

**Maura C. Flannery, *In the Herbarium: The Hidden World of Collecting and Preserving Plants*, New Haven and London: Yale University Press, 2023, 325 pp. ISBN: 9780300247916**

Maura C. Flannery's book proposes a broad history of herbaria, from the 16<sup>th</sup> century to today. A biologist working at St John University (New York), now a professor emerita and a researcher affiliated to the A.C. Moore Herbarium of the University of South Carolina, she had an interest in herbaria since 2010. That led her to study their history. Flannery's ambitious project is to "travel through the past, present and future of the herbarium" (p. 7). She tackles this challenging goal through sixteen chapters that present a rich and passionate history of herbaria, from their creation to their current uses and potential for the discovery of new species and for the study of environmental changes. Her research is mainly based on a rich bibliography and the study of several herbaria, complemented by some archives. These herbaria provide beautiful illustrations throughout the book, as Flannery presents some of the collections she studied, including famous ones (Linnaeus, Robert Brown, Jean-Jacques Rousseau, Ames Oakes, etc.), as well as their material and visual diversity, entwining science and art.

The first chapter focuses on the history of Ames and Blanche Oakes in the late 19<sup>th</sup> century and beginning of the twentieth, and emphasizes the complementarity between herbaria, drawings or other kinds of collections in the study of plants and in the visualization of their characteristics. He was a teacher of Botany at Harvard who investigated on orchids (among other topics), she worked with him and contributed to the making of an important herbarium of orchids, curated at Harvard University, which is one of the last testimonies of the botanical collections of Berlin before the Second World War. This herbarium includes specimens of dried orchids completed by sketches and watercolours of the living plants made by Blanche Oakes in 1922. The famous and beautiful collection of glass flowers made by Leopold and Rudolf Blaschka, ordered by Oakes, completed the study of dried specimens in the teaching of botany at Harvard, showing the volumes and the colours that vanished in herbaria. The importance of Blanche and of international networks that included artists and botanists announce some trends explored by the author. The steps of this rich history linking art to science, rooted in social and institutional history and related to actual environmental changes, are developed in the following chapters.

The birth of herbaria in 16<sup>th</sup>-century Italy, attributed to Luca Ghini, was linked to *materia medica*. This practice spread through medical and humanist networks in European countries, in relation to medical teaching and learning, but this could also be linked to the rise of collections, including cabinets of curiosities (briefly mentioned in p. 24). Those collections were strongly related to botanical drawings, and took various forms, from herbarium to collections of seeds, fruits of flowers in alcohol or in wax (chapters 3 and 5). This practice was sustained by scientific explorations from the sixteenth to the 19<sup>th</sup> century, which were increasingly organized by European and Western states. Thus, Flannery stresses the link between the making of herbaria, colonization, politic and economic issues. She presents this history in various geographical areas according to the period. She also highlights the relationships between botany, agriculture and the taste for ornamental plants, which led to the rise of horticulture. Herbaria were used as tools for botanical study and the elaboration of taxonomy, as in the case of Linnaeus (chapter 6), or later with the definition of type specimens to facilitate the use of

herbaria as taxonomic references in the late nineteenth and early 20<sup>th</sup> century (chapter 11), in relation to the problem of species and various methods to resolve taxonomic issues. Some were catalogues used by nurserymen to advertise their production, in relation to the rise of garden and the taste for ornamental plants. These chapters include sometimes elements of the actual scientific uses and significance of those collections, disrupting the historical narrative but showing their importance to study the evolutions of biodiversity and environmental change, for instance with the actual use of Bonpland and Humboldt herbarium in the study of the evolution of treelines in mountains. Their value, either scientific, historical, cultural or economic, raised issues on conservation and curation (chapter 5).

The focus on institutional and economic networks, linked to museums, states and nurseries, could have hidden other kinds of practices and actors who could take the opportunity of a private trip or professional opportunities to collect plants for herbaria. However, Flannery highlights the importance of indigenous guides and people in those explorations as well as in the making of botanical knowledge, which allows her to stress the importance of “decolonizing collections” several times throughout the book – even if other actors could collect in colonial areas. Moreover, the study of “gardens” (chapter 8) and of the wide-spread taste for natural history and botany in the 19<sup>th</sup> century (chapter 10) addresses other kinds of actors and practices, such as women, children, and the making of herbaria as souvenirs or personal and aesthetic, where the choice of plants is sometimes entwined with fashion or arts. This context, along with the rising institutionalisation and professionalisation of the field at the end of the 19<sup>th</sup> century, questions the way amateurs and women took part in the making of botanical knowledge and dealt with this changing context.

Between the 19<sup>th</sup> and the 20<sup>th</sup> centuries, the rise of new fields and objects of research, such as evolution, ecology and genetics, questioned the importance of herbaria and taxonomic studies and progressively led to the fading of herbaria in the second part of the 20<sup>th</sup> century. Nevertheless, ethnobotany, phylogenetic with DNA sequencing, and finally environmental issues raised a new interest in herbaria. The examination of plants in herbaria can reveal new species of plants, as well as new fungi discovered on the roots of the dry specimens. Collections can “provide evidence of climate change” (p. 207) through the study of stomatal density or phenology, and difference in times of blossoming can have consequences on pollination and insect populations, while live plants or seeds collections associated with herbaria are interesting resources to deal with issues related to conservation and uses of biodiversity. The making of the first databases in the end of the 1960s constitutes a prelude to the large-scale digitization of herbaria developed in the 21<sup>st</sup> century, even if that did not suppress the importance of fieldwork. This new visibility enhances the actual interest in herbaria, in education, arts or humanities, linked to new curiosity and attention for plants.

There are a few crucial aspects of the history of herbaria that the author has decided to leave aside: the material and technical operations involved in plant collecting and the making of herbaria (chapter 3), on which the author “could have written much more” (p. 248), as she herself acknowledges, or issue of social history (such as the evolution of the place of amateurs in science and the erasure of women in science).<sup>1</sup> Nevertheless, Flannery presents a wide and convincing history of those collections, entwined with colonial, cultural, economic, science and political histories. The index gives an overlook of the numerous questions addressed by the author. Her emphasis throughout the book on the importance of

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<sup>1</sup> Sarah Benharrech, “Botanical Palimpsest, or erasure of women in science: the case study of Mme Dugage de Pommereul (1733–1782)”, *Harvard Papers in Botany* 23, no.1 (2018): 89–108.

old herbaria to study the history of biodiversity and human societies, as well as the consequences of environmental change on habitats and plants, allows the author to link this history to actual and crucial issues, while considering the historical contexts and different aims in which herbaria were made and used. The nice writing communicates her passion for herbaria, and the author's attention for explaining every technical term make it accessible to a wide public, from student to experienced researchers interested in having a general view on those collections, their past and actual uses.

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