THE LEMNACEAE, OR DUCKWEEDS
A REVIEW OF THE DESCRIPTIVE AND EXPERIMENTAL LITERATURE
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INTRODUCTION

As the simplest and smallest of flowering plants, the Lemnaceae are usually relegated to the category of botanical curiosities. It is easy to understand why inconspicuous plants of no economic importance should be so dismissed, but it would be difficult to overestimate their potential value as experimental organisms for morphogenetic, physiological and biochemical research. When fruitflies and breadmolds are contributing so much to the general field of genetics, the student of higher plants may well consider using organisms offering some of the same advantages.

The valuable characteristics of the Lemnaceae include their small size, rapid growth and relative structural simplicity. All can be grown in aseptic culture, simplifying work with organic compounds. Reproduction is usually vegetative, so that genetic variability can be eliminated by using a single clone for all experiments. Controlled conditions of temperature, light and nutrition are far easier to maintain than for most other angiosperms. Recently, control of flowering has been achieved in at least two species.

While some excellent experimental work has been done with the Lemnaceae, most of these characteristics have not been fully exploited. One reason may be that no general account of these plants has appeared since the last century. The purpose of this review is to provide one, particularly of work since that time, which may serve as a guide for future investigators. The major emphasis will be placed on experimental work, but not to the exclusion of the descriptive disciplines. The divisions employed are necessarily somewhat arbitrary, particularly in the experimental section where a given factor or process may have been studied from more than one point of view. While adequate coverage of all work with a particular group of plants must perforce touch most fields of botanical research, it is impossible to consider each of the problems in its general context; to do so would be to write an encyclopedia. Thus both the bibliography and the detailed text discussions have been limited strictly to work with the Lemnaceae, leaving the reader to supplement them from previous knowledge and from other specialized sources. The aim of this article is to approximate the compactness and efficiency of its subjects, though it is admittedly not the smallest and simplest of reviews.