

in others it is replaced by a fusion of ascogonial nuclei in pairs. After either process the ascogonium becomes septate, and each of its cells gives rise to ascogenous hyphae. In the ascus two nuclei fuse, and three successive divisions result in eight spores, which subsequently become multinucleate. The authors regard *Aspergillus* as a primitive type of Ascomycetes, from which most of the others can be derived; and suggest that the Ascomycetes are related to the Basidiomycetes and the Florideae.—J. M. C.

Adventitious buds in leaves of *Gnetum*.—In plants of *Gnetum Gnemon* L., grown in a hothouse of the Botanic Garden at Utrecht, the tips of the leaves regularly produced adventitious buds. VAN BEUSEKOM³¹ finds that these buds are formed as a result of the attacks of a scale insect, *Aspidirtus dictyospermi* Morg., a species with a world-wide distribution in the tropics and in hothouses. The punctures of this insect result in yellow vesicles at various points on the leaf, and one or more near the apex stimulate the development of endogenous callus buds. The author "explains" the appearance of the buds in the apical part alone of the leaf, by assuming that "the small wound causes an afflux of nutrient matter in an apical direction," and that this necessarily stops just beyond the apical wounds. Of course this is a mere assumption, the like of which is often made, but it would puzzle any of those who use it to show how "an afflux of nutrient matter" could occur before growth actually begins.—C. R. B.

Conjugation and germination in *Spirogyra*.—An examination by TRÖNDLE³² of several thousand zygospores, some sectioned and some observed entire, confirmed the current account that the two nuclei remain separate for some time after the zygospore is formed. In *Spirogyra communis* the sexual nuclei fuse two or three weeks after the formation of the zygospore. Two successive mitoses giving rise to four nuclei, and a subsequent fusion of two of these nuclei as described by CHMIELEWSKI, do not occur. The male chromatophores in the zygote disorganize in about fourteen days after conjugation, leaving only the chromatophores of the female gamete. The writer also talks about a reduction of the hereditary mass, referring to the nuclear material, but nothing in the text or figures indicates any counting of chromosomes or any study of the mechanism of reduction. The paper contains a detailed account of the chemical changes occurring during the development of the zygospore.—CHARLES J. CHAMBERLAIN.

Plantae Lindheimerianae.—To students of the Texan flora ENGELMANN and GRAY's *Plantae Lindheimerianae*, in two parts, is a classic. It now appears that all of the collections of this pioneer botanist were not published and distributed, and the rich remnant came into the possession of the Missouri Botanical Garden

³¹ VAN BEUSEKOM, JAN, On the influence of wound stimuli on the formation of adventitious buds on the leaves of *Gnetum Gnemon* L. *Recueil Trav. Bot. Néerl.* 4:pp. 27. pls. 3. 1907.

³² TRÖNDLE, A., Ueber die Kopulation und Keimung von *Spirogyra*. *Bot. Zeit.* 65:188-216. pls. 5. 1907.



Chamberlain, Charles Joseph. 1908. "Conjugation and Germination in Spirogyra." *Botanical gazette* 45(5), 357–357. <https://doi.org/10.1086/329584>.

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