

Nitzschia vermiculata, n. sp. (Plate XIII. fig. 12.)

Magna, triplo longior quam latior; latere carinali per constrictionem angularem bilobato; carina granulis distinctioribus medio signata; apicibus cuneato-obtusis; valvis vermiculatim striolatis. Ad Zebu.

This superb Diatom was collected in the channel of Zebu among the Philippine Islands. Its frustule, which is three times as long as broad, is angularly constricted in the middle, and presents a bilobed aspect, the lobes forming wide curves. It is also marked by a row of large granules, and the extremities of the valve are cuneately obtuse. The general valvular ornamentation occurs in the form of tortuous lines of granules which intersect each other.

Nitzschia mammalis, n. sp. (Plate XXIX. fig. 5.)

Mediocris, oblonga, sinuato-constricta; apicibus productis, mammiformibus, carina excentrica; striis transversis. In mari Arafura.

This frustule, which was obtained in the Arafura Sea, has an elegant oblong form and a deep central contraction. Its transverse striation is uninterrupted longitudinally, and its extremities are slightly prolonged and mammiform.

Bacillaria, Gmel.¹

When the movements of Diatoms are considered, the peculiarities presented by those of the genus *Bacillaria* are the most remarkable and mysterious of any. The genus includes forms which are generally united to one another laterally, and in great numbers, and in the living condition the individual frustules are constantly gliding over one another without ever becoming completely disunited. Although various hypotheses have from time to time been advanced to explain such wonderful phenomena, no observer has been able by the most ingenious methods, by the use of the most perfect object-glasses or the most efficient methods of illumination, to discover any special organs that might bring about such curious results.

When, by treatment with acids or by mechanical action, the frustules of the *Bacillariæ* become isolated from one another, their form may at first sight cause them to be confounded with species of *Synedra*, *Diatoma*, or *Nitzschia*. Yet in the case of surface gatherings it is easy, by placing the organisms in a glass cell before isolating the frustules by the action of heat, to distinguish them by the characteristic disposition of the frustules already referred to.

By this means Bacillarian forms were frequently recognised in surface gatherings made in the Sea of Arafura. The frustules were sublinear, lanceolate, and very slightly sigmoid.

¹ This genus was established by Gmelin in 1788 when he founded the species *Bacillaria paradoxa* (Linnæus, Syst. Nat., ed. xiii. vol. vi., 1788; Hassall, Freshwater Algæ, pl. xciii. fig. 10; Kützing, Bacill. pl. xxi. fig. 18; Smith, Synop. Brit. Diat. vol. ii. p. 10, pl. xxxii. fig. 279, suppl. pl. lx. fig. 279.