

NOTES

A NOTE ON THE WING VARIATION OF THE DIATOM *PLANKTONIELLA SOL* (WALLICH) SCHUTT

ABSTRACT

In this note, a rare phenomenon of the wing variation of the diatom *Planktoniella sol* (Wallich) Schutt is described. This diatom exhibits widely differing wing structures which could lead to a mistaken identity. Although a few of these variations have been recorded before, and have been interpreted as developmental stages; some hitherto unrecorded forms are also presented in this note. It is suggested that some ecological factors may be responsible for bringing out these variations.

WHILE studying the species of the phytoplankton of the west coast of India, obtained during the cruises of *R. V. Varuna* and collected by means of a half metre bolting nylon net from depths 200 m to surface, an interesting feature in the wing variations of the diatom *Planktoniella sol* (Wallich) Schutt was noticed.

Wallich (1860) who first described the diatom *Planktoniella sol* as *Coscinodiscus sol* while identifying the siliceous organisms in the digestive cavity of some Salpae grouped it along with other *Coscinodiscus* species under the Sub Order Discoideae of the family Coscinodisceae due to its own characteristic nature namely, the expansion of a wing around the disc-shaped flat cell consisting of extracellular loculi separated by radially arranged ribs, which is membraneous, widely silicified and hyaline. The central valve portion has a sculpture as seen in *Coscinodiscus excentricus*. Although the wing variations have been noticed before (Cupp, 1943), Karsten (1907) included all those forms under one species explaining that they are developmental stages. He added that only one valve of the cell is provided with the wing and consequently upon division one daughter cell has no wing.

The typical *Planktoniella sol* has a discoid appearance consisting of a central '*Coscinodiscus*' body, surrounded by a wing-like expansion of peripheral loculi. The central portion is small, the valve convex and covered with large polygonal areolations arranged in tangential curved lines, somewhat similar to the structure of *Coscinodiscus excentricus*. The extracellular expansion is divided into a varying number of loculi by radial ribs. In some forms, the locules are filled with granules. The chambers may be turgid or flaccid. Chromatophores are plate-like bodies and the photosynthetic elements are restricted to the valvar portion of the organisms.

The important wing variations referred in this note are the wavy, irregularly serrated margins on the wing. In some forms, the margins have hemi-spherical depressions over the radial rays. In some others the margins form separate compartments having a ring-like appearance and in still others, the radial rays themselves are wavy and curved. Very few forms have the wing space between the radial rays sculptured and have photosynthetic granules. The differentiations in wing structure may be due to ecological factors, and hence they are recorded here to draw attention to the general variability in this species.

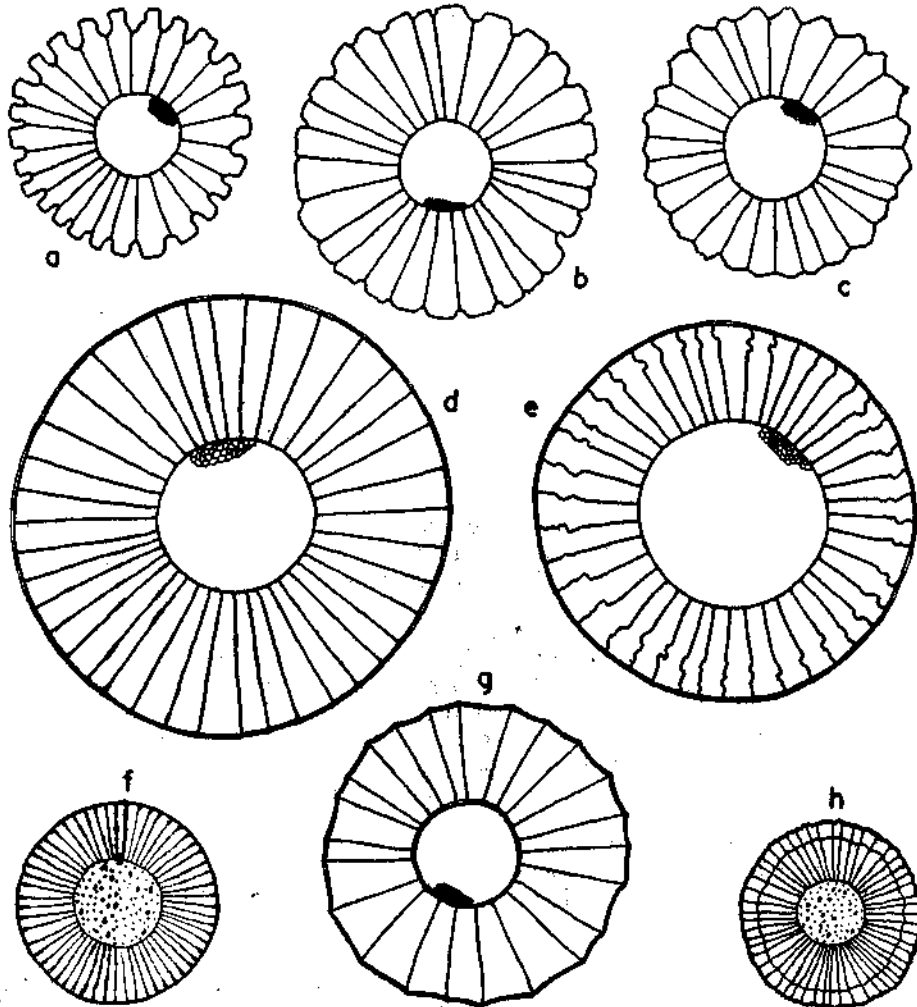


Fig. 1 a, b, c, e, f, g, and h. *Planktoniella sol* showing different wing variations; and d. a typical one. $\times 400$.

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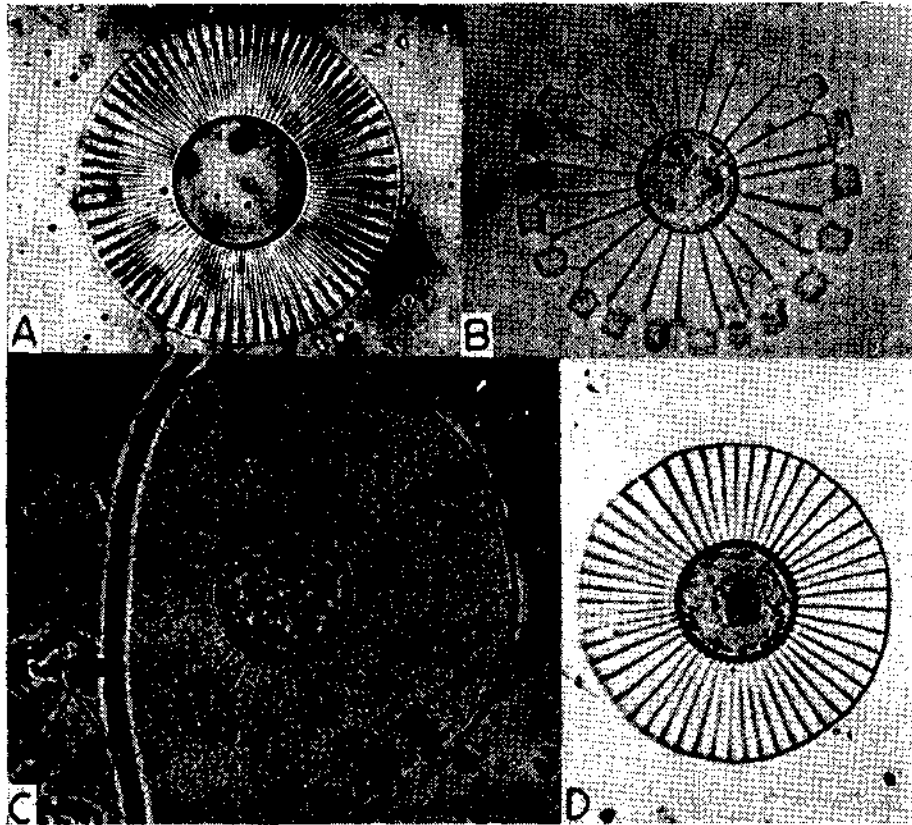


Plate I. A-D. *Planktoniella sol* showing different wing variations. A. radial lines showing thickening at the margin; B. the evaginated wing forms small plate like pentagonal structures at the margin; C. the space in between the radial lines are filled with photosynthetic granules; and D. a typical diatom without any morphological variations.