BOOK REVIEW

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Microscopic Preparation Techniques for Plant Stem Analysis [Gärtner, H. and Schweingruber, F. H.: Kessel Publishing House, Remagen, Germany, 78 pp., 2013; ISBN: 978-3-941300-76-7. Available at <http://www.forestrybooks.com/> for ca. €22 plus shipping]

Microscopic Preparation Techniques for Plant Stem Analysis by Holger Gärtner and Fritz H. Schweingruber was published in 2013 by Kessel Publishing House (ISBN 978-3-941300-76-7) and is available directly from the publisher. The authors have team-taught a workshop on wood anatomy for almost a decade, and this book clearly benefits from their extensive experience in teaching the basic techniques of microscopic plant stem preparation to researchers from a broad spectrum of disciplines.

The book's structure leads readers through the sequential steps involved in plant stem analysis. It begins with short sections on field-based sampling strategies and methods. Then the book transitions to its dominant focus: laboratory methods for maceration and thin-sectioning of plant material. It provides details on how to stain, bleach, fix, and preserve plant materials for viewing with a microscope. The excellent photographs in these sections let readers "see" the steps involved in microscope slide preparation. The book ends with very brief sections on common errors during sample preparation and microscopy tips for improved viewing of prepared samples.

This book takes the extensive experience in microscopic preparation possessed by Dr. Gärtner and Prof. Schweingruber and presents it to readers in a highly accessible format. The authors intentionally created an image-rich book to make it easier for readers lacking strong English skills to understand the content; however, this format also serves as a source of inspiration for future research projects. There were many pages where we saw a new technique being demonstrated and realized we

had the perfect application for that method in one of our current studies.

Although the book is aimed at an international audience, at times it falls short in that goal. Sometimes these shortcomings are entertaining, as in the paragraph on how to hold the razor blade during sectioning by hand, where readers are told to "cut the object like you would cut a salami, not like you would cut butter" (p. 21). This recommendation left us laughing, but having no idea how to hold the razor blade. Occasionally, the stilted language becomes annoying for native English speakers to read, but the meaning is always clear even if the noun and verb agreement is incorrect. One area where we wish the authors had spent more time was on the economics of these laboratory techniques. For example, they advocate the use of Canada balsam for embedding microsections and say, "for all other embedding resins we have no long-term experience" (p. 63). From our perspective, we look at having to pay US\$210 for 100mL of Canada balsam vs. having to pay US\$15 for 100mL of permanent mounting medium and are left wondering whether the extra US\$195 is really worth it. Unfortunately, the authors offer no suggestions for alternative techniques for researchers with more limited funds.

Overall, this is a useful reference book for any dendrochronology, wood anatomy, or plant sciences laboratory. In our own work, we have already used this book twice in the past week to find the appropriate solvent for a Safranin stain solution and to find suggestions for eliminating air bubbles during permanent slide preparation. In both cases, the Table of Contents quickly led us to

the information we sought. We anticipate that this book will continue to be an important reference to us and our students. We recommend *Microscopic Preparation Techniques for Plant Stem Analysis* to

other potential readers who would benefit from its clear and detailed descriptions of the laboratory techniques used to prepare plant material for microscopic analysis.