

Central Cells of the Stem Node and Charophyte Taxonomy

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Introduction

After studying the structure of the axial node of 32 taxa representing *Chara*, *Lamprothamnium*, *Nitellopsis*, *Nitella* and *Tolypella*, Frame and Sawa (2) concluded that the transfer of *Chara hornemannii* and *Chara buckellii* to *Lamprothamnium* by Daily (1) "may not be appropriate". Another interpretation of their results is presented here.

Background

Figure 1 shows the stem node of *Lamprothamnium succinctum* (A. Br.) R.D.W. of the Tribe Chareae having three central cells. After two central cells were formed, one divided again and the other one did not. Figures 2, 3 and 4 give a range in the number of axial node central cells in the genus *Nitella* of the Tribe Nitelleae from four to eight representing two or three divisions. The genus *Tolypella* of the Tribe Nitelleae has subdivided central cells also. One species of *Nitella* may show this whole numerical range of axial central nodal cells as in the dioecious *Nitella opaca*. *Lamprothamnium papulosum* (Wallr.) J. Gr., type species of the genus *Lamprothamnium* belonging to the Tribe Chareae, also has four central cells of the stem node (Giesenhagen, 3). It is indicated by Frame and Sawa (2) that this is the only genus of the Tribe Chareae having subdivided central cells of the axial node. The rest of the Chareae have undivided central cells of the axial node as *Chara hornemannii* Wallm. shown in Fig. 5. This includes the former *Nitellopsis bulbillifera* C.C. Dont. and *Chara buckellii* G.O. Allen transferred as varieties to *Lamprothamnium longifolium* (Rob.) Daily (1). It also includes *Nitellopsis obtusa* (Desv. in Louis.) J. Gr., type species of *Nitellopsis*.

On the basis of these results, Frame and Sawa (2) concluded that the subdivided central cells of the stem node in both *Lamprothamnium papulosum* and *L. succinctum* apparently support Wood's (5) transfer of the latter species from the genus *Chara*. However, since the central cells of the axial node of *Chara hornemannii* and *C. buckellii* do not subdivide, strong doubt is cast on the validity of Daily's transfer (1) of these taxa to the genus *Lamprothamnium*.

Discussion and Conclusions

Another interpretation of these results seems plausible. The divided central cell of the stem node of the morphologically transitional taxon, *Lamprothamnium succinctum*, seems no more important taxonomically than the undivided central cell. Therefore, the affinity of the taxon might be with other taxa having divided or undivided central cells of the axial node. Also Sawa (4) and Frame and Sawa (2) accept a range of four to eight central cells in the axial nodes (a doubling) in taxa properly referred to *Nitella*. Therefore, it seems justified in *Lamprothamnium*

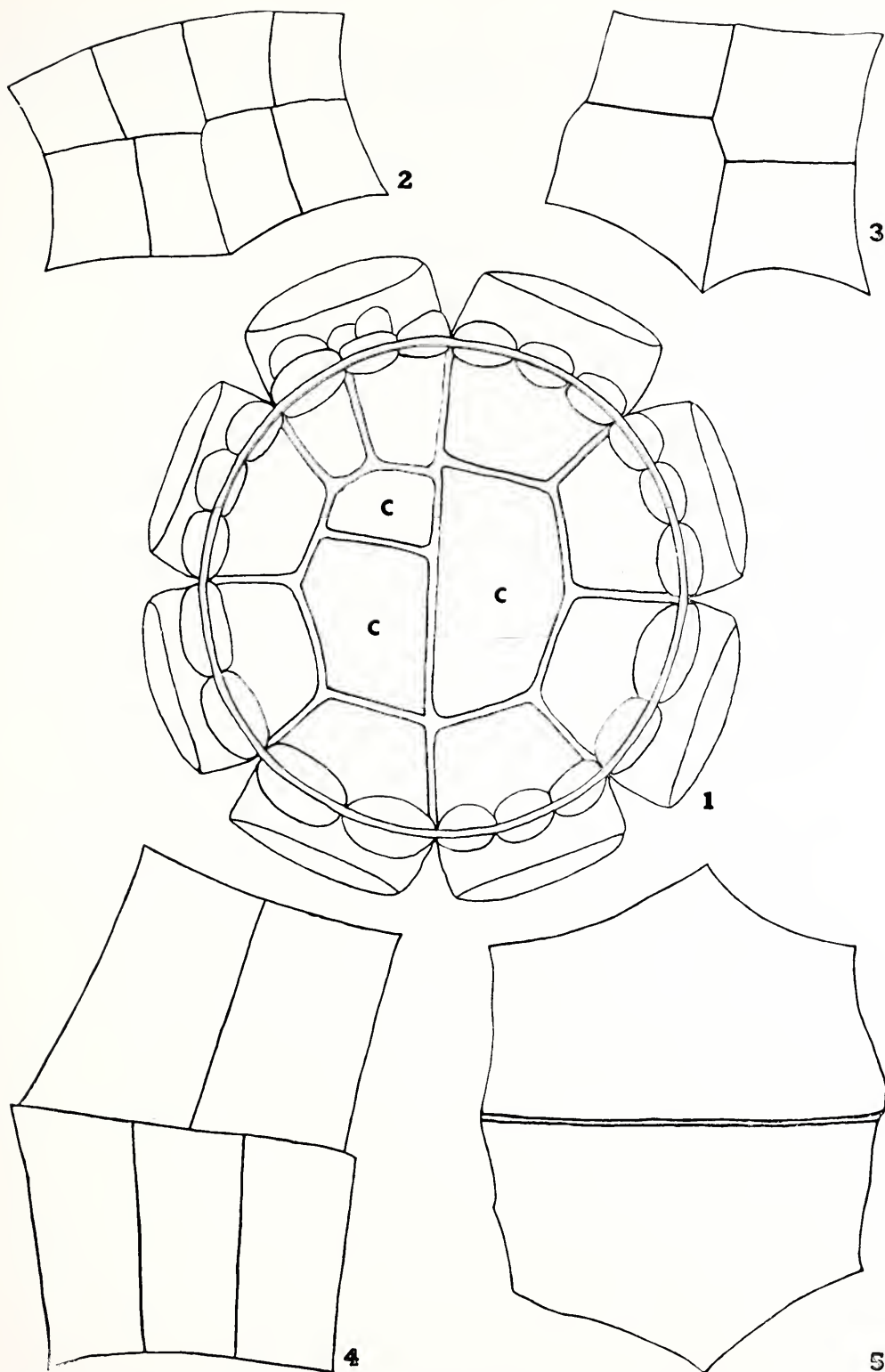


FIGURE 1. Stem node of *Lamprothamnium succinctum* (c = central cell) redrawn from Frame and Sawa (2). Figures 2-5. Central cells of the stem node: 2. *Nitella opaca* redrawn (4); 3. *Nitella mirabilis* redrawn from Sawa (4); 4. *Nitella opaca* redrawn from Sawa (4); 5. *Char hornemannii* adapted from Frame and Sawa (2).

to accept taxa with a range of two to four axial node central cells or also a doubling of the number. There would be nothing in this concept to prevent the transfer to *Lamprothamnium* of *Chara hornemannii*, *Chara buckellii* and *Nitellopsis bulbilifera* by Daily (1) or *Chara succincta* by Wood (5).

Acknowledgment

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Literature Cited

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