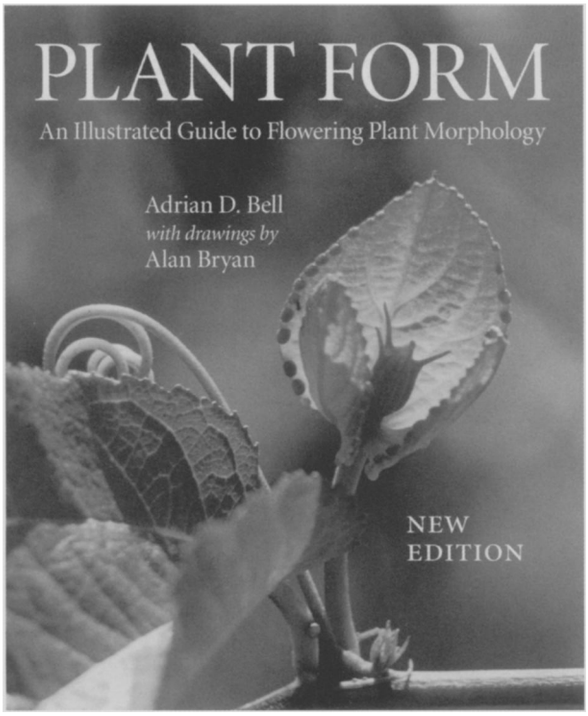

Plant Form: An Illustrated Guide to Flowering Plant Morphology (Second Edition). By Adrian D. Bell. Line drawings: Alan Bryan. 2008. Timber Press. (ISBN: 978-0881928501). 432 pp. Hardcover. $39.95.

This book is a new edition of a book published by Oxford University Press. It is divided into two parts: Morphological Description, sorted by plant organ and followed by entries for specific groups (e.g., grasses and orchids); and Constructional Organization, highlighting meristems, development, and body organization. Part of the update of this book reflects the more recent articulation of basal dicots (*Magnolia*, etc.) from eudicots. While reading the text, I often found myself thinking that examples from the non-flowering plants would be illustrative. But the book clearly restricts coverage to the flowering plants.

Adrian Bell's writing about morphology is mostly clear and concise and the sketches by Alan Bryan are supportive of the text and are clearly labeled. Botanical vocabulary is often difficult or confusing for a student, but the good integration between text and figures is helpful. As might be expected of a book originally published in Britain, many British spellings are strange to American students (programme, liane, centre, colour, etc.). In some cases European terms are used rather than their North American equivalents (epicarp vs exocarp).

In seed morphology, the bean seed diagram, so commonly used in teaching, incorrectly labels the raphe as the micropyle (Fig. 195E). The author gives examples of fruits often confusingly called seeds; I would add Asteraceae as most students have seen bags of "sunflower seeds" containing fruits (cypselas) as well as true sunflower seeds at the salad bar.

The author has a detailed section on the special case of grasses. For years botanists left the study of grasses to the agronomists. As a result, a completely different set of virtually synonymous terms developed. Of course the structures and organizational details are unique to grasses, making the separation understandable. It is nice to have this section in this book as corn is often used in teaching.

However, the author states that the monocot cotyledon "does not contain stored food" (p. 198). In introductory biology courses, soaked corn "seeds" (yes, caryopses) are longitudinally bisected along the embryonic axis (the white "shield"). The cut surfaces of these halves are tested with iodine (I_2KI), and Sudan IV solutions. The students learn that the endosperm holds most of the corn starch, but the corn oil is mostly in the embryo, especially including the cotyledon (scutellum). The error by the author is repeated on p. 200 where it says that food is stored in the cotyledons of dicots only. Considering the importance of corn oil in human nutrition, this error deserves correcting. There are a few other examples this reviewer takes issue with, including the author's statement that the "cotyledon absorbs the endosperm when the seed germinates" (p. 198), and that the "coleoptile is regarded either as the second leaf or as part of the cotyledon itself." Of course we cannot assign to the author of this one book any culpability for confusion in the botanical literature.

The first section ends with a series of entries on plants that defy attempts to classify them within the "typical" plant framework. It is satisfying for a book to go beyond the easy common examples and present interpretations and questions that remain to be fully articulated. It sets a good example of what science is all about ... that our ideas remain open to reconsideration as new information and deeper analysis provide. The second portion deals with the constructional organization of plants. Phyllotaxy comes under this portion of the book. Relating botany (at some level) to math enables a teacher to demonstrate the Fibonacci series between two vertically-aligned leaves in a plant with spiral phyllotaxy. The number of leaves between them and the number of spiral gyres shown by the leaves between them are almost always members of the series.

The book includes a substantial reference section representing outstanding modern articles on plant morphology. These are integrated throughout the text and virtually every section has references to fairly recent literature on the subject. The author suggests this book is likely to be used as an illustrated dictionary. However the book is topically (rather than alphabetically) organized and the index at the end is shorter than is needed for such a term-laden book. Readers who at least have an idea of what a term pertains to might be able to quickly locate the pertinent section of the text; but for a beginning student, this would be extremely difficult. A book such as *Plant Identification Terminology* (Harris & Harris, 2001) would be a better first approach.

While this book stays with some confusing conventions in botany (fertilized ovules, scattered monocot bundles, etc.), it is a welcome addition to my collection. It cannot replace standard textbooks on plant morphology (Gifford & Foster, 1989), but it provides a nice vignette of each of the covered topics, with good illustrations and an integrated set of modern references. A faculty member can provide interested students with a germ of an idea and the "handles" needed to get into some pertinent primary literature to support an independent study in plant morphology.

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