

Aster novae-angliae and *Solidago serotina* were the principle species under examination. Several figures show that a tetrad of four megaspores is formed, as would have been expected. In regard to later stages, PALM disagrees with the results of the reviewer¹⁷ and the subsequent study of Miss OPPERMAN,¹⁸ for he claims that the extensive development in the antipodal region is due to the growth of the lower megaspores of the tetrad. His series is far from complete, however, and his figures, interpreted in this way, do not show any antipodal cells. While my own series, published more than 20 years ago, was incomplete, and Miss OPPERMAN's lacked stages in the early development, I see no reason why either of us should change our view that the chalazal development results from the enlargement of one or more of the antipodal cells. To prove his claim, PALM should present figures of the 8-nucleate stage of the sac, followed by a close series showing the disappearance of the antipodal cells or nuclei. Since such figures are lacking, we prefer to interpret the enlarged cells in the chalazal region as antipodals and not as persistent megaspores.—CHARLES J. CHAMBERLAIN.

The vegetation of Connecticut.—Continuing the studies previously noted,¹⁹ NICHOLS²⁰ in a fourth paper has considered the vegetation of the swamps and bogs of Connecticut. The latter presents the more interesting group of plant associations, conspicuous among which is the bog forest of *Picea mariana* and *P. rubra*, occasionally supplemented by *Pyrus americana*, constituting a remarkable aggregation of northern trees. These trees, together with shrubs and herbs of northern affinities, lead the author to a consideration of the much discussed question of the origin of bog vegetation, resulting in the opinion that the vegetation is that of a relic swamp type, representing the vestigial remnants of a more northern type of flora which dominated the region within a geological time decidedly more recent than the Pleistocene.

In a similar connection it is interesting to note that in the fifth paper attention is directed to the fact that the rock ravine is second only to the bog for its display of northern species. This paper gives a careful survey of the plant communities associated with stream erosion and deposition. None of the associations are of striking interest, but it serves to round out a comprehensive study of the vegetation of the state.—GEO. D. FULLER.

¹⁷ CHAMBERLAIN, C. J., The embryo sac of *Aster novae-angliae*. BOT. GAZ. 20: 205-212. pls. 15, 16. 1895.

¹⁸ OPPERMAN, MARIE, A contribution to the life history of *Aster*. BOT. GAZ. 37:353-362. pls. 14, 15. 1914.

¹⁹ BOT. GAZ. 59:159-160. 1915.

²⁰ NICHOLS, G. E., The vegetation of Connecticut. IV. Plant societies of the lowlands. V. Plant societies along rivers and streams. Bull. Torr. Bot. Club 42:169-217. figs. 15. 1915; 43:235-264. figs. 11. 1916.



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