

The size of the frustules of this genus varies very greatly. *Etmodiscus humilis* and *Etmodiscus obovatus* are among the smallest forms hitherto recorded, *Etmodiscus convexus* measures 123  $\mu$ ,<sup>1</sup> *Etmodiscus punctiger* 143  $\mu$ , while *Etmodiscus gigas* reaches 1633  $\mu$ , and *Etmodiscus spheroidalis* 1882  $\mu$ .

The general shape of the frustule varies with the development of the connecting zone, and the degree of convexity of the valves. Four leading forms, however, may be recognised, namely, the discoid, as in *Etmodiscus convexus*, *Etmodiscus radiatus*, &c.; the oval, as in *Etmodiscus obovatus*; the cylindrical, as in *Etmodiscus wyvilleanus* (see fig. 332) and *Etmodiscus tympanum*; and the compressed spheroidal, as in *Etmodiscus spheroidalis*. In *Etmodiscus tympanum* a noteworthy superposition of a belt to the two hoops of the valves occurs, as in the genus *Biddulphia*, and in *Etmodiscus spheroidalis* the belt exhibits a small sutural line in its middle part, recalling in some measure that of *Melosira* and of *Podosira*.

The geographical range of the genus *Etmodiscus* is very extensive. Species occur in the Arafura Sea (e.g., *Etmodiscus convexus*) and the Sea of Japan (e.g., *Etmodiscus japonicus*). *Etmodiscus humilis* was found in mud procured from a sounding of 1950 fathoms near the ice barrier of the Antarctic Ocean, and *Etmodiscus diadema* was also obtained in the same ocean to the south of Heard Island. On the other hand, *Etmodiscus gigas*, *Etmodiscus wyvilleanus*, and *Etmodiscus spheroidalis* are Atlantic and Pacific species, and occur everywhere at the surface of the ocean within the tropics.

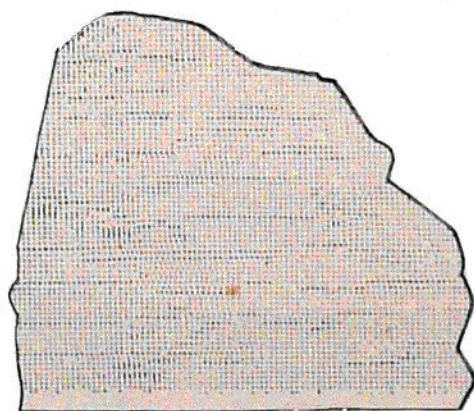


FIG. 333.—Fragment of frustule of *Etmodiscus* sp. <sup>110</sup>.

*Infusoria*.—*Noctiluca miliaris* was observed in great numbers in the water of harbours, but was rarely met with in the open sea far from land. It was abundant at Vigo in Spain, at the Cape of Good Hope, in several parts of the Philippines, at Hong Kong, at Japan, and off the coast of South America. On only two occasions were specimens taken at a great distance from the coast—once in the Japan Stream and once off the north coast of New Guinea—and in both instances the water was of low specific gravity and gave other evidences of being coast water; the specimens were also contracted and shrivelled up.

Species of *Carchesium*, *Vorticella*, *Acineta*, *Podophrya*, *Tintinnus*, and *Ceratium* are all much more abundant in the waters of harbours, enclosed seas, and coast waters generally than in the open ocean. Latterly, indeed, when many representatives of these genera, together with *Noctiluca*, certain other Infusoria, Hydromedusæ, and numerous

<sup>1</sup>  $\mu = 0.001$  millimetre.