

the diductor scars, and in the discrete nature of the inner pair of ridges in the dorsal valve.

Hercostrophia alpenensis, n. sp. Figs. 2, 4

Dimensions (in centimeters).—

	Length	Width
Holotype: U.S.N.M. No. 116017.....	1.0	1.4
Paratype: U.S.N.M. No. 116018.....	0.9	1.2
Paratype: U.S.N.M. No. 116019a.....	1.1	1.7

Sample population (length, width, in centimeters).—0.6, 0.8; 0.6, 0.8; 0.9, 1.2; 0.9, 1.2; 0.9, 1.2; 1.0, 1.3; 1.0, 1.3; 1.0, 1.4; 1.0, 1.4; 1.0, 1.4; 1.1, 1.4; 1.1, 1.4; 1.1, 1.4; 1.2, 1.5; 1.1, 1.6; 1.1, 1.6; 1.2, 1.6; 1.2, 1.6; 1.2, 1.6; 1.2, 1.7; 1.3, 1.8; 1.4, 1.9.

Exterior.—Moderate size, transversely semi-oval, gently concavo-convex. Ventral interarea apsacline, pseudodeltidium entire, with a narrow median fold; dorsal interarea anacline, chilidium vestigial. Ornamented by a finely parvicostellate ribbing with strong primaries, and by strong concentric lines of growth.

Ventral interior.—Hinge-line denticulate for about three-quarter length. Process pits excavate, ventral process strong. Adductor scars finely impressed, diductor scars elongated, divergent, outer and inner lateral ridges meeting postero-centrally to form a pair of narrow rings; outer ridges, anterior to the rings, only slightly curved.

Dorsal interior.—Cardinal process lobes disjunct, attachment faces directed posteriorly. Socket plates vestigial strengthened by transverse band of secondary shell material. Medial ridge long and low. Adductor scars posterior to two pairs of lateral ridges, inner pair high, tuberculate, outer pair rather indistinct.

Type material.—Holotype, U. S. N. M. no. 116017; figured paratypes, U. S. N. M. nos. 116018, 116019a; unfigured paratypes, U. S. N. M. no. 116019.

Horizon and locality.—Alpena limestone, 30'–40' below top at Michigan Alkali Company Quarry, Alpena, Mich.

Hercostrophia robusta, n. sp. Figs. 1, 5

Dimensions (in centimeters).—

	Length	Width
Holotype: U.S.N.M. No. 116020.....	1.8	2.6
Paratype: U.S.N.M. No. 116021.....	1.5	2.4

Sample population (length, width, in centimeters).—1.2, 1.6; 1.2, 1.7; 1.3, 1.7; 1.6, 1.9; 1.5,

2.0; 1.6, 2.0; 1.6, 2.0; 1.5, 2.1; 1.5, 2.2; 1.6, 2.2; 1.6, 2.3; 1.8, 2.3; 1.8, 2.4; 1.9, 2.6.

Exterior.—Large, transversely semioval, very gently concavo-convex with a planate appearance. Ventral interarea apsacline, pseudodeltidium entire with a narrow median fold; dorsal interarea anacline, chilidium vestigial. Ornamented by a finely parvicostellate ribbing with strong primaries, and by concentric lines of growth.

Ventral interior.—Denticulate for about three-quarter length of hinge-line. Process pits excavate; ventral process strong. Adductor scars lanceolate, foliaceous. Diductor scars, divergent, splayed anteriorly, inner and outer lateral ridges to each scar strong, and forming a thin ring posterocentrally. Outer lateral ridges strongly curved anterior to the rings. Peripheral callus well developed.

Dorsal interior.—Unknown.

Type material.—Holotype, U. S. N. M. no. 116020; figured paratype, U. S. N. M. no. 116021; unfigured paratypes, U. S. N. M. no. 116022.

Horizon and locality.—3-foot shale on "Blue" bed; quarry at Silica, 2½ miles southwest of Sylvania, Ohio.

Discussion.—This species differs from *P. alpenensis* in (1) the consistently larger and stronger shells attained in maturity; (2) the almost planate disposition of the valves toward the periphery; (3) the pronounced curves to the outer lateral ridges bounding the diductor scars and the splayed nature of the scars themselves, and (4) the presence of a strong, low callus around the periphery.

Hercostrophia sp. Figs. 3, 6

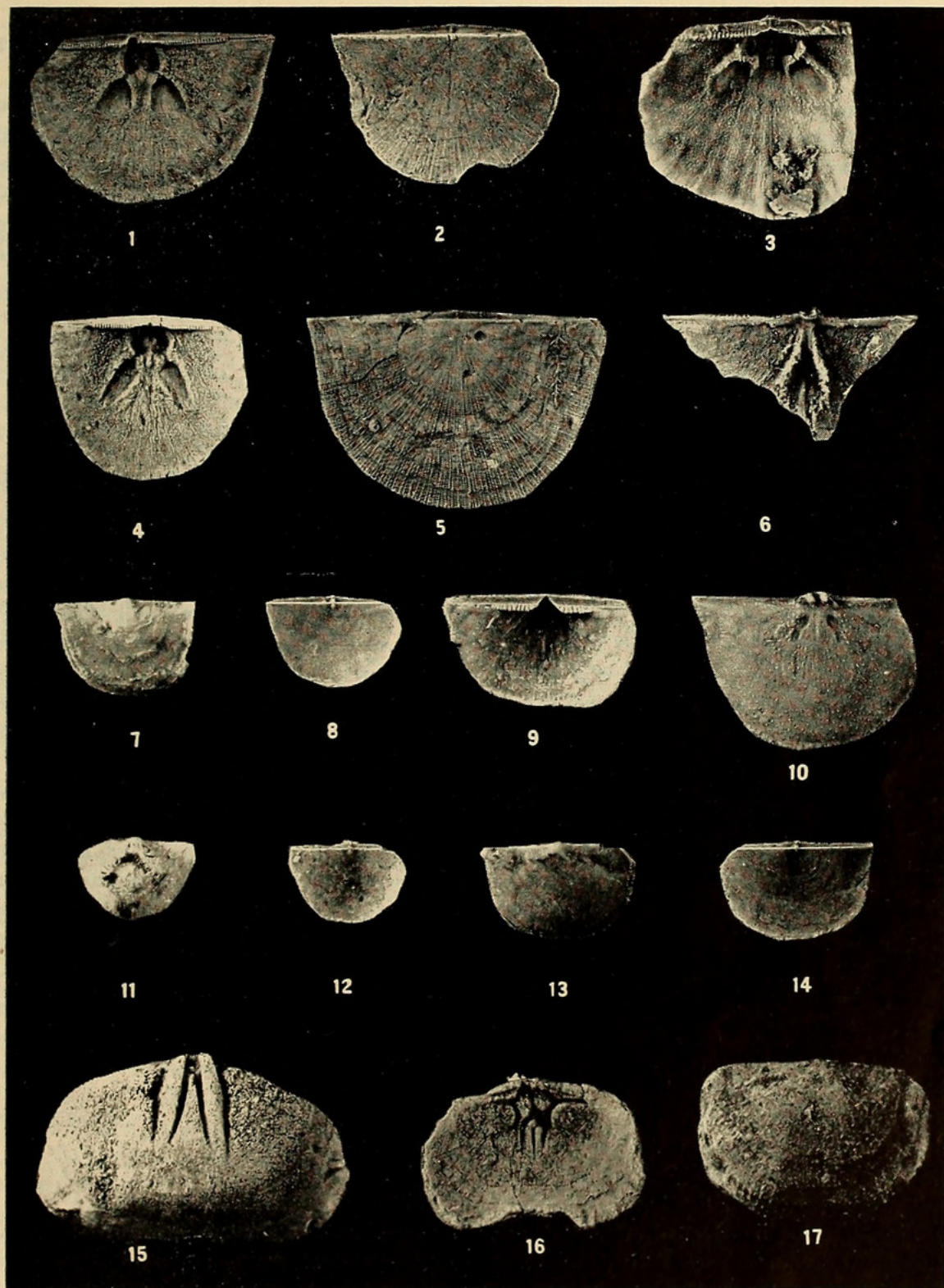
Specimens of an undescribed species often confused with *Douvillina* are figured for comparison with the Michigan and Ohio species. A fragmentary brachial valve shows details of the cardinalia.

Figured specimens.—U. S. N. M. no. 116034 a, b.

Horizon and locality.—Hamilton group, Canandaigua Lake, N. Y.

Pholidostrophia (*Mesopholidostrophia*), n. subg. Figs. 7–10

Silurian pholidostrophids possessing an incompletely developed pseudodeltidium, a prominent



FIGS. 1, 5.—*Hercostrophia robusta*, n. sp.: 1, Ventral interior of paratype (U.S.N.M. no. 116021), $\times 2$; 5, dorsal view of complete shell of holotype (U.S.N.M. no. 116020), $\times 1\frac{1}{2}$.

FIGS. 2, 4.—*Hercostrophia alpenensis*, n. sp.: 2, Dorsal view of almost complete shell of paratype (U.S.N.M. no. 116018), $\times 2$; 4, ventral interior of holotype (U.S.N.M. no. 116017), $\times 2$.

FIGS. 3, 6.—*Hercostrophia* sp.: 3, Ventral interior of U.S.N.M. no. 116034a, $\times 2$; 6, dorsal interior of U.S.N.M. no. 116034b, $\times 2$.

FIGS. 7–10.—*Pholidostrophia* (*Mesopholidostrophia*) *nitens*, n. subg. and sp.: 7, Ventral exterior of holotype (U.S.N.M. no. 116023), $\times 2$; 8, dorsal view of entire specimen, a paratype (U.S.N.M. no. 116024a), $\times 2$; 9, ventral interior of paratype (U.S.N.M. no. 116024b), $\times 3$; 10, dorsal interior of paratype (U.S.N.M. no. 116024c), $\times 3$.

FIGS. 11, 12.—*Lissostrophia* (*Mesolissostrophia*) *minuta*, n. subg. and sp.: Ventral and dorsal views of an entire shell, holotype (U.S.N.M. no. 116028), $\times 2$.

FIGS. 13, 14.—*Lissostrophia* (*Mesolissostrophia*) *pellicida*, n. subg. and sp.: Ventral and dorsal views of an entire shell, holotype (U.S.N.M. no. 116026), $\times 2$.

FIGS. 15–17.—*Shaleria* (*Telaeshaleria*) *sulcata*, n. subg. and sp.: 15, Mold of ventral interior of paratype (U.S.N.M. no. 116031), $\times 2$; 16, mold of dorsal interior of paratype (U.S.N.M. no. 116023), $\times 1\frac{1}{2}$; 17, ventral interior of holotype (U.S.N.M. no. 116030), $\times 2$.

to vestigial chilidium, a conjunct to incipiently disjunct cardinal process, and progressively degenerate socket plates. Muscle scars pholidostrophid but not impressed.

Genotype.—*Pholidostrophia* (*Mesopholidostrophia*) *nitens*, n. sp.

Discussion.—Differs from *Pholidostrophia* (*Pholidostrophia*) Hall and Clarke (1892, p. 287), which is here emended to include only forms with a smooth pseudodeltidium, no chilidium, a disjunct cardinal process, no socket plates, and strongly impressed muscle scars.

***Pholidostrophia* (*Mesopholidostrophia*) *nitens*,**
n. sp. Figs. 7-10

Dimensions (in centimeters).—

	Length	Width
Holotype: U.S.N.M. No. 116023.....	0.65	0.96
Paratypes: U.S.N.M. No. 116024a.....	0.6	0.9
U.S.N.M. No. 116024b.....	0.7	1.2
U.S.N.M. No. 116024c.....	0.65	1.0

Exterior.—Outline transversely semioval, mucronate, concavo-convex with a slight to moderate, even curvature to the valves. Ventral interarea apsacline, pseudodeltidium very small, dorsal interarea anacline, chilidium massive. Surface pseudonacreous, lamellose, free of radial ornamentation except for traces of fine primary costellae buried under the lamellose layer. Lamellose material heavily deposited toward the periphery to break the contour of the shells with concentric overlapping edges.

Ventral interior.—Hinge-line denticulate for less than half the length. Process pits very lightly impressed. Ventral process faintly developed. Adductor scar lanceolate impressed posteriorly and divided medianly by a very fine septum, diductor scars subcircular feebly impressed.

Dorsal interior.—Cardinal process lobes slender, socket plates small. Notothyrial platform virtually absent, adductor scars lightly impressed subquadrate contained posterolaterally by bounding ridges and divided by a feeble median ridge.

Type material.—Holotype, U. S. N. M. no. 116023; figured paratypes, U. S. N. M. nos. 116024a-c; unfigured paratypes, U. S. N. M. no. 116025.

Horizon and locality.—"Gotlandian," brickyard near Klintehamn, Gotland.

Discussion.—The large amount of excellent material available at the U. S. National Museum indicates that this stock is fairly common in the Middle Silurian "shales" of Gotland, but so far

as I am aware it has not been described. For purposes of close comparison between this species and any other undescribed material that exists, the following measurements of a U. S. N. M. sample are given (length of the shell followed by width of the shell at the hinge-line, in centimeters): 0.79, 1.25; 0.69, 1.00; 0.60, 0.94; 0.69, 1.00; 0.45, 0.69; 0.63, 0.97; 0.47, 0.63; 0.75, 1.10; 0.79, 1.10; 0.46, 0.79; 0.63, 0.94; 0.59, 0.72; 0.60, 0.87; 0.46, 0.69; 0.63, 1.00; 0.50, 0.90; 0.45, 0.79; 0.58, 0.91; 0.60, 0.91; 0.49, 0.85; 0.79, 1.06; 0.60, 1.10; 0.60, 1.00; 0.25, 0.35; 0.17, 0.25.

***Lissostrophia* (*Mesolissostrophia*),** n. subg.
Figs. 11-14

Erected to include Lower Silurian lissostrophids with an incompletely developed pseudodeltidium, a strong to vestigial chilidium, conjunct to incipiently disjunct cardinal process, abbreviated to obsolescent socket plates, and faintly impressed lissostrophid muscle scars.

Genotype.—*Lissostrophia* (*Mesolissostrophia*) *pellucida*, n. sp.

Discussion.—Differs from *Lissostrophia* (*Lissostrophia*) Amsden, 1949 (p. 202), which is here emended, in that the latter subgenus embraces forms with a smooth pseudodeltidium, no chilidium, a disjunct cardinal process, no socket plates, and strongly impressed muscle scars.

***Lissostrophia* (*Mesolissostrophia*) *pellucida*,** n. sp.
Figs. 13, 14

Dimensions (in centimeters).—

	Length	Width
Holotype: U.S.N.M. No. 116026.....	0.7	1.1
Paratypes: U.S.N.M. No. 116027a.....	0.7	1.1
U.S.N.M. No. 116027b.....	0.64	0.94

Exterior.—Rather small, transversely oval in outline, mucronate, concavo-convex with a low curvature to the valves. Ventral interarea apsacline, pseudodeltidium incipient, dorsal interarea anacline, chilidium large. Shell smooth, pellucid, ornamented only by fine concentric lines of growth.

Ventral interior.—Denticulate for a short distance on each side of the delthyrium. Process pits faintly excavate, ventral process incipiently developed, muscle scar obscure.

Dorsal interior.—Cardinal process lobes elongated conjunct, socket plates abbreviated, adductor scars obscure, median ridge low.



Schultz, Leonard P. 1950. "Notes on the blennioid fish genera *Runula* (subfamily *Petroscirtinae*) and *Tripterygion* and *Helcogramma* (family *Clinidae*), of the American tropical Pacific." *Journal of the Washington Academy of Sciences* 40, 266–268.

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