

NOTES.

APOSPORY IN THE CHARACEAE.—In his recent paper 'On Apospory and Allied Phenomena'¹ Prof. Bower criticises the view expressed by me in a paper on 'The Pro-embryo of Chara'², that the 'pro-embryo' of the Characeae represents the asexual generation in the life-history of these plants, and is in fact an aposporous sporophyte.

I fail to perceive that Prof. Bower's criticism touches the real merits of the case. My view does not necessarily lead to the conclusion that every lateral bud is to be regarded as an independent generation, nor to the assumption that the protonema of Mosses represents a third generation in the life-history of those plants, as Prof. Bower suggests. My argument is based, not upon any special virtue of 'laterality' of budding, but upon the general law that, in plants which present an alternation of generations, that which proceeds from the oospore is the sporophyte. If this holds good in Mosses, Ferns, etc., why should it not apply in the Characeae, where the oospore does not, as in the Fucaceae, give rise to a normal oophyte, but to something different? The idea of an aposporous sporophyte, though somewhat hazardous at the time my paper was written, has been fully justified by Prof. Bower's own researches.

My views on the subject have, however, undergone considerable modification, and I am glad to have this opportunity of stating that such is the case. But this is due, not to any *a priori* objections, but to facts which have come to light in recent years. I have always been conscious that the true significance of the pro-embryo of the Characeae would be made clear, not directly by the discovery of an asexual production of spores by the pro-embryo, but by the investigation of the embryology of other Algae, especially of the Florideae and the Phaeosporeae. This has been to some extent realised by Sirodot's remarkable observations on certain families of the Florideae, the

¹ Trans. Linn. Soc., vol. ii, Part 14.

² Journal of Botany, 1878.

Lemaneaceae¹, and the Batrachospermeae². He finds that, in the Lemaneaceae, the carpospore gives rise to a creeping filamentous or flattened body which produces neither sexual nor asexual reproductive organs, but gives rise to erect lateral branches which eventually become independent and constitute sexual plants (oophytes). This case is comparable with that of the Characeae. In *Batrachospermum*, the carpospore likewise gives rise to a filamentous body, the Chantransia-form, from which the sexual Batrachospermum-plant eventually springs as a lateral branch. This case, again, is so far comparable with that of the Characeae. But there is this peculiarity, that the Chantransia-form of *Batrachospermum* produces spores. This would seem to confirm my view concerning the nature of the pro-embryo of the Characeae, but, as a matter of fact, it does not. These Chantransia-spores are of the nature of gonidia; that is, they simply reproduce and multiply the Chantransia-form; they do not give rise to Batrachospermum-plants. Hence, they do not prove that the Chantransia-form is the sporophyte in the life-history of *Batrachospermum*; nor does their presence absolutely disprove that the Chantransia-form is the sporophyte, though it renders it improbable. The Chantransia-form is probably analogous to the protonema of Mosses; it is the pro-embryo of the oophyte, just as the protonema is the pro-embryo of the oophyte, though the one is developed from a sexually-produced, the other from an asexually-produced, spore. If this be so, then the analogy holds good also in the case of the Lemaneaceae and of the Characeae. The development of the pro-embryo in these plants is then indicative, not of an alternation of generations, but simply of indirect or heteroblastic development.

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METHOD FOR PRESERVING THE COLOURS OF FLOWERS IN DRIED SPECIMENS.—The preservation of the colour in dried flowers, leaves, and stems is a matter which has interest for a considerable section of the public, and as a method, not generally known in Britain, by which this is secured has been practised in Berlin with great success for several years, I propose to give a description of it. It is described by Mr. Hennings in the *Abhandlungen des botanischen Vereins des Provinz Brandenburg*, Bd. xvii (1885).

¹ Ann. d. sci. nat. sér. 5, Tom. xvi.

² Les Batrachospermes, 1884.



Vines, Sydney Howard. 1887. "Apospory in the Characeae." *Annals of botany* 1, 177–178. <https://doi.org/10.1093/oxfordjournals.aob.a089048>.

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