Book Reviews

The Drawings of Antoine Nicholas Duchesne for his Natural History of the Gourds. Harry S. Paris. 2007. Museum National d'Historie Naturelle, Publications Scientifiques, CP39, 57, Rue Cuvier, F-7505 Paris France. 454 pp., 258 color plates, List price $257. hardbound. ISBN 978-2-85653-604-9.

This gigantic book weighing about 6 kg and measuring 32 cm x 44 cm is the result of nearly two decades of research by eminent cucurbitologist, Harry S. Paris of the ARO, Newe Ya'ar Research Center, Israel. The search, with many disappointments along the way, finally led to the discovery of manuscript 5007 consisting of two voluminous portfolios containing Duchesne's gourd paintings and sketches, but without any accompanying manuscript.

Antoine Nicholas Duchesne (1747–1827) was born at Versailles, France. His father, who taught him the basics of art, science, and language, was the Superintendent of Royal Buildings. Later, he became the student of Royal Botanist, Bernard de Jussieu under whose tutelage he learned about horticulture, plant classification, and plant morphology. This education and training led to his widely acclaimed first book, *Manuel de Botanique* that was published in 1764 to wide approval. All of this activity occurred at 17 years of age.

Before his cucurbit studies, Duchesne did classic studies on strawberry, leading to publication of the also well-received *Histoire naturelle des fraisiers* in 1766.

Plants of the genus *Cucurbita* produce fruit ranging from less than 50 g to over 400 kg and having an array of vibrant colors with various stripes and color pattern that are cultivar specific. Duchesne grew gourds of different types together and in isolation. Those grown together were subject to cross pollination and produced fruit that differed among themselves. On the other hand, gourds grown in isolation produced fruit the same as their parents. After six years of study, he painstakingly documented his tests with elegant paintings of the results.

Manuscript 5007 contains the very detailed drawings and paintings mostly of cucurbit fruit, but also of flowers and vines. The watercolors show the shape, color, protuberances, and striping pattern of these beautiful fruit, sometimes in full size. Cucurbits, being of New World origin, were unknown in Europe before 1492. In the succeeding two centuries, very many cucurbits were brought to Europe where they were used mostly as objects of curiosity rather than for food.

Duchesne's drawings and their legends are the heart of this book. However, there are interesting short chapters in English or French that assist in one's understanding and appreciations of the subject of the book. In order of presentation, they are Prologue, Biography of Antoine Nicholas Duchesne, *Essai sur l'Histoire Naturelle des Courges*, Introduction, the Genus *Cucurbita*, Glossary, Experiments to Define the Species of *Cucurbita*, context of the Drawings, and Duchesne's General Remarks on the Pepo.

This book is not one to take to the beach, to read in bed, or to balance on your knee. It is definitely one to read at your desk, or as I have done on the dining room table. Although awkward to handle because of its size and weight, its dimensions were necessary to present the integrity and beauty of Duchesne's paintings. Again, because of the size of the book, it is difficult to shift from a Plate Legend to the Plate itself some 100 pages distant.

Altogether, the drawings of Antoine Nicholas Duchesne and his Natural History of the Gourds is a magnificent book what will be of great interest to horticulturists, botanists, and art enthusiasts.

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Plant Hormone Signaling. Peter Hedden and Stephen G. Thomas (eds.). 2006. Blackwell Publishing Ltd., Oxford, UK. 377 pp. $211.99, hardcover. ISBN-13:978-14051-3887-1; ISBN-10:1-4051-3887-4.

Progress during the past decade in our understanding of plant hormone signaling from perception to phenotype has been phenomenal. This collection of review articles, Volume 24 in Blackwell's *Annual Plant Reviews* series, was published in 2006 at the crest of this wave of research progress and thus describes most of the recent seminal discoveries in the field if not all of the details. The volume consists of 11 chapters; each of the first eight describes an individual class of endogenous plant growth substance, and the last three integrate research around the themes of hormone distribution and transport, reproductive development, and seed development and germination. An important and very useful feature of the first eight chapters is that they each review the metabolism of a class of compounds as well as signal transduction. The authors of each of the chapters are leading, active scientists on the subject matter, and thus the individual reviews are scientifically critical and thorough up to the time of publication.

The volume begins with a brief preface by the editors and provides an excellent historical context of the field, indicating the five classes of compounds – auxins, gibberellins (GA), cytokinins, ethylene, and abscisic acid (ABA) – that are generally regarded as the Sacred Canon of plant hormones, as well as the rationale for elevating three other classes – brassinosteroids, oxylipins (including jasmonic acid), and salicylic acid – to that exalted status. Each of the first eight chapters is an excellent review and resource. Reading these chapters in a short window of time makes it clear about how much we have learned about hormone metabolism and signal transduction in recent years, but also what the major gaps are. For example, ethylene metabolism and signaling (Chapter 5) appear to be reasonably well-understood. In contrast, our understanding of auxin signaling has made tremendous progress in the last three years, but our understanding of auxin metabolism is still not clear. Rather than auxin biosynthesis being a simple conversion of tryptophan, indole acetic acid is synthesized by several pathways, either tryptophan-dependent or tryptophan-independent, and the relative importance, regulation, and the metabolic details of these pathways are not well understood (Chapter 2). Of the several overall themes that arise from this volume, perhaps the most surprising is that several classes of plant hormone receptors participate directly in the ubiquitin ligase-mediated degradation of transcriptional regulators. I do not believe that this mechanism would have even been considered by most scientists working in the field 15 years ago. In terms of the content of the first eight chapters my only regret, which is acknowledged by the authors, is that Chapter 8, an excellent review of the role of salicylic acid (SA) in plant disease resistance, neglects other roles that SA may play in regulating plant growth and development.

The last three chapters provide valuable insights into the integrative relationships that plant hormones play in development. Chapter 10, on reproductive development, focuses attention, especially, on the role of gibberellin in flowering time, flower development, and fruit development. Chapter 11 highlights the relative roles of GA and ABA in seed development and seed germination. Chapter 9, on hormone distribution and transport, makes it clear to the reader that polar auxin transport is qualitatively different in kind and importance from transport of other hormones. My only criticism of this well-written chapter is that it fails to make the distinction in mechanism between *N*-1-naphthylphthalamic acid (NPA), a classic inhibitor of polar auxin transport, and 2,3,5-triiodobenzoic acid (TIBA). These differences, reported by Rainer Hertel's group in the 1970's, is that NPA and its many analogues are specific inhibitors of auxin efflux, whereas, TIBA is a weak auxin and is itself transported in a polar fashion. Many of today's plant scientists are not aware of that distinction and may draw erroneous conclusions from pharmacological experiments with TIBA.

Although I have few criticisms of this very useful book, there are two, both editorial, that I would like to point out. In a volume on plant metabolism, there needs to be a figure for each pathway showing the structures of the compounds and a numbered chemical skeleton for the class. Some of

the chapters in this book have excellent figures that do this; some do not. My second concern is that while some of the chapters are very well-written and clear to the non-specialist, others are dense and are filled with specialized jargon and extensive use of abbreviations.

Overall, this book is a scientific successor to Peter Davies' *Plant Hormones: Biosynthesis, Signal Transduction, Action!* (2004). Only two years separate the publication dates between these volumes, but the rapid progress in the field makes the newer book quite valuable. *Plant Hormone Signaling* will be an important resource to all those involved in research and teaching about plant hormones. It would also be an excellent text for a graduate course on the topic, but its extremely high price makes it unaffordable to most graduate students and non-specialists. If Blackwell were to cut the price in half, the impact of this volume on modern plant science would be greatly enhanced.

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Corrigendum

In the article "Texture and Other Quality Attributes in Olives and Leaf Characteristics after Preharvest Calcium Chloride Sprays" by Eleni Tsantili, Miltiadis V. Christopoulos, Constantinos A. Pontikis, Pantousis Kaltsikes, Chariklia Kallianou, and Michalis Komaitis [*HortScience* 43(6):1852–1856], there is an error in the units for carbon dioxide production in Table 3 on the bottom of page 1854. The correct units are $mmol \cdot kg^{-1} \cdot h^{-1}$ instead of $\mu mol \cdot kg^{-1} \cdot h^{-1}$. The same correction should also be made in the text on page 1853, third line from the bottom of column 1.