Brachiopods of the Ede Quartzite (Lower Llandovery) of Norderön, Jämtland

By

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ABSTRACT.—The Ede Quartzite carries a brachiopod faunule comprising a small number of species which were studied by breaking up a large rock sample and preparing internal and external molds of the calcitic specimens by acid etching.

The generic assemblage consists of *Dalmanella*, *Fardenia?*, *Eostropheodonta*, *Cryptothyrella?*, *Protatrypa*, and an indeterminant virgianinid genus, all of which are pre-middle Upper Llandovery (pre-C_3) forms. However, *Eostropheodonta* and *Protatrypa*, unknown in the Ordovician, characterize the Lower Llandovery with an almost world-wide distribution and the fossil-bearing beds studied are assigned an Early Llandoverian age.

One new species, *Protatrypa thorslundi*, is described.

Introduction

In 1956, while collecting Silurian brachiopods in Scandinavia, Boucot was directed by Professor PER THORSLUND to the Ede Quartzite locality about 300 meters south of the ferry landing on the west side of the island of Norderön in Jämtland. About seventy-five kilograms of fossiliferous quartzite were collected and eventually prepared for study. Preparation was accomplished by means of a rock-splitter combined with mild acid treatment, the latter exposing the internal structures of the shell adequately. The Ede Quartzite at the Norderön locality is largely cemented by calcite so that only a few minutes in acid can be permitted if detail is not to be destroyed. The leached specimens must be hardened with a plastic dissolved in a solvent after washing and drying or else handling will destroy the internal details.

The 1956 collection yielded only a restricted number of brachiopod species, but the assemblage is adequate to indicate that the Ede Quartzite at this locality is of Early Llandovery age. *Protatrypa* has not been observed below the Lower Llandovery elsewhere, and the *Eostropheodonta* is similar to forms found elsewhere in the Lower Llandovery. The virgianid and the *Fardenia?* are not too useful. True *Dalmanella*, likewise, is not especially useful for purposes of correlation. The nearest similar fauna is that found in division 6 of the Oslo region.

The virgianid undoubtedly represents an undescribed genus, but adequate material was not available upon which to base a complete description.

We are greatly indebted to Professor P. THORSLUND for having made the original collection possible, and also for having assisted in the publication of the paper.

The recognition of Early Llandovery brachiopod faunas

The recognition of Early Llandovery brachiopod faunas is a problem difficult to solve neatly in the present state of the art of correlation. As might be expected the Early Llandovery brachiopod fauna is very closely allied to that of the Late Ordovician. What is not well understood in many circles is the fact that most Silurian sections containing rich marine faunas begin well up in the Late Llandovery. Middle Llandovery and early Upper Llandovery faunas are very poorly known and only sparingly represented in the literature dealing with Silurian brachiopods. It is not surprising if a tendency exists among paleontologists to assign Early Llandovery brachiopods to the Ordovician rather than the Silurian as most students' conception of the "basal" Silurian fauna is based upon Late Llandovery shells. The situation is further exacerbated by the first appearance of a number of genera and families in about the middle portion of the Late Llandovery (for example: delthyrids including *Howellella* and *Delthyris*, true *Atrypa* of the *A. "reticularis"* type, *Chilidiopsis*, *Dalejina* (= *Rhipidomelloides*), *Merista*, *Coelospira*, pentamerinids except for one occurrence of *Rhipidium* in the Ashgillian of Norway, and gypidulinids including *Gypidula* and *Sieberella*).

The easiest way to characterize the Early Llandovery brachiopod fauna is by stating that it is essentially a Late Ordovician fauna in which a few of the characteristic Ordovician genera are no longer present and in which a few Silurian-type genera make their first appearance. Particularly important is the appearance of *Stricklandia*, *Protatrypa*, *Meifodia*, an abundance of strophe-odontids, an abundance of *Cryptothyrella*, and an abundance of *Mendacella*. Stropheodontids, *Cryptothyrella*, and *Mendacella* are known in strata of Ashgillian age, but not normally in abundance. True *Fardenia* is also present in the Early Llandovery as well as in the Ashgillian. True *Isorthis* is recognized for the first time in the Early Llandovery as shown by studies in progress by WALMSLEY, BOUCOT, and HARPER.

With this information in mind it is easy to see why the Ede Quartzite fauna is assigned to the Early Llandovery rather than to the Ordovician. The occurrence of *Protatrypa* in the Ede Quartzite is particularly significant as this genus has been encountered in Early Llandovery age strata of the Siberian Platform; Malmøya, Norway; Gaspé, Quebec; and in Venezuela.

Systematic paleontology

Phylum *Brachiopoda*

Class *Articulata*

Suborder *Dalmanelloidea* MOORE, 1952

Superfamily *Enteletacea* WAAGEN, 1884

[*nom. transl.* ALTSKHOVA, 1960 (*ex Enteletinae* WAAGEN, 1884).]

Family Dalmanellidae SCHUCHERT, 1913

[*nom. transl.* SCHUCHERT & LEVENE, 1929 (*ex Dalmanellinae* SCHUCHERT, 1913).]

Genus *Dalmanella* HALL & CLARKE, 1892

Type species. — *Orthis testudinaria* DALMAN, 1828, p. 115; Pl. II, fig. 4.

Dalmanella aff. *testudinaria* DALMAN, 1828

Pl. I, figs. 1–12; Pl. II, figs. 1–7.

EXTERIOR.—The shells are transversely subsemicircular in outline and unequally biconvex in lateral profile. The pedicle valve is more strongly convex and is slightly carinate. Its interarea is apsacline, slightly incurved, and equal to 1/2 to about 3/5 of the maximum width of the shell. The brachial valve bears a broad shallow sulcus. Its interarea is anacline. The surface is finely costate with ribs increasing in number anteriorly by bifurcation and by implantation along the sides of the interspaces. The anterior commissure is crenulated by the impressions of the costellae.

INTERIOR OF PEDICLE VALVE.—Muscle field impressed, cordate. Myophragm present nearly to the anterior terminus of the diductor scars. The teeth are stubby and rounded. Short dental lamellae present, diverging anteriorly at an angle between 75 and 90 degrees, but recurving very slightly adjacent to the diductor impressions. The margins are crenulated by the impress of the costellae.

INTERIOR OF BRACHIAL VALVE.—A cardinal process is present as a low prominance on the median ridge between the proximal ends of the sockets. Brachiophores diverge more widely at their bases than do their ventral edges. Fulcral plates present. A broad, low myophragm separates the muscle scars posteriorly. Muscle field enclosed by faintly developed arcuate bounding ridges in large specimens. The adductor impressions are elongate and are only poorly divided into anterior and posterior scars in some large specimens.

Suborder *Pentameroidea* SCHUCHERT & COOPER, 1931

Superfamily *Pentameracea* M'COY, 1844

[*nom. transl.* SCHUCHERT, 1896 (*ex Pentameridae* M'COY, 1844).]

Family *Virgianidae* BOUCOT & AMSDEN, 1963

Virgianinid gen. indet.

Pl. IV, figs. 5–7.

REMARKS.—The available specimens must be excluded from *Virgiana* and *Platymerella* because those genera bear low plications. *Holorhynchus* differs by its lack of a median septum in the pedicle valve, however, assignment to the Virgianidae is confirmed by the absence of an interarea and by the presents of short brachial plates. The Swedish specimens have brachial plates most like those of *Holorhynchus* (ST. JOSEPH, 1938, Fig. 9) in which relatively broad inner plates are developed. *Virgiana* (SCHUCHERT & COOPER, 1932, Fig. 35, p. 186) and *Platymerella* (AMSDEN, 1953, Fig. 4; p. 142) both appear to have relatively smaller inner plates.

EXTERIOR.—The surface is smooth except for growth lines. The pedicle valve is fairly strongly convex at the umbo, but becomes less so anteriorly. The brachial valve is only moderately convex.

INTERIOR OF PEDICLE VALVE.—A strong median septum is present umbonally, but it thins markedly anteriorly and extends less than halfway to the anterior margin. The median septum supports a very short, small, V-shaped spondylim.

INTERIOR OF BRACHIAL VALVE.—The inner plates of the brachial valve are relatively broad and converge toward the median plane at a high angle. They project slightly medially beyond the inner sides of the inner plates to form a carina on each side. The outer plates curve slightly outward then recurve and converge slightly toward the midline but do not join together. The outer plates are relatively short, extending only about 3 mm anteriorly, on the largest brachial valve available and they diverge very slightly anteriorly.

The adductor muscle field consists of two pairs of elongate impressions divided by a low, narrow median ridge.

Suborder *Strophomenoidea* MAILLIEUX, 1932

Superfamily *Strophomenacea* KING, 1846

[*nom. transl.* SCHUCHERT, 1896 (*ex Strophomenidae* KING, 1846).]

Family *Stropheodontidae* CASTER, 1939

Subfamily *Stropheodontinae* CASTER, 1939

Genus *Eostropheodonta* WILLIAMS, 1951

Type species.—*Orthis hirnantensis* M'COY, 1851, p. 395.

Eostropheodonta sp.

Pl. III, figs. 1–9; Pl. IV, figs. 1–4.

EXTERIOR.—The valves are plano- to slightly concavo-convex in lateral profile and sub-semicircular in outline. The greatest width is at the hinge line. The delthyrium bears a small apical pseudodeltidium. The interarea on the pedicle valve is apsacline. The greatest width is at the hingeline. The interarea on the brachial valve is anacline. A chilidium strongly convex outward is present. The surface ornament is finely parvicostellate and anterior commissure is crenulate.

INTERIOR OF PEDICLE VALVE.—Dental lamellae are present and diverge at about 90 degrees from one another. Denticulations are present near the middle of the hinge line but it was not determined how far along they are developed. The diductor muscle scars are straight sided postero-laterally, impressed posteriorly, and blend imperceptably with the interior shell surface anteriorly. The postero-lateral impressed edges of the diductor field are straight and extend from the inner extremities of the dental lamellae. A thin and faint myophragm is discernible dividing the anterior 2/3 of the diductor field on some specimens. The adductor scars are small and elongate, situated within the posterior portion of the diductor field, and are most deeply impressed at their posterior end. The adductor impressions have the form of a simple inverted V. The anterior part of the shell is crenulated by the impress of the costellae.

INTERIOR OF BRACHIAL VALVE.—The cardinal process lobes consist of two plates, conjunct posteriorly and divergent anteriorly. Laterally, the inner walls of the low divergent socket plates define shallow, broadly divergent sockets. The muscle scars are poorly impressed and consist of two elongate pairs divided by a broad low median ridge. At about the middle of its length the median ridge is abruptly constricted and is much narrower anteriorly. The costae are only faintly impressed near the anterior margin.

Superfamily *Orthotetacea* WAAGEN, 1884

[*nom. transl.* WILLIAMS, 1953 (*ex Orthotetinae* WAAGEN, 1884).]

Family *Orthotetidae* WAAGEN, 1884

[*nom. transl.* MCEWAN, 1939 (*ex Orthotetinae* WAAGEN, 1884).]

Subfamily *Orthotetinae* WAAGEN, 1884

Genus *Fardenia* LAMONT, 1935

Type species.—*F. scotica* LAMONT, 1935, p. 311; Pl. VII, figs. 1–7.

Fardenia? sp.

Pl. II, figs. 8–15.

EXTERIOR.—The shell is lenticular and slightly biconvex in lateral profile. The hinge line is straight and the interarea is low. Deltidial or chilidial plates are not discernible on the available material. The ornament is of radial costellae. Growth lines have not been observed. The costellae are distinctly raised and rounded on their crests. The interspaces are somewhat flat. Costellae increase in number anteriorly by implantation along the sides of the interspaces. The anterior commissure is rectimarginate.

INTERIOR OF PEDICLE VALVE.—Dental lamellae are present and diverge from the midline at angles of about 40 degrees initially, but curve silghtly to diverge more widely anteriorly. The dental lamellae are relatively short and measure slightly less than 3 mm on the largest specimen. The musculature is not significantly impressed. The shell surface is crenulated by the impress of the costellae.

INTERIOR OF BRACHIAL VALVE.—Short hinge plates diverge from the midline at angles between 45 and 50 degrees. A short low rounded myophragm is present posteriorly. The form of the cardinal process is not discernible.

Suborder *Atrypoidea* MOORE, 1952

Superfamily *Atrypacea* GILL, 1871

[*nom. transl.* SCHUCHERT & LEVENE, 1929 (*ex Atrypidae*, GILL, 1871).]

Family *Atrypidae* GILL, 1871

Subfamily *Atrypinae* GILL, 1871

[*nom. transl.* WAAGEN, 1883 (*ex Atrypidae* GILL, 1871).]

Genus *Protatrypa* BOUCOT, JOHNSON, & STATON, 1964

Type species.—*P. malmoeysensis* BOUCOT, JOHNSON, & STATON, 1964.

Protatrypa thorslundi n. sp.

Pl. IV, figs. 9–14; Pl. V, figs. 1–17; Pl. VI, figs. 1–15; Pl. VII, figs. 1–19.

EXTERIOR.—The shells are subequally biconvex in lateral profile and subcircular to elongate suboval in outline. The hinge line is very narrow. Maximum width is attained near midlength. The pedicle beak is straight or is more strongly incurved. In small shells as in the posterior portion of larger ones the pedicle valve is carinate and the brachial valve has a shallow sulcus. The anterior commissure is rectimarginate. On the surface, growth lines are only faintly and irregularly developed except near the anterior commissure where they may be lamellose. Radial costae are evenly developed on the flanks and infrequently increase in number anteriorly by bifurcation. On some specimens there is an enlarged median interspace on the pedicle valve and a corresponding large median rib on the brachial valve.

INTERIOR OF PEDICLE VALVE.—Short dental lamellae are present. The teeth are stubby, rounded dorsally, and they expand antero-laterally. The muscle scars are only faintly impressed and are non-flabellate. A low transverse adductor platform is developed on some of the larger specimens.

INTERIOR OF BRACHIAL VALVE.—A strong V-shaped myophragm is developed in the posterior portion of most shells. Hinge plates are disjunct and diverge anteriorly. Crural lobes are variably developed or are absent (see Pl. V, figs. 10–13). Sockets are non-crenulate except in a single specimen (Pl. V, figure 6) on which several crenulations are developed in the anterior portions of the sockets. A single specimen also shows a small knob-like cardinal process developed in the notothyrial cavity. A striate area for diductor attachment is lacking. The shell is crenulated by the impress of the costae.

COMPARISON.—*Protatrypa thorslundi* n. sp. differs from *P. malmoeyensis*, the type species, in having a much shorter hingeline, in being more strongly biconvex, in being elongate rather than transverse and by the lack of strong growth lines over the entire shell. *Protatrypa septentrionalis* (NIKIFOROVA, 1961) from Llandoverian beds of the Siberian Platform has a longer hinge line, a less acuminate beak and more strongly developed growth lines.

Suborder *Athyridoidea* Boucot, Johnson, & Staton, 1964

Superfamily *Athyridacea* M'Coy, 1844 emend. Davidson, 1881

[*nom. transl.* Williams, 1956 (*ex Athyridae* M'Coy, 1844).]

Family *Meristellidae* Waagen, 1883

[*nom. transl.* Hall & Clarke, 1895 (*ex Meristellinae* Waagen, 1883).]

Subfamily *Meristellinae* Waagen, 1883

Genus *Cryptothyrella* Cooper, 1942

Type species.—*Whitfieldella quadrangularis* Foerste, 1906, p. 327; Pl. 1, figs. 4 a–c.

Cryptothyrella? sp.

Pl. IV, fig. 8.

Exterior.—A single pedicle internal mold is available for study. It is elongate and very strongly convex.

Interior of Pedicle Valve.—The pedicle cavity is well defined, medial to short dental lamellae. The dental lamellae extend anteriorly as ridges flanking the muscle impressions. The musculature is elongate, triangular, and well impressed. The umbonal cavities are corrugated by low chevron-like ridges as in *Cryptothyrella crassa*.

Remarks.—Positive assignment of the specimen is precluded by lack of any brachial valves for study. *Cryptothyrella* differs from *Meristina* chiefly by the absence of a brachial median septum.

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Plate I

Figures 1–12: *Dalmanella* aff. *testudinaria* (DALMAN, 1828).

Ede Quartzite, Jämtland, Sweden, 300 m south of Ferry landing on southwest shore of Norderön.

Figs. 1–8. Molds of interiors of pedicle valves × 3. Note low rectangular impression of the adductor ridge; note impressions of dental lamellae and of arcuate ridges bounding the muscle field. Nos. J 141 A–H.

Fig. 9. Mold of interior of brachial valve × 3. Note impression of cardinal process, brachiophore supporting plates and anteriorly converging ridges bordering the adductor muscle field. No. J 141 I.

Fig. 10. Mold of pedicle valve × 3. Counterpart of specimen in figure 3. No. J 141 J.

Figs. 11–12. Molds of exteriors of pedicle valves × 3. Nos. J 141 K, J 141 L.

Plate II

Figures 1–7. *Dalmanella* aff. *testudinaria* (DALMAN, 1828).

Ede Quartzite, Jämtland, Sweden, 300 m south of Ferry landing on southwest shore of Norderön.

Fig. 1. Mold of interior of pedicle valve × 3. No. J 142 A.

Fig. 2. Mold of interior of brachial valve × 3. Note impression of cardinal process. No. J 142 B.

Fig. 3. Mold of interior of brachial valve × 3. No. J 142 C.

Fig. 4. Mold of interior of pedicle valve × 3. No. J 142 D.

Fig. 5. Mold of interior of pedicle valve × 3. No. J 142 E.

Fig. 6. Mold of interior of brachial valve × 3. No. J 142 F.

Fig. 7. Mold of interior of brachial valve × 4. No. J 142 G.

Figures 8–15: *Fardenia?* sp.

Same locality as above.

Fig. 8. Mold of interior of pedicle valve × 3. Counterpart of specimen in fig. 12. No. J 143 A.

Fig. 9. Mold of exterior of brachial valve × 3. Counterpart of specimen in fig. 15. No. J 143 B.

Fig. 10. Mold of exterior of pedicle valve × 3. Counterpart of specimen in fig. 13. No. J 143 C.

Fig. 11. Mold of interior of pedicle valve × 3. Note well developed dental lamellae. No. J 143 D.

Fig. 12. Mold of exterior of pedicle valve × 3. No. J 143 E.

Fig. 13. Mold of interior of pedicle valve × 3. No. J 143 F.

Fig. 14. Mold of interior of brachial valve × 3. No. J 143 G.

Fig. 15. Mold of interior of brachial valve × 3. No. J 143 H.

Plate III

Figures 1–9: *Eostropheodonta* sp.

Ede Quartzite, Jämtland, Sweden, 300 m south of Ferry landing on southwest shore of Norderön.

Fig. 1. Mold of interior of pedicle valve × 2. Note posterior position of adductor scar. No. J 144 A.
Fig. 2. Mold of interior of pedicle valve × 2. No. J 144 B.
Fig. 3. Mold of interior of brachial valve × 2. Note impression of bilobed cardinal process. No. J 144 C.
Fig. 4. Mold of interior of brachial valve × 3. No. J 144 D.
Fig. 5. Mold of exterior of brachial valve × 2. No. J 144 E.
Fig. 6. Mold of exterior × 3. No. J 144 F.
Fig. 7. Mold of interior of pedicle valve × 2. Note well developed dental lamellae. No. J 144 G.
Fig. 8. Mold of interior of brachial valve × 2. No. J 144 H.
Fig. 9. Mold of interior of pedicle valve × 2. No. J 144 I.

Plate IV

Figures 1–4: *Eostropheodonta* sp.

Ede Quartzite, Jämtland, Sweden, 300 m south of Ferry landing on southwest shore of Norderön.

Fig. 1. Mold of interior of brachial valve × 3. No. J 145 A.
Fig. 2. Mold of interior of brachial valve × 4. No. J 145 B.
Fig. 3. Mold of interior of pedicle valve × 3. Note well developed dental lamellae. No. J 145 C.
Fig. 4. Mold of exterior of pedicle valve × 2. No. J 145 D.

Figures 5–7: virgianinid gen. indet.

Same locality as above.

Fig. 5. Mold of interior of pedicle valve × 2. Note absence of plications. No. J 146 A.
Fig. 6. Mold of interior of brachial valve × 2. No. J 146 B.
Fig. 7. Mold of interior of pedicle valve × 2. No. J 146 C.

Figure 8: *Cryptothyrella?* sp.

Same locality as above. Mold of interior of pedicle valve × 2. Note triangular impressed muscle scar and bounding ridges. Note corrugations in the posterolateral regions. No. J 147 A.

Figures 9–14: *Protatrypa thorslundi* Boucot & Johnson, n. sp.

Same locality as above.

Fig. 9. Mold of interior of brachial valve × 3. Note small, disjunct hinge plates. No. J 148 A.
Fig. 10. Mold of exterior of brachial valve × 2. Counterpart of specimen in fig. 12. No. J 148B.
Fig. 11. Mold of interior of brachial valve × 3. No. J 148 C.
Fig. 12. Mold of interior of brachial valve × 2. No. J 148 D.
Fig. 13. Mold of exterior of brachial valve × 3. Counterpart of specimen in figure 14. No. J148 E.
Fig. 14. Mold of interior of brachial valve × 3. Note elongate oval outline. No. J 148 F.

Plate V

Figures 1–17: *Protatrypa thorslundi* Boucot & Johnson, n. sp.

Ede Quartzite, Jämtland, Sweden, 300 m south of Ferry landing on southwest shore of Norderön.

Figs. 1–5. Brachial, pedicle, side, posterior, and anterior views of the holotype × 3. No. J 149 A.
Fig. 6. Mold of interior of brachial valve × 3. Note one or two crenulations on the anterolateral extremities of the sockets. No. J 150 A.

Fig. 7. Mold of interior of brachial valve × 3. No. J 150 B.
Fig. 8. Mold of exterior of brachial valve × 3. No. J 150 C.
Fig. 9. Mold of interior of brachial valve × 3. No. J 150 D.

Figures 10–13: Molds of interiors of four brachial valves × 3.

Note variation in the development of the inner hinge plates from essentially lacking (fig. 12) to well developed (figs. 10 & 13). Nos. J 151 A–D.

Figures 14–17: Side, brachial, posterior, and anterior views of an internal mold × 3. No. J152 A.

Plate VI

Figures 1–15: *Protatrypa thorslundi* BOUCOT & JOHNSON, n. sp.

Ede Quartzite, Jämtland, Sweden, 300 m south of Ferry landing on southwest shore of Norderön.

Fig. 1. Mold of exterior of pedicle valve × 3. Counterpart of specimen in fig. 8. No. J 153 A.
Fig. 2. Mold of exterior of pedicle valve × 3. Counterpart of specimen in fig. 3. No. J 153 B.
Fig. 3. Mold of interior of pedicle valve × 3. No. J 153 C.
Fig. 4. Mold of exterior of brachial valve × 3. No. J 153 D.
Fig. 5. Mold of interior of pedicle valve × 3. No. J 153 E.
Fig. 6. Mold of interior of pedicle valve × 3. No. J 153 F.
Fig. 7. Mold of exterior of pedicle valve × 3. Mold of same shell as figure 13. No. J 153 G.
Fig. 8. Mold of interior of pedicle valve × 3. Note short dental lamellae. No. J 153 H.
Fig. 9. Mold of interior of pedicle valve × 3. No. J 153 I.
Fig. 10. Mold of interior of pedicle valve × 3. No. J 152 A.
Fig. 11. Mold of interior of brachial valve × 3. No. J 153 L.
Fig. 12. Mold of posterior of shell × 3. No. J 153 M.
Fig. 13. Mold of anterior margin of brachial valve × 3. Note growth lines. No. J 153 N.
Fig. 14. Mold of interior of pedicle valve × 3. No. J 154 A.
Fig. 15. Mold of interior of brachial valve × 3. No. J 154 B.

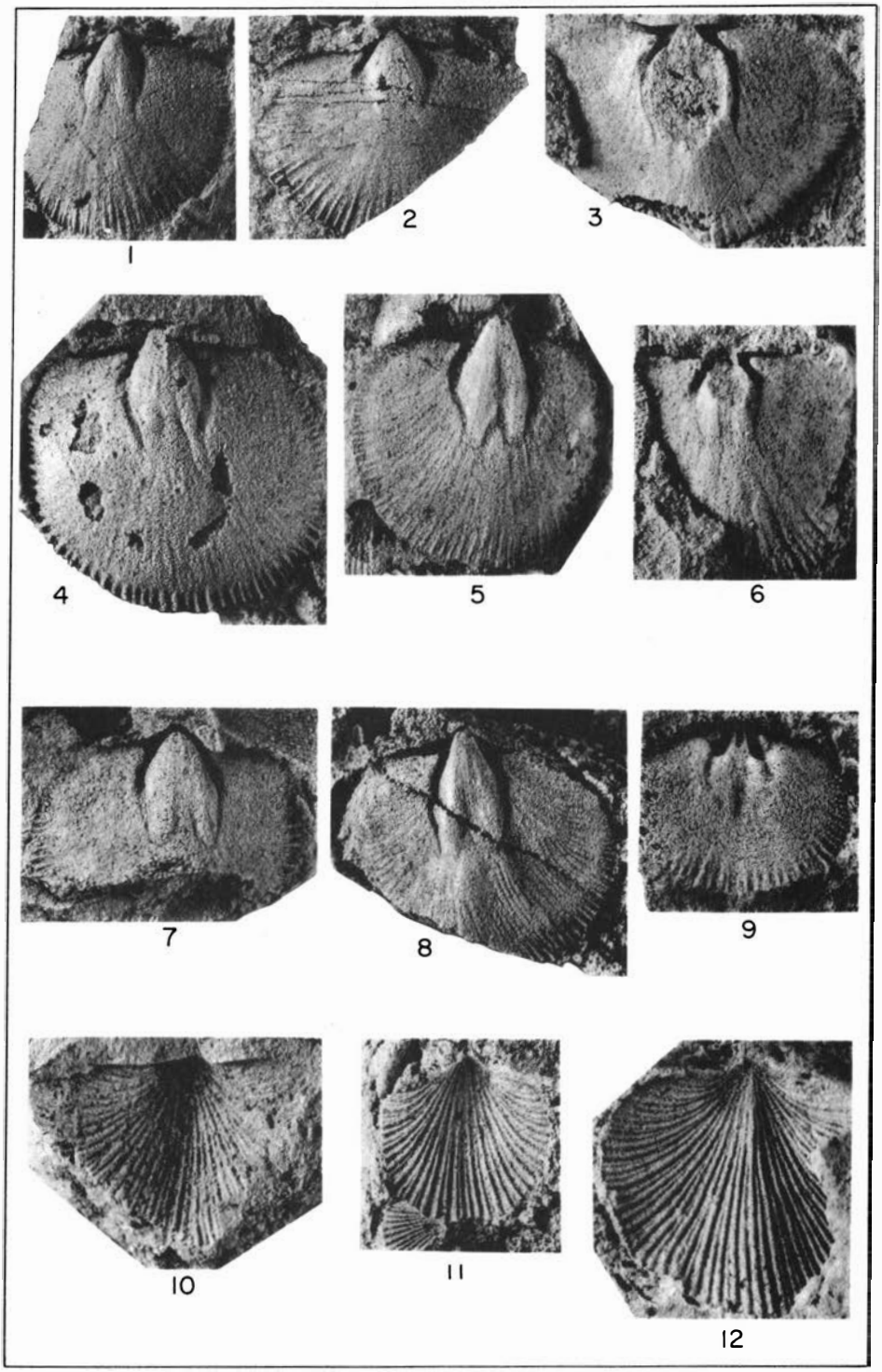
Plate VII

Figures 1–19: *Protatrypa thorslundi* BOUCOT & JOHNSON, n. sp.

Ede Quartzite, Jämtland, Sweden, 300 m south of Ferry landing on southwest shore of Norderön.

Figs. 1–4. Molds of interiors of pedicle valves × 3. Note well developed short dental lamellae in small specimen (fig. 1) and partial obsolescence in larger specimen (fig. 2). Nos. J 155 A–D.
Fig. 5. Mold of interior of brachial valve × 3. No. J 156 A.
Figs. 6–8. Molds of interiors of brachial valves × 3. Nos. J 157 A–C.
Figs. 9–11. Pedicle, side, and brachial views of an internal mold × 3. No. J 158 A.
Fig. 12. Mold of interior of brachial valve × 3. No. J 159 A.
Fig. 13. Mold of exterior of pedicle valve × 3. No. J 160 A.
Figs. 14–18. Molds of interiors of brachial valves × 3. Nos. J 161 A–E.
Fig. 19. Mold of exterior of pedicle valve × 3. No. J 162 A.

Tryckt den 3 november 1964.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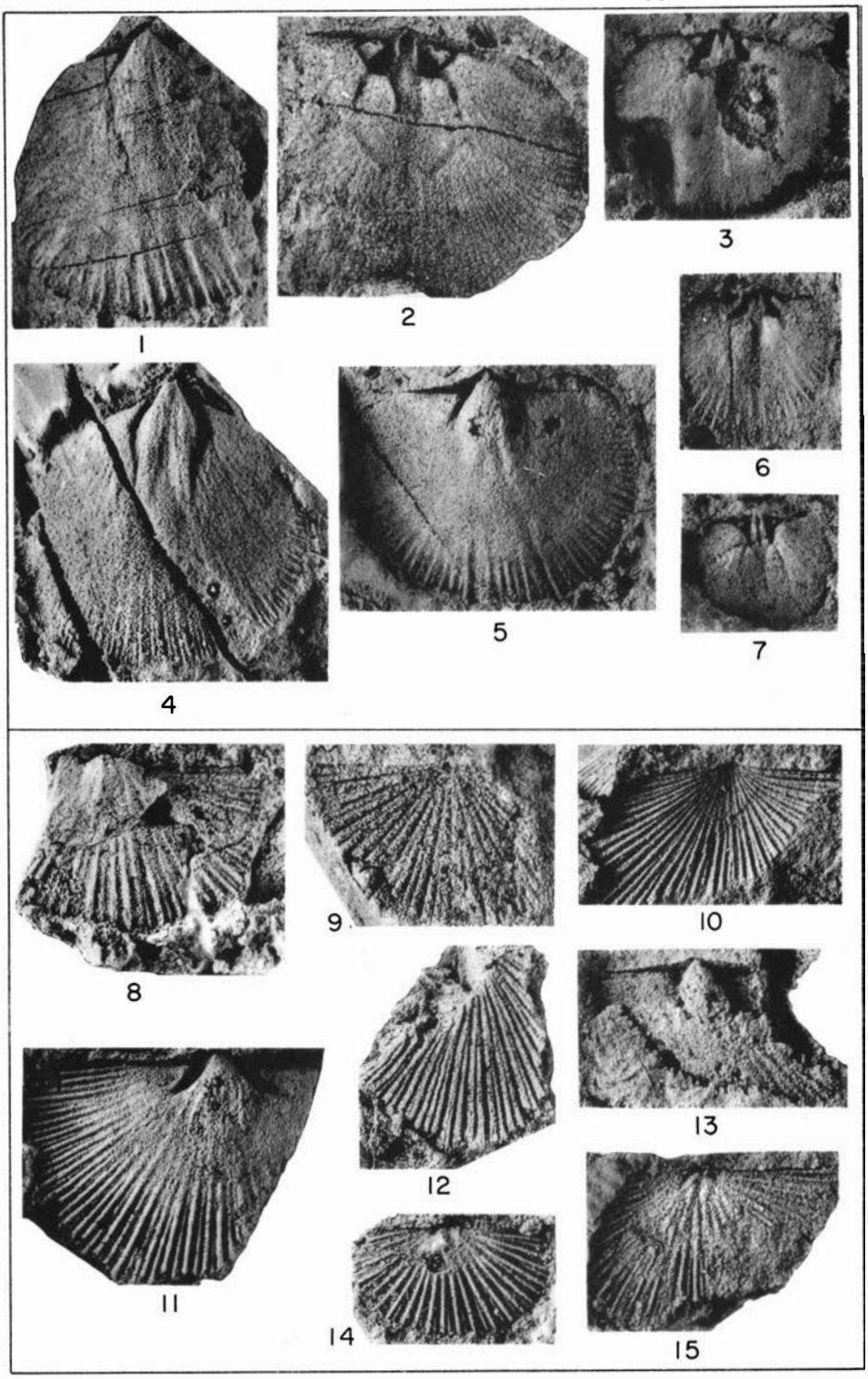
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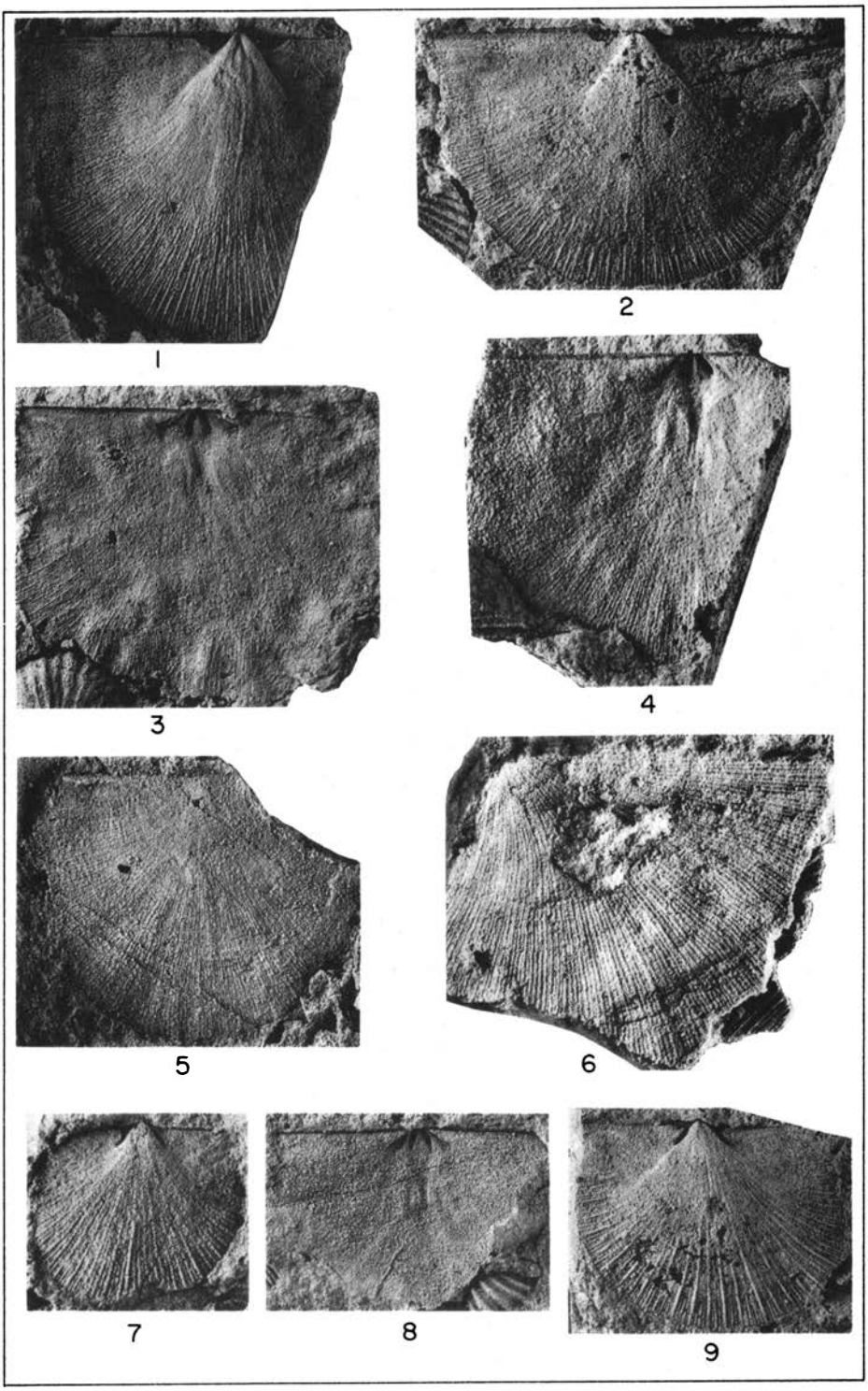
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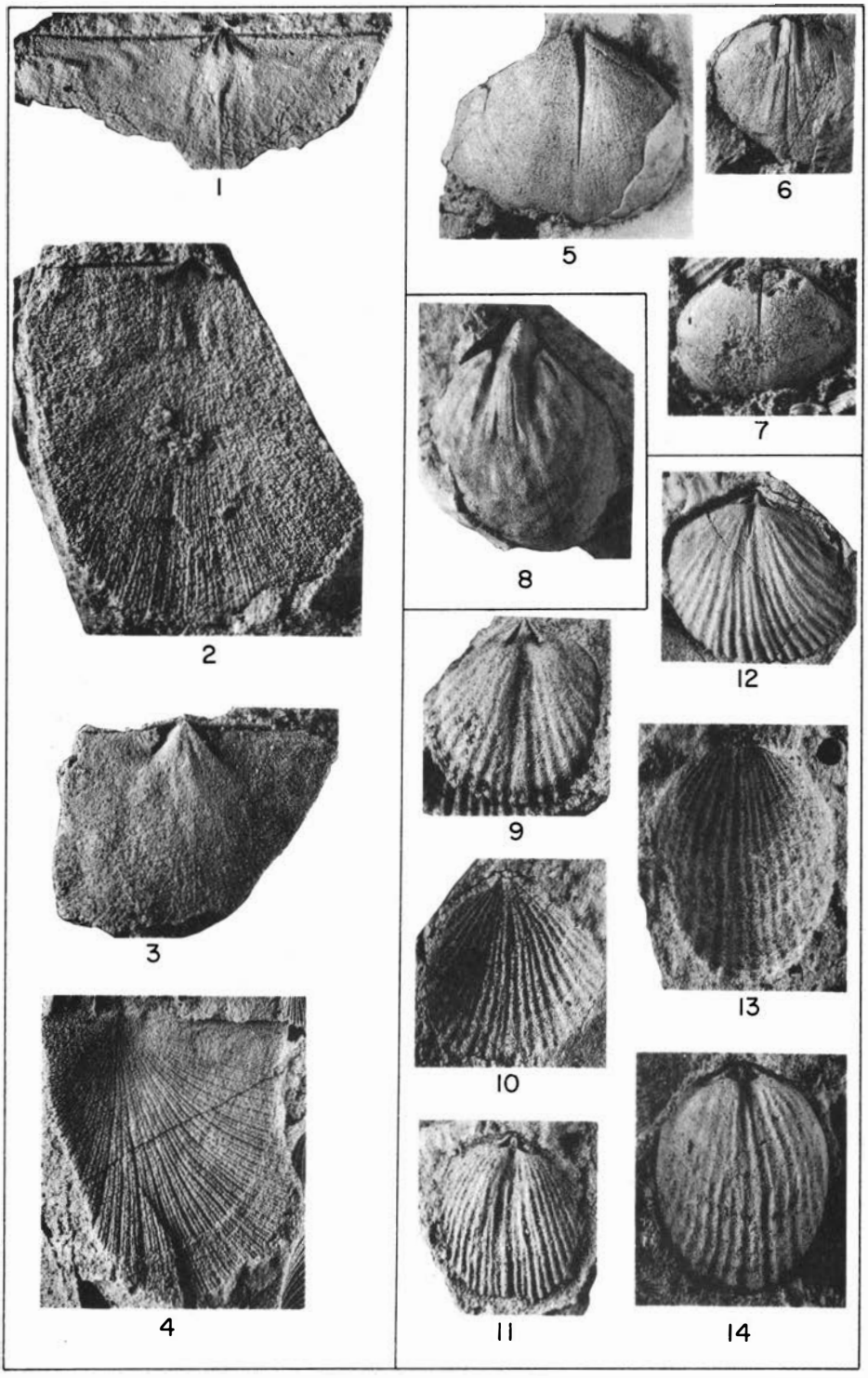
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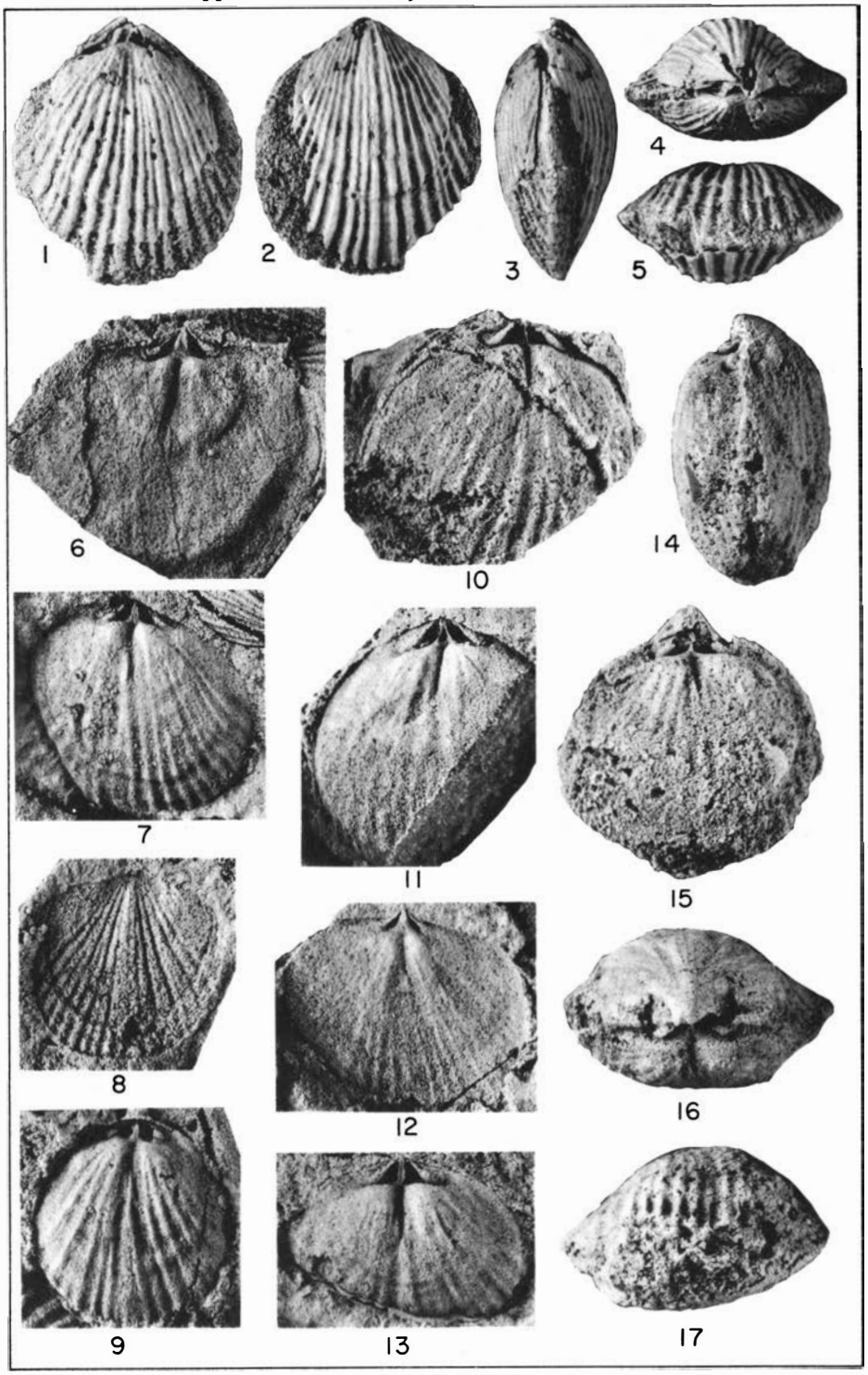
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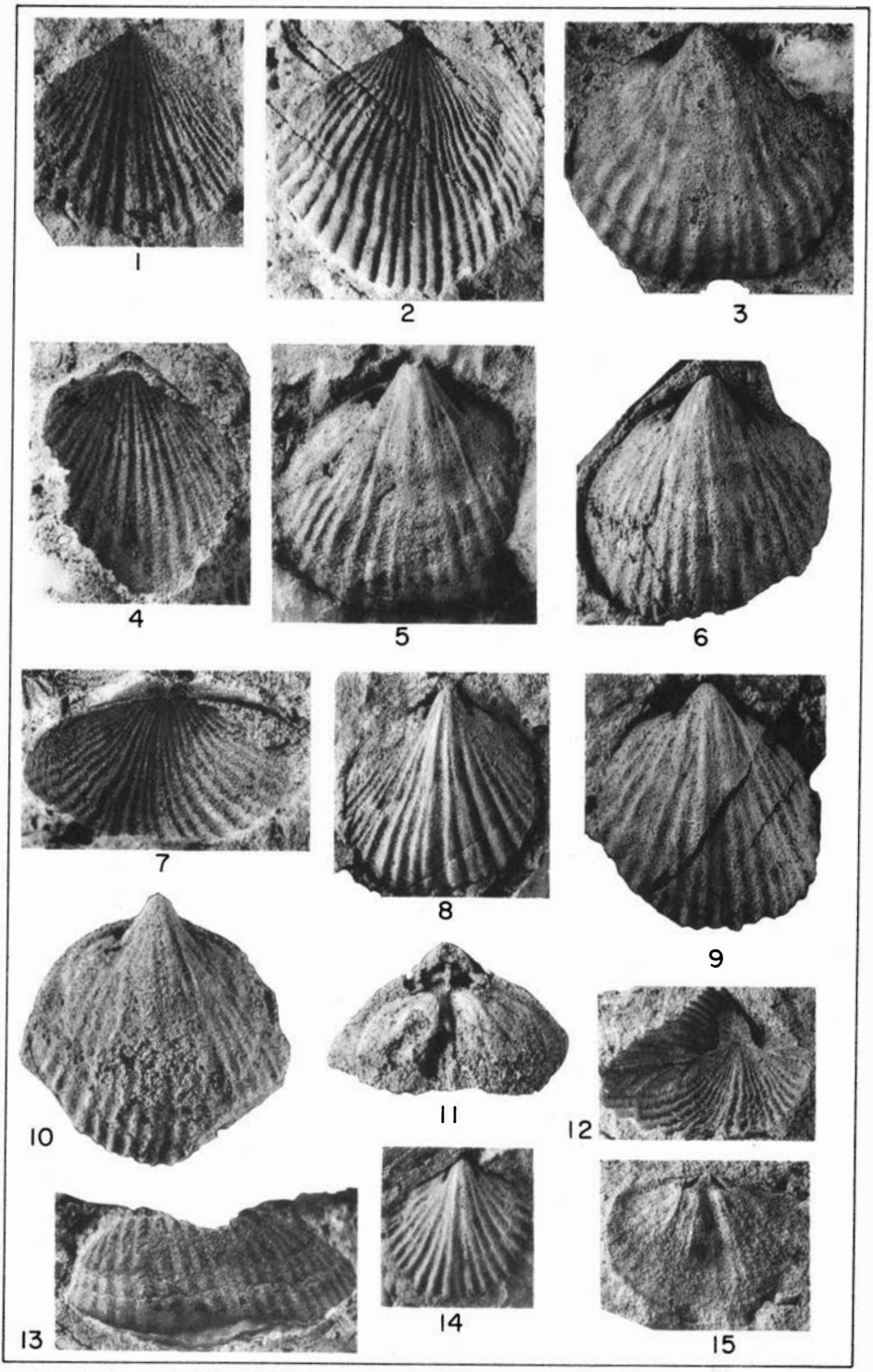
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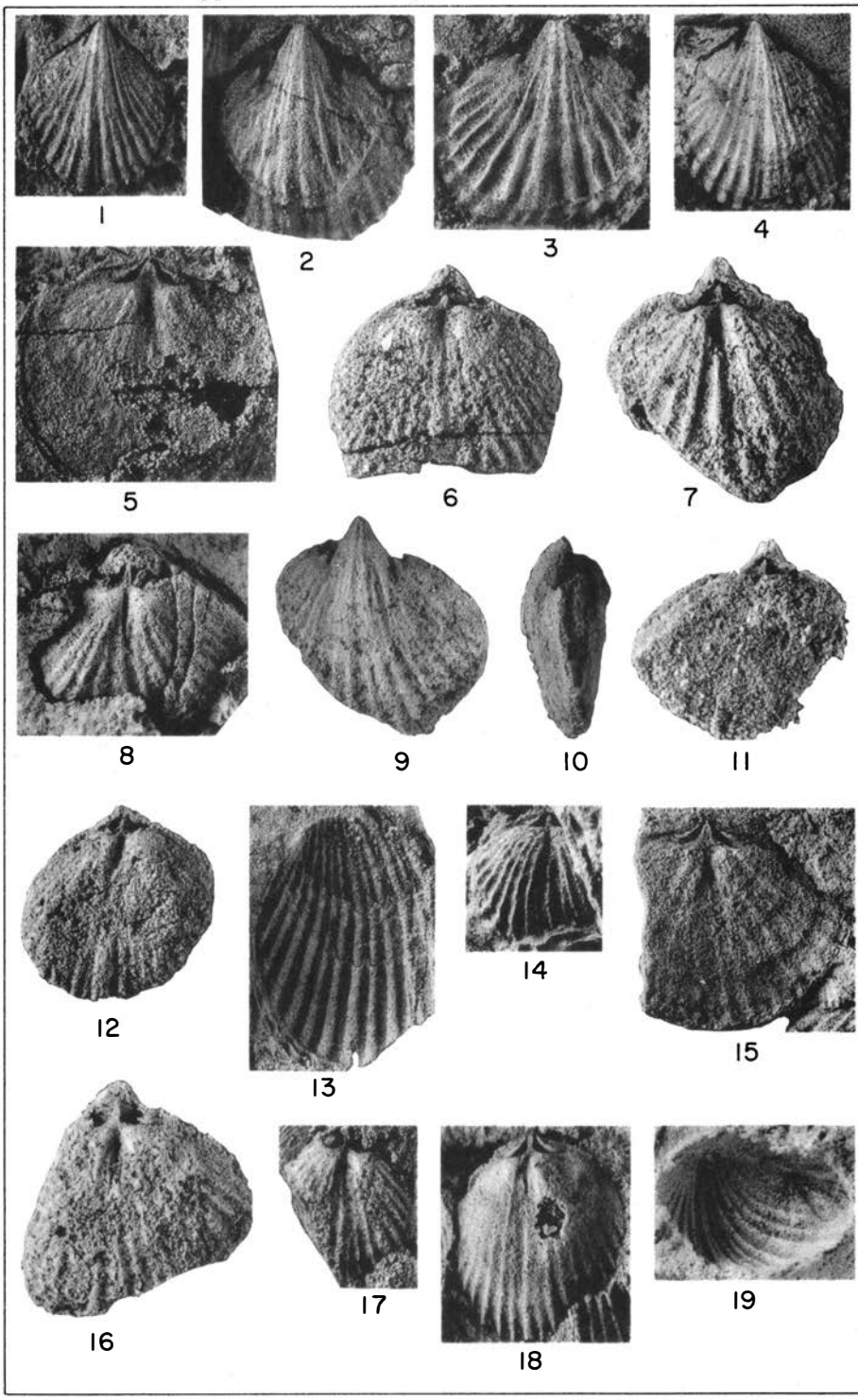
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