



STRUCTURE, DEVELOPMENT AND CYTOLOGY
OF APPENDICULELLA AND ALLIED GENERA

by

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Thesis submitted to the University of Adelaide
in partial fulfilment of the requirements for
the degree of Master of Science.

Adelaide.
December, 1960 .

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SUMMARY

In this thesis two members of the ectoparasitic Meliolineae were studied: App endiculella and Asteridiella. By the serial-sectioning of the fungi on their leaf hosts, the life-history was determined. This was compared with previous work on the allied genus, Meliola, and the conclusion drawn that a combined and generalised description could be given of the important events in the life histories of all three genera.

The fungus develops a stroma-like ascocarp in which two cells become modified and later fuse: these two cells can be regarded as very rudimentary sex cells. Septate ascogenous hyphae arise from the resulting binucleate cell, branch, and give rise to asci by the crozier formation. A cavity develops, mainly by dissolution. Cell-elongation, however, is also an important factor in the enlargement of the interior of the ascocarp, for true paraphyses are absent. The ascus is very thin-walled, deliquesces early, and leaves the spores lying free within the ascocarp. Normally only two spores mature. Spore dispersal is probably effected by the rupture of the ascocarp near its base, although a periphysate ostiole does develop.

The presence of "abortive asci" is the unusual feature of the fungi studied. Seemingly paraphysis-like structures, they are, however, binucleate and arise from ascogenous hyphae late in ascocarp development.

The taxonomy of the Meliola group is discussed in relation to the classifications of Luttrell, Martin and Miller. With the life-history of these fungi now determined, their taxonomy must be revised, the first step being in their removal from those orders in which the true perithecium exists. Suggestions are made as to their positions in the classifications of those authors mentioned above.

This thesis contains no material which has been accepted for the award of any other degree or diploma in any University, and to the best of my knowledge and belief the thesis contains no material previously published or written by another person except when due reference is made in the text of the thesis.