horn-like processes, which are not situated on the protuberances between the two processes, but alternate with them.

Cerataulus turgidus, Ehrenb., var. *polyceros*, nov. (Plate XXVI. figs. 6 and 8.)

The organisms here figured belong to the genus now before us, although the valve is of considerable size, and is distinguished by the presence of some well-defined irregularly scattered granules. That both forms, which were collected in the same locality—the Sea of Japan—represent the same species is unquestionable.

The general aspect and sigmoid curve of the frustule and connecting zone point to affinities with the *Cerataulus turgidus* of Ehrenberg. On comparing, however, our two figures with the *Cerataulus turgidus* of the Typenplatten of Möller, and with the different specimens which we find in the typical preparations of Eulenstein, they agree in all respects, except that Möller's specimen is provided with a remarkable crown of thorns, along with very small irregularly scattered valval thorns, while in the frustules of Eulenstein's preparation only the very minute thorns occur—differences that are of little moment. In the case of the Challenger forms, on the other hand, the minute thorns are entirely absent; and, instead of a strong long point or cornu alternating with the two short processes, there is present a group of strong, short obtuse cornua. These marks of distinction have been looked upon as sufficient to justify the establishment of a new variety.

Biddulphia, Gray.[1]

Although, as above stated, I cannot adopt the view of Professor Smith, according to which he would unite the genus *Cerataulus*, Ehrenb., to that of *Biddulphia*, I am of opinion that the union of the genera *Zygoceros*, Ehrenb.,[2] *Odontella*, Ag.,[3] *Porpeia*, Bailey,[4] and *Amphitetras*, Ehrenb.,[5] to that genus as advocated by him is well founded. Thus the only difference of any importance between *Zygoceros* and *Biddulphia* is the circumstance that the frustules of the former are isolated. A *Biddulphia*, however, may also be found solitary, not only as a result of having been casually detached from a series, but because its mode of reproduction supposes that, at some time, the frustule should occur free. Again, only the absence of spines on the margins of the valve distinguishes *Odontella*

[1] Gray, Nat. Arr. of Brit. Plants.

[2] Compare *Zygocerus mobilensis*, Bail., Smithson. Contrib., 1859; *Zygoceros rhombus*, Ehrenb., Kreideth., p. 80, N. 61, pl. iv. fig. 11; Kütz., Bac., pl. xviii. fig. 9; *Zygoceros surirella*, Ehrenb., Kreideth., *loc. cit.*, fig. 12, Kütz., *loc. cit.*, fig. 12; Roper, *Micr. Journ.*, vol. vii. pl. vi. figs. 11 and 12.

[3] Ag. Consp., 56, Kütz., Bacill., pl. xviii. fig. 89, pl. xxix. figs. 88 and 90; Wigand in Hedwigia, vol. ii. p. 45, pl. vii. fig. 21, Montagne, Syll., p. 473.

[4] Bailey, MS. Pritchard, *op. cit.*, p. 850, pl. vi. fig. 6.

[5] Ehrenb., Kreideth., p. 62, N. 22; Ralfs, *Ann. and Mag.*, vol. xii. pl. viii. fig. 5; Smith, Synop. Brit. Diat., vol. ii. p. 47, pl. xliv. fig. 318; Jan. et Rabenh., Hondur., p. 4, pl. i. fig. 3; Heiberg, Conspec., p. 42, &c.