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## A Note on Permian Crassatellid Pelecypods

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Well-preserved examples of crassatellid pelecypods are so rare in rocks of Permian age that it seldom is possible to examine hinge characters or directly to compare complementary valves of a single individual. Consequently, there has been uncertainty about the hinge characters of the two genera thus far recognized, *Oriocrassatella* Etheridge, 1907, and *Procrassatella* Yakovlev, 1928. Dickins (1956, pp. 32–35) has reexamined *Oriocrassatella* in studies based on Australian examples of the genotype, *O. stokesi* Etheridge. He concludes that this genus is closely similar to *Procrassatella* but lacks some of the hinge teeth possessed by the latter.

After Dickins' manuscript had gone to press, an exceptionally well-preserved left valve of *Oriocrassatella stokesi* was found which sheds further light on the genus. He has generously supplied me with a photograph of the specimen, illustrated here as figure 2.

Through the courtesy of the British Museum (Natural History), I have had an opportunity to study well-preserved examples of *Procrassatella plana* (fig. 1A–C). A photograph of the interior of a right valve, apparently one of Yakovlev's originals, was later published by Licharew (1939). Licharew's illustration is reasonably clear and convincing when compared with recent shells of *Crassatellites*. The diagram of figure 3A is based on Licharew's photograph. The photograph shows both anterior and posterior lateral teeth in the right valve. By analogy with *Crassatellites* these should be AI and PIII. Cardinal teeth 3a and 3b are also clearly shown in the original illustration.

Additional evidence on the nature of the teeth is provided by the left valves of *Procrassatella plana*, illustrated in figure 1. A furrow be-

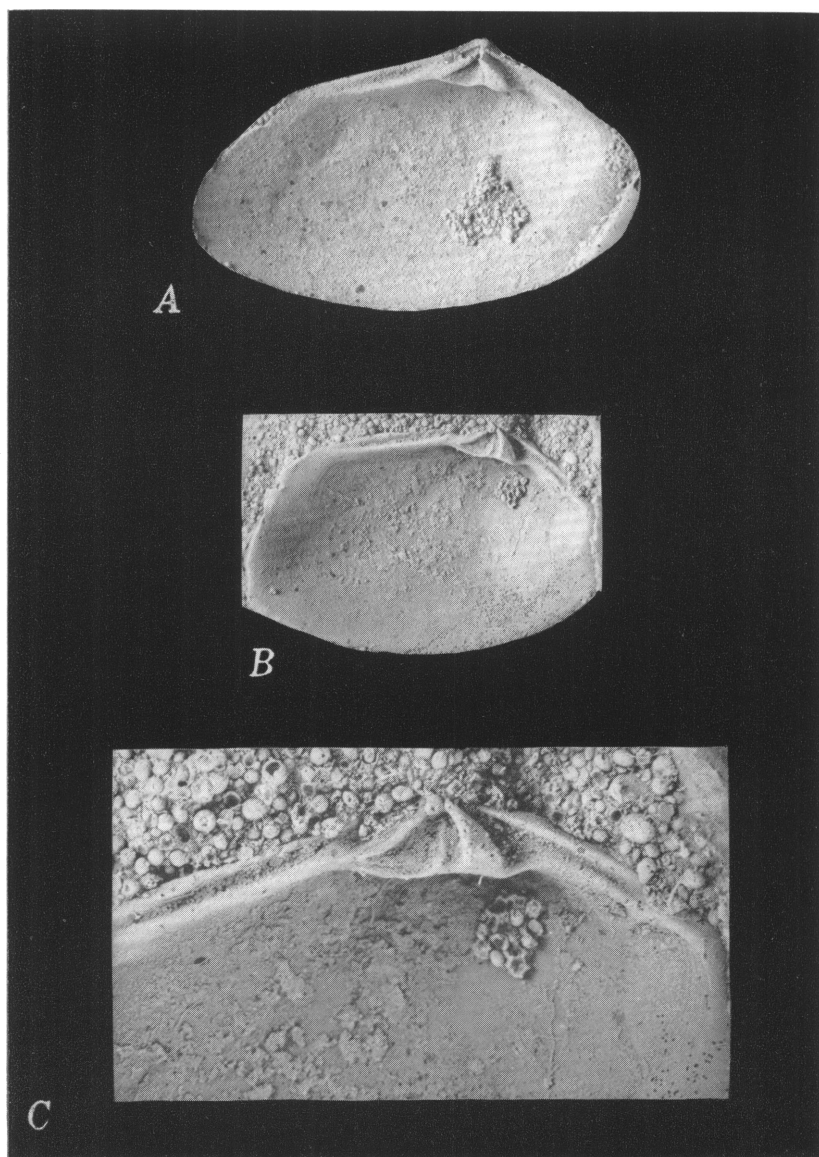


FIG. 1. *Oriocrassatella plana* (Golowinsky), British Museum (Natural History), No. L-5182, Permian (Kazanian), Russia. A. Latex cast of a left valve in which the anterior cardinal tooth has been damaged.  $\times 2$ . B, C. Latex cast of another left valve with well-preserved dentition. B.  $\times 2$ . C.  $\times 5$ .

hind the beak separates the lateral tooth (PII) from the shell margin. As in *Crassatellites*, this tooth lies below, not above, the posterior lateral of the right valve. Hence, these two teeth are, respectively, PII and PIII, and PI is lacking. Yakovlev's diagrams do not show the posterior lateral furrow of the left valve, but this is well shown by the British Museum specimens (fig. 1). By analogy with *Crassatellites* this furrow is the socket for reception of AI, and the anterior margin of the left valve serves as AII.

Yakovlev (1928) showed that a heavy septum separates an internal ligament furrow from a triangular resilifer. In *Crassatellites* the ligament is also differentiated, but an intervening septum is lacking or obsolescent. The complete dental formula for *Procrassatella plana* is:

$$\begin{array}{c} \text{AI3a} - 3b - rsl - \text{PIII} \\ \text{AII} - 2 - 4brsl \text{PII} - \end{array}$$

In the formula, *r* represents resilium, *s*, septum, and *l*, ligament.

Dickins shows very well that *Oriocrassatella* from the Australian Permian is very similar to *Procrassatella* (Dickins, 1956). However, he was unable to find anterior laterals in either valve or anterior cardinal tooth 3a in right valves of *Oriocrassatella*. It is necessary to stress the fact that really good examples of right valves of *Oriocrassatella* are not yet known and the basis for judgment depends in large measure on Etheridge's original specimen (Etheridge, 1907, pl. 6, fig. 3), which cannot at present be located, and a right valve described by Prendergast (1935, pl. 2, figs. 19, 20). Regarding this specimen, Dickins writes: "I find that in this shell the anterior part of the dorsal margin projects distinctly out from the hinge plate, as distinctly as does the posterior part. In this way it is thus different from specimens which I have examined and thus, no doubt, would require a socket in the left valve. Assuming that this shell can be referred to *Oriocrassatella stokesi* then there is some variation in this species in this respect.

"There is, however, no tooth separated from the anterior part of the hinge plate which I would describe as an anterior cardinal and which would require a distinct socket in the left valve" (J. M. Dickins, letter of March 29, 1956).

The specimen referred to is not very well preserved, and the matter surely must be regarded as unsettled until unequivocal specimens are discovered.

Inferences about the structure of right valves of *Oriocrassatella* may be derived also from an examination of the excellent left valve of *O. stokesi* illustrated as figure 2. By analogy with *Procrassatella*



FIG. 2. *Oriocrassatella stokesi* Etheridge, University of Western Australia No. 28740, Permian (lower Liveringa formation), northwest of Mt. Marmion, western Kimberly, Western Australia. A nearly perfect left valve.  $\times 4$ .

*plana* and living *Crassatellites* (e.g., *C. erroneus* Reeve and *C. cumingi* Adams), the marginal ridge along the anterior dorsal part of the shell must be considered to be a lateral tooth, AII. The furrow immediately below it corresponds to AI of the opposite valve, and the triangular shelf in front of the cardinal tooth resembles the corresponding socket of *Procrassatella plana*. As in the latter species, this must receive an anterior cardinal tooth (3a) of the right valve. The existence of a socket virtually identical to that of *P. plana* in the corresponding part of the hinge of the left valve is strong evidence that 3a is actually present in the right valve. In view of the lack of good material thus far found, failure to recognize tooth 3a in the Australian shells cannot be regarded as strong evidence that the tooth is indeed lacking.

In summary, I am unable to find any significant basis for distinguishing *Procrassatella* from *Oriocrassatella*, and there is no evident advantage in recognizing both names. Consequently, I am placing *Procrassatella* in the synonymy of the older name *Oriocrassatella*.

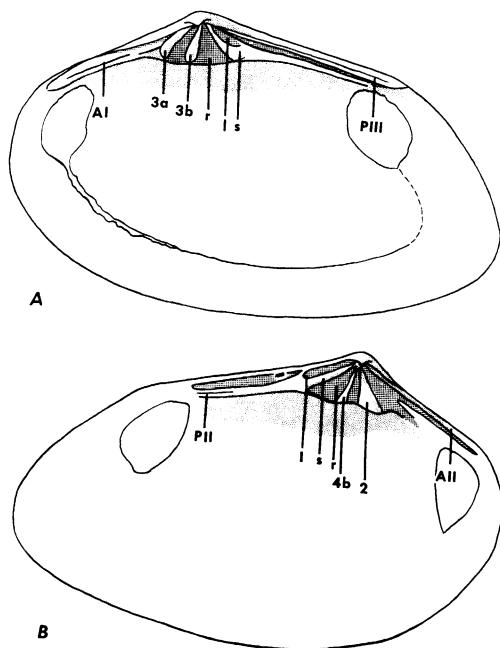


FIG. 3. *Oriocrassatella plana* (Golowinsky), Permian (Kazanian), Russia. Diagrammatic restoration. A. Right valve, based on a photographic illustration published by Licharew; approximately  $\times 1$ . B. Left valve, based on figure 1; approximately  $\times 2$ .

## CRASSATELLITIDAE DALL, 1895

GENUS *ORIOCRASSATELLA* ETHERIDGE, JR., 1907

Figures 1-3

GENOTYPE: *Oriocrassatella stokesi* Etheridge, Jr., 1907, monotypic.

SUBJECTIVE SYNONYMY: *Procrassatella* Yakovlev, 1928 (genotype *Schizodus planus* Golowkinsky, 1868, monotypic).

DIAGNOSIS: Lenticular, ovoid to elongate, crassatelliform, unornamented shells without well-defined lunule and escutcheon; ligament furrow opisthodontic, internal, separated by a heavy septum from a triangular resilifer; 3a and 4b narrow. Dental formula:

$$\begin{array}{c} \text{AI3a} - 3\text{b} - \text{rsl} - \text{PIII} \\ \text{AII} - 2 - 4\text{brsl} \text{PII} - \end{array}$$

Higher Permian (Artinskian-Kazanian), Greenland, Russian platform, Australia, Timor, Kashmir?

## REFERENCES

DALL, W. H.

1895. Tertiary fauna of Florida, a new classification of the pelecypods. Trans. Wagner Free Inst. Sci., vol. 3, pt. 3, pp. 483-570.

DICKINS, J. M.

1956. Permian pelecypods from the Carnarvon Basin, Western Australia. Bull. Australia Bur. Min. Resources, Geol. and Geophys., no. 29, 42 pp.

ETHERIDGE, R., JR.

1907. Official contributions to the paleontology of South Australia. Adelaide, South Australia House of Assembly, Supplement to Parliamentary Paper no. 55, 1906, pp. 1-21.

GOLOWKINSKY, N. A.

1868. O permiskoe Formation. Materialien zur Geol. Russlands, vol. 1, pp. 273-415.

LICHAREW, B.

1939. The atlas of the leading forms of the fossil fauna U.S.S.R. Leningrad, vol. 4, Permian, 270 pp.

PRENDERGAST, K. L.

1935. Some Western Australia upper Paleozoic fossils. Jour. Roy. Soc. Western Australia, vol. 21, pp. 9-30.

YAKOVLEV, N. N.

1928. *Procrassatella*, un genre nouveau du Permien. Ann. Soc. Paleont. Russie, vol. 7, pp. 119-125.