The Occurrence of Tracheides in the Nucellus of Steriphoma cleomoides, Spreng.

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With Plate CLXVI.

THE occurrence of tracheidal elements in the sporogenous tissue of ovules has been recorded, up to the present time, in only three genera, belonging to families possessing no close phylogenetic relationship.

They were first described by Treub * as occurring in the nucellus of *Casuarina glauca*, Sieb., and *Casuarina Rumphiana*, Miq. As figured in his paper, they are elongated, narrow, pointed cells, and their production in the sporogenous tissue suggested to him an analogy with the formation of elaters in the Hepaticae. Their function he regarded as a matter for speculation.

Miss Benson,† in her investigations on the embryology of the Amentiferae, recorded the occurrence of small tracheides around the antipodal end of the embryo sac of *Castanea vulgaris*, Lam. She suggested that these elements were vestigial in character and that they represented some former organ—" possibly a vascular strand connecting the chalaza with the sporogenous tissue."

The third instance is recorded by Frye ‡ in his work on the Asclepiadaceae. In his examination of the ovule of *Asclepias cornuta*, Dec., he noted the presence of a tracheid near the base of the embryo sac, and slightly projecting into it. This author favours Miss Benson's suggestion as to the origin of these tracheides, but is unable to reconcile their occurrence in a specialised family like the Asclepiadaceae with their supposed primitive character.

While examining sections of the ovaries of certain Capparidaceae, the author of this note observed the occurrence of elongated elements, with well-defined annular thickening on

* M. Treub in Ann. du Jard. Bot. de Buitenzorg, x (1891), p. 170.

† M. Benson in Trans. Linn. Soc., iii (1894), pp. 412, 421.

‡ T. C. Frye in Botanical Gazette, xxxiv (1902), p. 402.

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their walls, in the nucellus of many of the ovules of *Steriphoma cleomoides*. They were particularly obvious in sections stained with gentian-violet.

They occur singly, and in groups of two or three together, abutting on the mature embryo sac, and extending from its organic base over the whole length of the sac in the direction of the micropyle.

Their form and structure suggest that they are tracheidal in nature, although the production of tracheides in sporogenous tissue is of such rare occurrence. They are completely isolated from the vascular strand traversing the funicle, and there is no evidence of any connection with the chalaza.

As more mature ovaries of *Steriphoma* were unobtainable at the time, the ultimate fate of these elements could not be traced, and an examination of the ovules of some of the allied genera failed to disclose the presence of similar structures.

No satisfactory explanation can be found to account for the production of these tracheides in the nucellus of *Steriphoma*, and, at present, it is not possible to say whether they play a definite part in the economy of the ovule, or are merely survivals of a primitive feature traceable to the vascular sporangia of a long-extinct ancestor. In either case, their non-occurrence in the nucellar tissue of the ovules of allied genera is peculiar, although their limitation to one genus of a family is in accordance with the findings of other authors.

EXPLANATION OF PLATE CLXVI.

Illustrating Mr. M. Y. Orr's paper on Steriphoma.

Ovule of *Steriphoma cleomoides* in longitudinal section. *m.*, micropyle; *e.s.*, embryo sac; *tr.*, tracheid.


e.s.
tr.
m.