

ON THE FORMATION OF
AUXOSPORES IN *BACTERIASTRUM*

AUXOSPORE-FORMATION is known only in a few species among the Centrales. Any new case of auxospore-formation in this group is always interesting. This process does not appear to have been recorded so far in the genus *Bacteriastrum*. The author, while working on the marine plankton Diatoms of the Madras Coast, observed the formation of auxospores in *Bacteriastrum varians* Lauder. A brief account of the process is given here.

During auxospore-formation, the valves of the mother-cell move apart and the cell protoplast emerges out surrounded by a delicate membrane, the perizonium [Figs. 1 (a) and

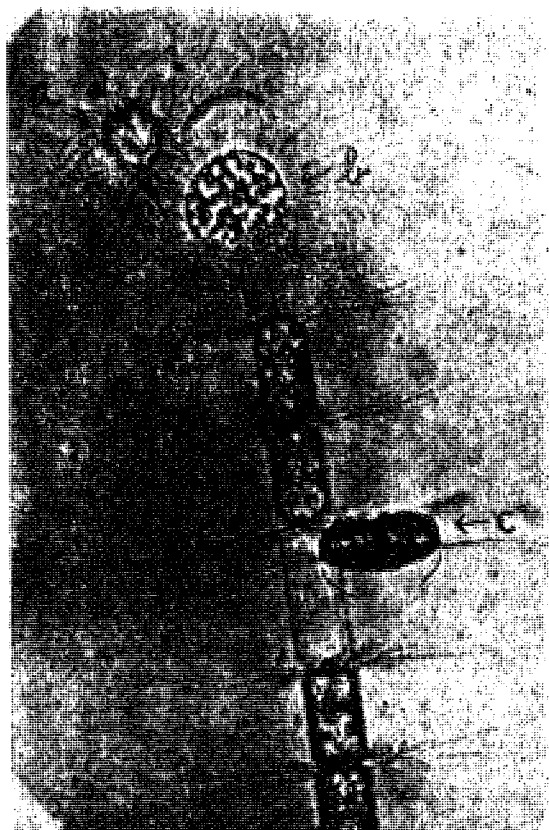


FIG. 1

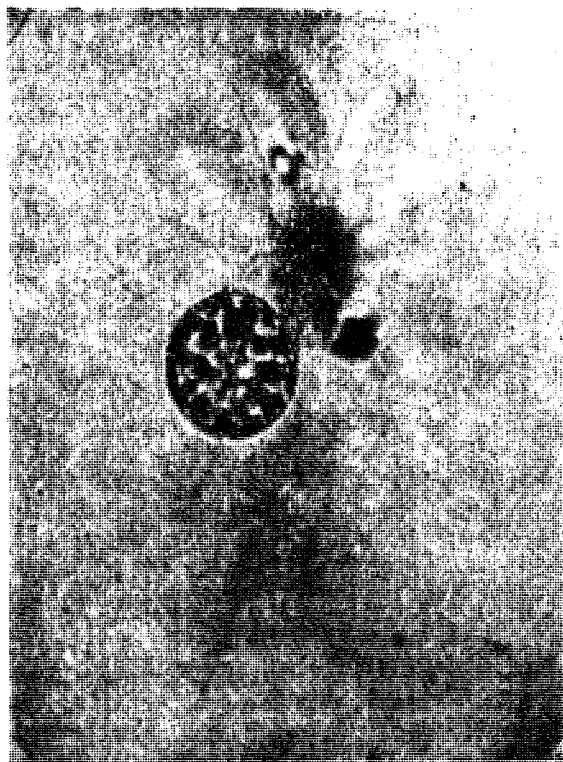
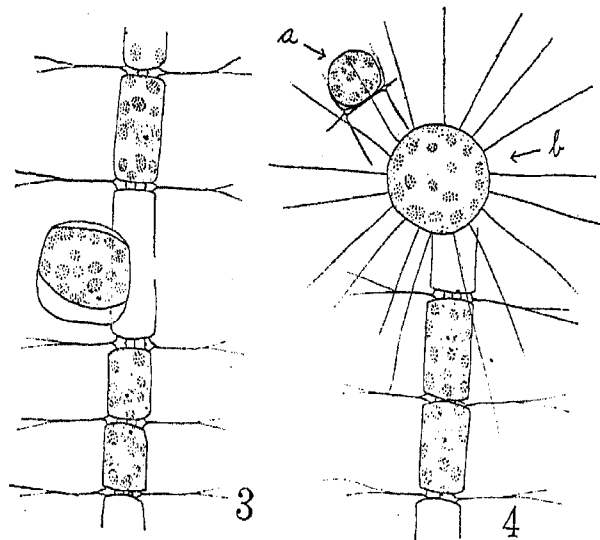


FIG. 2

contents then contract from the opposite side also and secrete the second valve (Fig. 3).



FIGS. 1-4. *Bacteriastrum varians* Lauder.

Fig. 1. Photomicrograph of a chain of cells showing auxospore-formation; *a*, the protoplast of a cell which has emerged out of the valves; *b*, new cell formed by auxospore-formation seen in valve view; *c*, another new cell formed by auxospore-formation seen in girdle view. Note the ruptured perizonium. $\times 350$. Fig. 2. Photomicrograph of a new cell formed by auxospore-formation seen in valve view. $\times 350$. Fig. 3. Auxospore-formation in one of the cells of a chain. Note new valves being secreted inside the perizonium. $\times 350$. Fig. 4. Same as Fig. 1. Only a portion (*a* and *b*) of Fig. 1. shown. $\times 350$. All from living specimens.

As the valves are secreted the characteristic spines or setæ of the Diatom are also developed [Fig. 1 (*b*) and 4 (*b*)]. The setæ develop in the same manner as was observed by Iyengar and Subrahmanyam (1944, p. 118) during the vegetative division of the same Diatom. The perizonium becomes ruptured and the new cell becomes free [Fig. 1 (*c*)]. The new cells have a diameter about two and a half times that of the mother-cell of the auxospore (Fig. 2). Vegetative divisions then take place in the new cell and soon a chain of cells is formed.

Auxospore-formation takes place in the chains of cells which through successive vegetative divisions have become very narrow in diameter. Only one auxospore is formed in each cell, but auxospore-formation may take place simultaneously in several cells of the same chain.

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4 (*a*)]. The protoplast after coming out of the valves (auxospore), gradually grows until it reaches a very large size. The contents of this auxospore then contract from one side of the perizonium first and secrete a valve. The

1. Iyengar, M. O. P., and Subrahmanyam, R., "On the Structure and Development of the Spines or Setæ of some Centric Diatoms," *Proc. Nat. Acad. Sci., India*, 1944, 14, Pt. 3, 114-124.