STUDIES ON
THE DASYURIDAE AND THE LAMNITIDAE (RHODOMELACAE)
OF THE RHODOPHYTA.

by

Murray J. Parsons, M.Sc.,
Department of Botany, University of Adelaide

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I. SUMMARY

To date the knowledge of the family Daesyaceae has been obtained from species known only in the northern hemisphere, yet Southern Australia is an important centre of distribution for species of this family.

Morphological studies have been carried out on four species of *Daesa*, *Daesa clarigera* (Womersley) comb. nov. has been transferred from *Daesa*, five species of *Heterosiphonia* and two species of *Heterosiphonia* including the type species, with comments made on a further two species of *Daesa* and one of *Heterosiphonia*. New diagnoses of the genera have been given.

Several features reported in the literature as being characteristic of the Daesyaceae have been found to be inconsistent and this study shows that the development of the fusion cell, along with sympodial growth of the thallus, provides a good family character.

Three genera of the tribe Lophothaliaceae (Rhodophyceae) have been studied also because of the superficial similarity with species in the Daesyaceae. *Haplophora*, once placed in the Daesyaceae, has been removed to the Lophothaliaceae. The type species of *Lophothalae*, *Doxodarya* and *Haplophora*, and one other species of *Doxodarya* and *Haplophora* (*H. tomentosa* sp. nov.) have been studied in detail to provide an understanding of the tribe Lophothaliaceae. Comparisons of the Lophothaliaceae with
Browningiella (as described in the literature) have been made and the differences require the formation of a new tribe, the Browningiellae, to take Browningiella and similar genera once placed close to Lophothallia. It appears that the Lophothalliae are closely related to Borytchidae and this tribe is now placed in the subfamily Borytchiidae Sommer and of the Rhodomelaceae.

It would appear that the Lophothalliae and the Borytchiaceae are examples of parallel evolution of thallus form and are not closely related.

Cultural studies using two species of Dasya, two of Heterosiphonia, and Raplochus urceolata were used to attempt to grow plants completely through their life cycle in the laboratory. Dasya oleifera has been successfully taken through its life cycle for two generations of sexual plants and one of tetrasporangial plants. No other species was grown to reproductive maturity.