

STUDIES ON THE MARINE

ALGAE OF SOUTHERN

AUSTRALIA.

by

H. B. S. WOMERSLEY Ph.D.

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PREFACE.

The studies included in this thesis have been carried out since 1946 in the Department of Botany, University of Adelaide.

Previous to this, virtually nothing had been done in South Australia on the marine algae of our coasts, and indeed very little anywhere in southern Australia during the last half century. The only studies during this time, those of A.H.S. Lucas and Mrs. F. Perrin, are largely compilations from the literature, with only a few critical studies of groups by Lucas.

Studies by the author have been along two main lines. Firstly, contributions towards an ecological account of the intertidal zone of the South Australian coast and the biogeographical relationships of this coast with the rest of Australia, culminating in the paper by Womersley and Edmonds 1958. Secondly, taxonomic studies contributing towards our knowledge of the taxonomy and floristics of the marine algae of southern Australia. These have been concerned with ecologically or taxonomically important groups, and have been based on a study of the type specimens of nearly all described species of southern Australian marine algae in British, European and Australian herbaria together with an extensive field knowledge of the species.

During the past 15 years the algal herbarium and library of the Department of Botany of the University of Adelaide have been built up to provide a sound basis for all kinds of work on marine algae, and the Department is now the main centre for marine algal studies in southern Australia.

Nearly all the papers in this thesis deal with the marine algae of southern Australia. A few are included, however, dealing in whole or in part with the marine algae of tropical and subtropical coasts.

The present state of our knowledge of Australian marine algae is described in "The Marine Algae of Australia" (1959), published recently in the Botanical Review. The intertidal ecology and the floristic relationships of Australian marine algae are also discussed here.

The author's studies were recognised in 1956 by the award by the Royal Society of New South Wales of the Edgecworth David Medal, for "Distinguished researches on Australian marine algae".

The papers listed below have in every case been instigated by the author. In the case of joint papers, the author's part is stated more precisely in the list of contents.

CONTENTS

The papers have been grouped in two sections; firstly, those on intertidal ecology; secondly taxonomic studies (in order of publication). One paper on a freshwater Charophyte is also included.

ECOLOGICAL PAPERS

1. The marine algae of Kangaroo Island. I. A general account of the algal ecology.
2. The marine algae of Kangaroo Island. II. The Pennington Bay Region.
3. The marine algae of Kangaroo Island. III. List of species 1.
4. The marine algae of Kangaroo Island. IV. The algal ecology of American River inlet.
5. Marine coastal zonation in southern Australia in relation to a general scheme of classification (with S.J. EDMONDS. H.B.S.W. responsible for general write-up and algal aspects).
6. A general account of the intertidal ecology of South Australian coasts. (with S.J. EDMONDS. H.B.S.W. responsible for most of general write-up and algal aspects; somewhat more than half).

7. Studies on the marine algae of southern Australia: Introduction and No. 1. The genera *Isactis* and *Rivularia* (Myxophyceae).
8. Studies on the marine algae of southern Australia. No. 2. A new species of *Dasyopsis* (Family *Dasyaceae*) from Kangaroo Island.
9. Studies on the marine algae of southern Australia. No. 3. Notes on *Dictyopteris* Lamouroux.
10. *Protochara*, a new genus of Characeae from Western Australia. (With I., L. OPHEL. Responsibility about equally divided).
11. The Archipelago of the Recherche. 3b. Marine algae.
12. The species of *Macrocystis*, with special reference to those on southern Australian coasts.
13. Australian species of *Sargassum*, subgenus *Phyllotrichia*.
14. A new marine *Vaucheria* from Australia (with J. L. BLUM. (H. B. S. W. responsible for somewhat less than half).
15. New marine Chlorophyta from Southern Australia.
16. A critical survey of the marine algae of southern Australia. I. Chlorophyta.
17. The genus *Codium* (Chlorophyta) in southern Australia (with P. C. SILVA. H. B. S. W. responsible for somewhat less than half).

18. Marine algae from Arnhem Land, North Australia.
19. The structure and reproduction of *Gulsonia annulata* Harvey (Rhodophyta) (with E.M. WOLLASTON. H.B.S.W. instigated the work which was carried out by E.M.W.; write-up jointly by both authors).
20. Studies on the *Sarcomenia* group of the Rhodophyta, (with E.A. SHEPLEY. H.B.S.W. originated this study which was carried out further by E.A.S. under author's supervision; write-up jointly by both authors; responsibility about equal).
21. The marine algae of Australia.
22. A free-floating marine red alga (with R.E. NORRIS. Write-up by H.B.S.W., responsibility largely H.B.S.W.).
23. *Sympodophyllum*, a new genus of Delesseriaceae from South Australia (with E.A. SHEPLEY. Responsibility about equal).
24. The structure and systematic position of the Australian brown alga, *Notheia anomala* (with M. NIZAMUDDIN. Responsibility about equal). Unpublished.
25. Australian species of *Sargassum* subgenus *Arthrophyces*. Unpublished.