Chapter 7
Science of the Archives:
Visual Learning about Plants

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ABSTRACT

This chapter deals with the history of plant collections and their uses in science and art. It does this within the context of the development of a visual literacy about plants and their structures. It also covers how the value and influence of these collections are increasing as they become available electronically. These resources are now accessible not only to plant biologists but also to gardeners, environmentalists, naturalists, and students. Included here is a discussion of the various online portals that have been created, their relative usefulness to nonprofessionals, and how they can be "tamed" by educators to make them useful and useable tools for students.

INTRODUCTION

Biology is an extremely visual science, with millions of species to examine at both the macroscopic and microscopic levels. Thus, observation is a key ability in biological inquiry, sometimes taken for granted as a lower-level cognitive skill as opposed to what it really is: a complex interaction of seeing with thinking. Living in a visually rich world, particularly because of access to the Internet, does not necessarily translate into sophistication in the use of visual information. This chapter presents one way to create this sophistication in students in biology, through the informed use of digital archives such as the Encyclopedia of Life and JSTOR Global Plants. It focuses on flowering plants and particularly on botanical illustrations and on pressed plant specimens kept in collections called herbaria (Figure 1). As these resources become more readily available on the web, biology teachers have more tools for developing students' biological and visual literacies. The broad spectrum of visual material presented here, along with the review of the history of herbaria and taxonomic botany, will serve as a foundation on which to build a discussion about using this information in developing students' visual literacy as well as their appreciation of the links between science and

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Figure 1. Specimen from the Lord Robert James Petre Herbarium, Volume 4. (© 2014, California State Library-Sutro Library, San Francisco, California; photograph by Angelica Illueca, librarian. Used with permission).

art. Visual literacy will be discussed in a relatively narrow context, that of how a student looks at plant structure and comes to understand it.

VISUAL LITERACY

The Mind and the Eye, a book on the philosophy of biology by the British botanist Agnes Arber (1954), is relevant here. Arber's father was a professional landscape painter who began teaching her art when she was six years old. She went on to become a noted plant morphologist and the third woman elected a Fellow of the Royal Society. Arber did most of the pen and ink illustrations for her journal articles and books on morphology. Part of her motivation was financial. Her husband, Newell Arber, a paleobotanist with an appointment at Cambridge University, died when their daughter was five years old. Arber

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