

**Article VI.**—AN UNUSUAL SPECIMEN OF *MYTILUS MIDDENDORFFII* GREWINGK, FROM ALASKA.

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PLATE VII.

About two years ago Mr. Alfred H. Dunham of Nome, Alaska, brought to me a molluscan fossil, received by him from an old Spanish sea captain of the name of de Soto, who had found it on one of the islands of the Alaskan Peninsula. Its excellent preservation, the strongly accentuated features of age, seen in it, and an apparent newness in its specific character, at least, gave it an especial interest. Later examination confirmed the impressions of its unusual character, and its identification as *Mytilus middendorffii* Grewingk was made by Dr. Dall.

The fossil is that of a lamellibranch shell, consisting of the right and left valves which have been separated, and somewhat displaced from their original relative positions, the movement tearing apart the ventral edges, slightly reversing or deflecting the umbones, and disclosing the interior filling of gravel-like cement, in which quartz grains are abundant and which shows a probably coarse clastic sedimentation in the matrix formation from which this shell was taken.

A superficial glance provoked the first suspicion that the shell belonged to the Mytilidæ and might indeed be a *Modiola*. The nucleal shell had a mytiloid shape, but the development of a short rounded shelly cord or ridge (bourrelet), curving from the apex to the edge of either valve appeared abnormal. The shell had developed very marked old-age characters, and its extended numerously ridged or corded and voluminous ventral areas, formed evidently a dependent pouch-like extension beyond the original oblong or elliptical outlines of the younger shell. Dr. Dall's letter disclosed its exact reference. He wrote:

"Your fossil is a much distorted specimen of the Miocene *Mytilus middendorffii* Grewingk, described in his book on the Geology of N. W. America. Normally it is like most other *Mytili* except that it has three wide plications distally, but your specimen has grown in an arcuate shape and something or other has made it have exaggerated resting stages, like *Botula cinnamomea*: the dental ridge near the beak, which is present in all *Mytili* is exaggerated and made conspicuous by the arcuation. There is another species very like it in the Pliocene of Oregon which I named after

Dr. Condon of the State University. I don't wonder you did not recognize it as a *Mytilus*, as the distortion is exceptionally great, and the beast evidently had a hard life of it."

The alteration of the typical shell produced by distortion, abnormal development, old age, and perhaps interrupted though persistent growth, merits a record at least as displaying an interesting phase in fossil molluscan disfiguration. The specimen may be described as follows:

Shell oblong, quadrate, slightly protuberant posteriorly, swollen at beaks, becoming in old age sacciform; apical outline mytiloid, elevated dorsal center with curving descending edge becoming inflected or carinate in old individuals, through arcuation, half way to the inferior limits of the shell, the lower half (in the specimen a gerontic feature) forming a columnar cavity, compressed and throughout striate with undulating lines of growth. Surface at first smooth with undulating lines of growth which are strengthened at successive intervals into shoulders or semi-salient folds, which become crowded, later producing a coarsely striate surface. Shell crossed by evident anterior-posterior furrows or plications forming with the lines of growth more or less obsolescent nodes, these latter more noticeable in the earlier periods of the shell. Apparently, in the specimen described, constriction developed as the shell increased in size and its ventral edge lengthened, making a lateral shallow concavity. The "dental ridge" is very conspicuous, being a round thickened crest or cord, developed like a fold, leaving the anterior angle of the umbo, and turning backward in a semicircle. The strong sculpture or successional ridges or capes over the surface of the valves is unusual, and if persistent in many individuals would almost constitute a varietal feature as also the humped up effect of the dorsal outlines. When compared with Grewingk's figures the identity of the two phases is not striking, and might indeed not be even suspected, though it is also obvious that the plicate and sulcate surfaces of the former admit, in extreme growth, of almost inevitable distortion.

Grewingk's specimens came from Tonki Cape and Igatskoi Bay, on Kadiak Island; de Soto's specimen was picked up on the hills forming the medial ridge of the Alaskan peninsula near Cape Seniavin.

#### *Description of the Plate.*

Fig. 1. Dorsal view of specimen showing distortion and extension of the shell and ridgy striation. Nat. size.

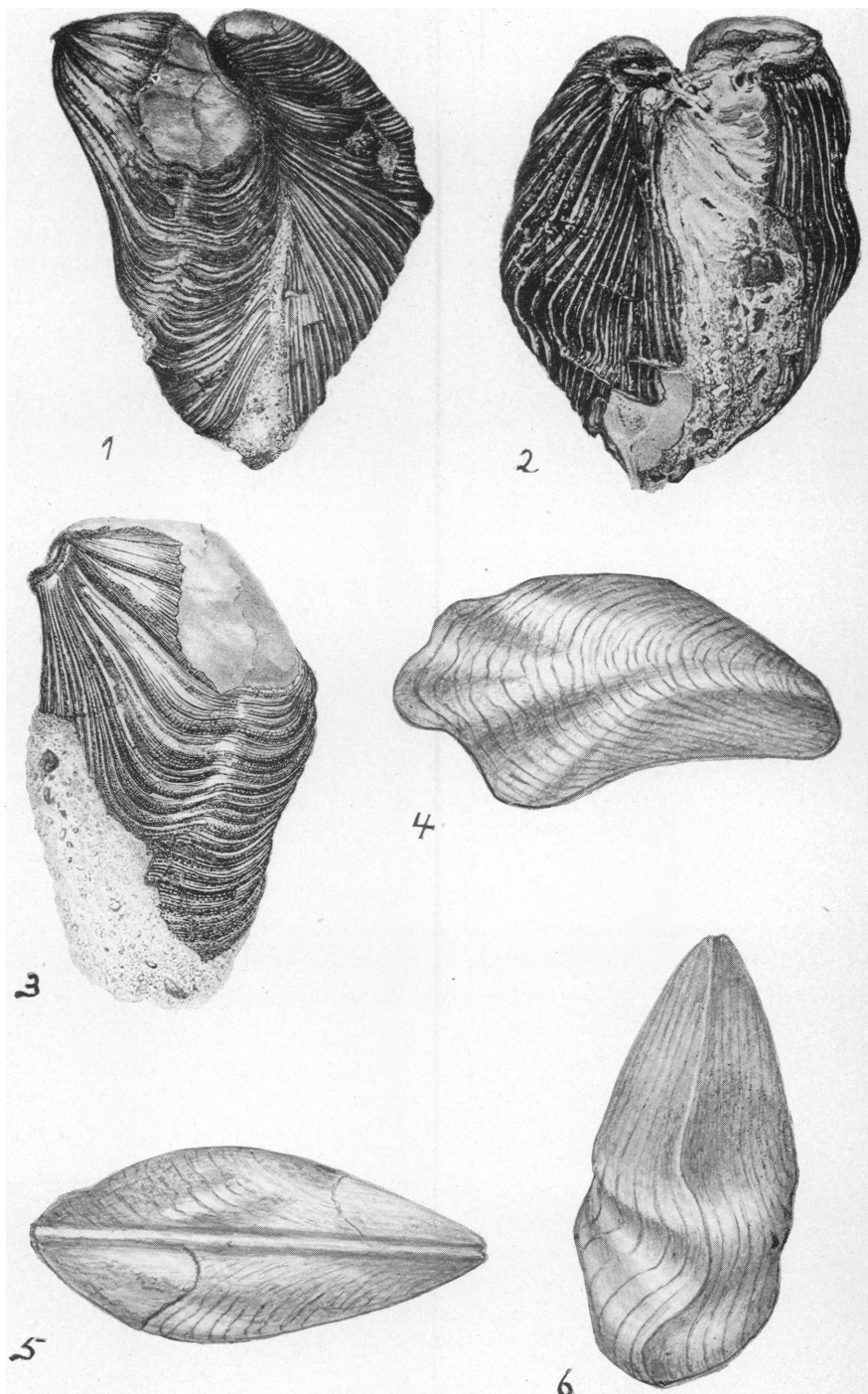
Fig. 2. Ventral view of specimen showing separated umbone, and the strong "dental ridge." Nat. size.

Fig. 3. View of one valve showing "dental ridge," and the prominent growth stages. Nat. size.

Fig. 4. *Mytilus middendorffi* (from Grewingk).

Fig. 5. Dorsal view (from Grewingk).

Fig. 6. Ventral view (from Grewingk).



DISTORTED SPECIMEN OF *Mytilus middendorffii* GREWINGK.

