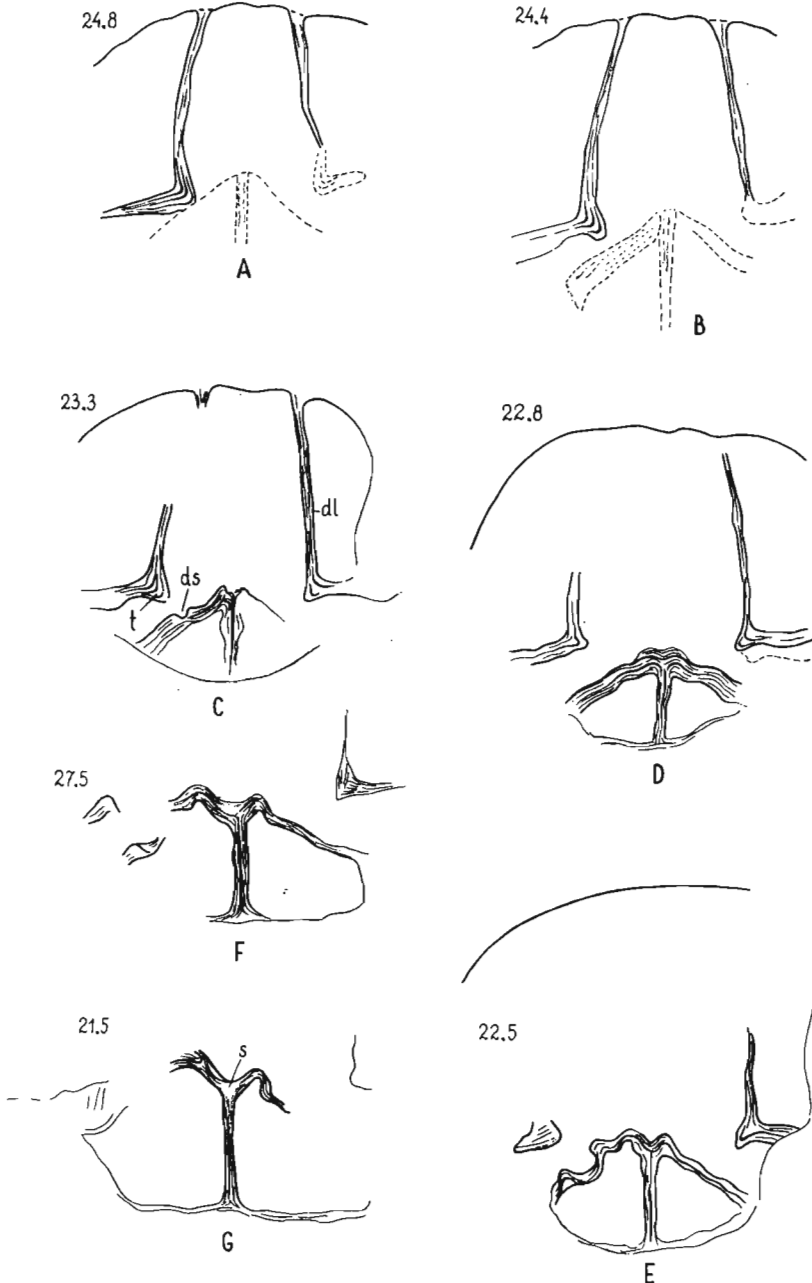


Fig. 3. — Cross sections of a specimen (length 25 mm, width 45 mm) of *Dzieduszyckia kielcensis* (F. Roemer) from Ruda Strawczyńska (I. G. 1100.II^{39a}); *dl* dental plate, *ds* dental socket, *t* tooth, *s* septalium; approx. $\times 12$.

more is *Dz. crassicostata* (H. G. Termier), mainly by the radial ornamentation, the costae dichotomous (comp. Termier & Termier, 1952, Pl. 100, fig. 1). *Dzieduszyckia tenuicostata* (H. Termier) differs the most from *Dz. kielcensis* (F. Roemer) in having very thin, striae-like costae densely covering the all shell surface. The appearance of *Dz. tenuicostata* shows that this species is quite distinct from the other Moroccan species of the genus *Dzieduszyckia*, from the Uralian species, as well as from the type species from the Kadzielnia quarry.

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GERTRUDA BIERNAT

NOWE DANE DOTYCZĄCE RODZAJU *DZIEDUSZYCKIA* SEMIRADZKI, 1909
(BRACHIOPODA)

Streszczenie

Praca dotyczy rodzaju *Dzieduszyckia* Siemiradzki, górno-dewońskiego przedstawiciela brachiopodów. Badania oparto na materiale pochodzącym z rdzenia otworu wiertniczego w Rudzie Strawczyńskiej koło Kielc oraz na kilku okazach z kolekcji Puscha, pochodzących z kamieniołomu Kadzielnia w Kielcach, zebranych tam w roku 1825.

Typowy gatunek *Dzieduszyckia kielcensis* (F. Roemer, 1866) został opisany po raz pierwszy z muszłowca, znalezionej w kamieniołomie Kadzielnia w Kielcach, jako *Terebratulites lacunoides* Pusch (Pusch, 1833). W nieco późniejszej literaturze był on cytowany i opisywany jako: *Terebratula amphitoma* Bronn (v. Buch, 1834, 1839; Pusch, 1837), *T.?* *kielcensis* (F. Roemer, 1866; Gürich, 1896), *Dzieduszyckia kielcensis* (F. Roemer) (Siemiradzki, 1909). Typowy okaz gatunku *Dz. kielcensis* nie został wyznaczony przez F. Roemera w 1866 r., w obecnej więc pracy wybrano jeden okaz z zachowanej fragmentarycznie kolekcji Puscha, pochodzącej z Kadzielni, i wyznaczono go jako neotyp. Znajduje się on w zbiorach Zakładu Paleozoologii PAN w Warszawie (numer inwent. Bp. X/17), i jest ilustrowany na Pl. I, fig. 1.

Stanowisko systematyczne rodzaju *Dzieduszyckia* było dotychczas błędnie interpretowane z powodu przypisania typowemu gotunkowi *Dz. kielcensis* (F. Roemer) nie istniejącej u niego struktury wewnętrznej, a mianowicie spiralnego brachidium (Pusch, 1837; Siemiradzki, 1909). Struktura wewnętrzna *Dz. kielcensis* nie była nigdy zbadana z braku materiału. W wyniku tego, rodzaj *Dzieduszyckia* był błędnie uznawany za przedstawiciela rodziny Atrypidae Gill, 1871 (Roger, 1952; Rzoncicka, 1960), a w roku 1965 umieszczony został w obrębie rodziny Athyrisinidae Grabau, 1931 (Boucot, Johnson *et al.*, 1965).

Na podstawie przeprowadzonych badań struktury wewnętrznej, w niniejszej pracy stwierdzono, że rodzaj *Dzieduszyckia* Siemiradzki należy uznać za przedsta-

wiciela paleozoicznych Rhynchonellacea (rodzina jeszcze nie ustalona). Dowodem tego jest typowo rynchonellowa budowa wewnętrzna: małe zęby i podpory zębowe, dorsalne septum, septalium, płytki zawiasowe rozdzielone. Na żadnym z wykonanych szlifów seryjnych nie stwierdzono jakichkolwiek nawet śladów spiralnego brachidium. Poza tym stwierdzono ogromną zmienność interspecyficzną u wszystkich przedstawicieli rodzaju *Dzieduszyckia*, dotyczącą głównie cech morfologii zewnętrznej muszli (elementy struktury wewnętrznej zachowują charakter dość stały). Wzmiankowana zmienność dotyczy szczególnie urzeźbienia radialnego muszli, w mniejszym stopniu — jej kształtu i rozmiarów. Obok tej dużej zmienności, istnieją także cechy stałe, powtarzające się u wszystkich przedstawicieli tego rodzaju, a mianowicie: duże — w porównaniu z innymi przedstawicielami paleozoicznych Rhynchonellacea — rozmiary muszli oraz mały dziób wentralny, słabo rozwinięta wentralna area, bisulkacja muszli, mniej lub bardziej wcięta i asymetryczna komisura przednia muszli, charakter żeber radialnych (pojedyncze lub rozgałęziające się, na ogół dość grube).

Zbadany rodzaj ma duże rozprzestrzenienie geograficzne i spotykany jest w facji wapiennej i wapienno-marglistej. Przedstawiciele rodzaju *Dzieduszyckia* występują w Polsce, Góry Świętokrzyskie (*Dz. kielcensis* (F. Roemer)), w Z.S.R.R., południowa część Uralu i Kazachstanu (*Dz. baschkirica* (Tschernyschew)), w Afryce Północnej, centralna część Maroka (*Dz. intermedia* (H. Termier), *Dz. crassicostata* (H. G. Termier), *Dz. tenuicostata* (H. Termier) i *Dz. semialata* (H. Termier)).

ГЕРТРУДА БЕРНАТ

НОВЫЕ ДАННЫЕ ОТНОСЯЩИЕСЯ К РОДУ *DZIEDUSZYCKIA* SIEMIRADZKI (BRACHIOPODA)

Резюме

Настоящая работа посвящена роду *Dzieduszyckia* Siemiradzki, 1909—верхнедевонскому представителю брахиопод. Изучения основаны на материале из керна буровой скважины в Рудзе Стравчиньской около Кельц, а также на нескольких образцах из коллекции Пуша (Pusch), происходящих из каменоломни Кадзельня в Кельцах, собранных там в 1825 году.

Типичный вид *Dzieduszyckia kielcensis* (F. Roemer, 1866) был описан впервые из ракушечника, найденного в каменоломне Кадзельня в Кельцах; как *Terebratulites lacunoides* Pusch (Pusch, 1833). Немного позже в литературе форму эту цитировано и описывано как: *Terebratula amphitoma* Bronn (v. Buch, 1834, 1839;

Pusch, 1837), *Terebratula? kielcensis* (F. Roemer, 1866; Gürich 1896) и *Dzieduszyckia kielcensis* (F. Roemer) (Siemiradzki, 1909). Голотип вида *Dz. kielcensis* не был определен Ремером в 1866 г., поэтому в настоящей работе выбрано 1 образец из частично сохраненной коллекции Пуша, происходящей из Кадзельни и принято его как неотип. Находится он в фондах Института Палеозоологии ПАН, инвентарный номер Вр. X/17, иллюстрированный на Пл. I, фиг. 1.

Систематическая позиция рода *Dzieduszyckia* была до сих пор ошибочно интерпретирована по поводу приписывания типичному виду *Dz. kielcensis* (F. Roemer) не существующего у него внутреннего строения, именно спирального брахидиума (Pusch, 1837; Siemiradzki, 1909). Внутренняя структура *Dz. kielcensis* никогда не была изучена за отсутствием материала. В результате род *Dzieduszyckia* считался неправильно представителем семейства Atrypidae Gill, 1871 (Roger, 1952; Ржонницкая, 1960), а в 1965 году был вмещен в пределы семейства Athyrisinidae Grabau, 1931 (Boucot, Johnson и ин., 1965).

На основании проведенных исследований внутреннего строения, в настоящей работе констатируется, что род *Dzieduszyckia* Siemiradzki следует признать представителем палеозойских Rhynchonellacea (семейство еще не определено). Доказательством этого является внутреннее строение, типичное для ринхонеллид: мелкие зубы и зубные пластины, дорсальная септа, септалиум, разделенные замочные пластины. Ни на одном из серийных шлифов не констатируется каких либо даже следов спирального брахидиума. Кроме этого констатируется значительную интерспецифическую изменчивость у всех представителей рода *Dzieduszyckia*, относящуюся главным образом к признакам внешней морфологии раковины при довольно устойчивом внутреннем строении. Указанная изменчивость особенно касается радиальной скульптуры раковины, в меньшей степени её формы и размеров. Наряду с этой большой изменчивостью существуют также устойчивые признаки, которые повторяются у всех представителей этого рода, а именно: крупные, по сравнению с иными представителями палеозойских Rhynchonellacea, размеры раковины и малая вентральная макушка, слабо развита вентральная арка, бисулькация раковины, менее или более врезанная и асимметрическая передняя комиссура раковины, характер радиальных ребер (единичные или разветвляющиеся. в общем довольно крупные).

Изученный род имеет широкое географическое распространение и встречается в известняковых и мергелистых породах. Представители рода *Dzieduszyckia* известны в Польше, Свентокржиские Горы (*Dzieduszyckia kielcensis* (F. Roemer)), в СССР, южная часть Урала и Казахстана (*Dz. baschkirica* (Tschernyschew)), в северной Африке, центральная часть Марокка (*Dz. intermedia* (H. Termier), *Dz. crassicostata* (H. G. Termier), *Dz. tenuicostata* (H. Termier) и *Dz. semialata* (H. Termier)).

PLATES .

Plate I

Dzieduszyckia kielcensis (F. Roemer)

(All specimens come from original Pusch's collection — Kadzielnia quarry in Kielce,
Holy Cross Mountains, Poland)

Fig 1. Neotype (Bp. X/17) in: *a* brachial valve, *b* pedicle valve, *c* anterior commissure, *d* posterior views.

Figs. 2, 3. Two adult specimens (Bp. X/18, 40) in: *a* brachial valve, *b* pedicle valve, *c* anterior commissure views.

Figs. 4, 5, 6*a*. Three brachial valve views of different adult specimens (Bp. X/16 concerns Figs. 5, 6*a*, Bp. X/9 — Fig. 4).

Fig. 6*b*. Anterior margin views of Figs. 5 and 6*a* (Bp. X/16).

All specimens of natural size



1a



1c



1b



2a



1d



2b



3a



3b



5



2c



4



6a



3c



6b



1a



1c



4



1b



3



5



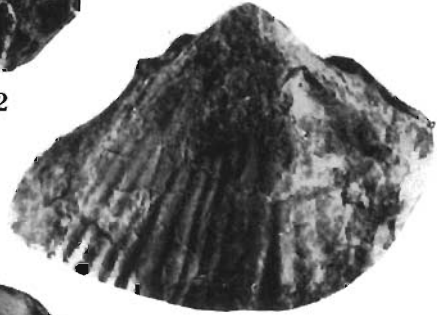
6a



2



8



10



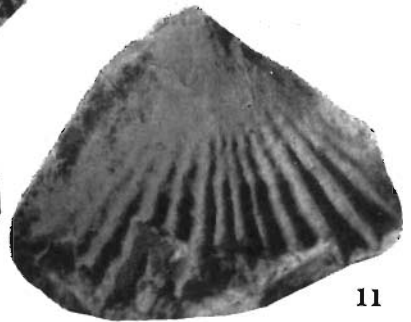
7



6b



9



11

Plate II

Dzieduszyckia kielcensis (F. Roemer)

(Ruda Strawczyńska, limestone, "lumachelle")

- Fig. 1. Thick-ribbed specimen of adult individual I. G. 1100.II¹ (a brachial valve, b pedicle valve, c side views), with marked arrested growth (Fig. c); nat. size.
- Figs. 2, 3. Anterior commissure of two different specimens (I. G. 1100.II²⁻³); nat. size (I. G. 1100.II^{4-5, 7-8}).
- Figs. 4, 5, 7-9. Brachial valve view of 5 specimens in different individual age; (I. G. 1100.II^{4,5,7-9}); Figs. 4, 5, 7 — nat. size, Figs. 8, 9 — slightly enlarged.
- Fig. 6. Brachial valve and pedicle valve views of adult individual (I. G. 1100.II⁶); nat. size.
- Figs. 10, 11. Pedicle valve views of two specimens in different individual age (I. G. 1100.II¹⁰⁻¹¹); Fig. 10 — nat. size, Fig. 11 — approx. $\times 4.2$.