

BOOK REVIEW

BRITT A. BUNYARD AND JAY JUSTICE. 2020. **Amanitas of North America**. (ISBN-13: 978-0-578-67572-5, hbk). The FUNGI Press, PO Box 98, Batavia, Illinois 60510-9998, U.S.A. (**Orders:** fungimag.com). \$60.00 US, 340 pp., 120 color photos, glossary, bibliography, index, 10" × 8½".

About the Book: The authors state: "It is hoped that this book may be used to greatly expand the knowledge of and familiarity with this group of mushrooms: their natural ranges and habitat, their taxonomy, role in nature, and how to know the common species you may encounter." It meets these expectations and more!

The genus *Amanita* has both edible and poisonous species, with several of the poisonous species such as *Amanita bisporigera* (white destroying angel) and *Amanita phalloides* (death cup) that are notably poisonous, deadly and result in most of the deaths due to mushroom poisonings. These are large attractive fleshy gilled mushrooms conspicuous in their association with different tree species. As an additional warning sign like a skull and cross bones along with beware poisonous in bright red letters under the name would have emphasized these dangerous species, especially since some *Amanita* species are edible along with look-a-like species that may confuse the novice mushroom hunter.

There is a detailed topical section on gravitropism that describes this property of reorienting the stipe, cap and gills in a vertical position to ensure release of basidiospores into air currents and dissemination over longer distances. This would have been a place to describe how to make spore prints and demonstrate the typical white spores of this group of gilled mushrooms. However, the section on Collecting Mushrooms for Study contains details for field collecting and photography not found in most books on fungi.

Morphology highlights the development of the *Amanita* fruitbody illustrated to show internal formation of structural parts. I found description of gross morphological features of the cap and stipe with appropriate terminology such as pileipellis, velar patch, universal and partial veil, annulus, volva, with photographic species examples pictorial look-a-likes, and chemical tests, an excellent way to introduce external features important in noting differences seen with the naked eye.

Additional topical sections include Taxonomy highlighted by a history of students of fungi going back to the early first century and Pliny the Elder among others. There is a more current state of *Amanita* research that emphasizes Alexander Smith, Kees Bas, David Jenkins, and Rodham Tulloss. The sections on Toxicology of Amanitas and Amatoxin poisons, especially the details of the Phalloides Syndrome and cyclopeptides, is well worth reading to appreciate the deadly nature of the delayed symptoms and eventual destruction of the liver and death. There is more about biochemistry and treatments here worth considering! A more enlightening section "Phalloidin: A Poison Becomes a Means to Cure", is one example of how toxins, used in appropriate concentrations, are research tools to study cellular cytoskeletons and division and movement of cancer cells.

You must read the lore and mythology of *Amanita muscaria* (Fly Agaric) fact and fiction! Not only is this species easily recognized by its mostly bright red caps and white patches, it has for centuries filled mycological books with tales that will pique the curiosity of anyone interested in how mushrooms are used in the past and in popular culture. This section of the book is where Britt Bunyard's authorship shines given the psychedelic nature of this mushroom and Santa Claus imagery. Beginning with Amanita Lore on page 48 and including the Soma Myths, Religious and Entheogenic Uses of Amanitas, Amanitas Have Been Implicated In Many Poisonings, Amanitas In Popular Culture, and ending with *Amanita* Mushroom and Edibility on page 80. The book is worth the purchase price just for this section.

The rest of the book deals with *Amanita* species that number approximately 120 taxa plus 3 species of *Limacella* and finally a topical section on *Amanita* parasites such as *Hypomyces hyalinus*, *Mycogone rosea*, and *Szyzygites megalocarpus* that adds something special to the book usually not found in other mushroom books. Many of the photographs that are full page could easily have been reduced in size by half or more to save space and cost but these are author's choices. The book ends with a four page glossary that is very helpful in understanding the terminology used in the book and an Index that guides the reader to taxa and topical subjects.

Persons interested in the historical aspects of mushrooms and nontechnical topical subjects should buy this book as part of their mycological literature. Mycologists interested in *Amanita* biology and taxonomy should buy this book because there is no other book like it available with this kind of detailed coverage of *Amanita* taxa. I strongly recommend the mushrooming public buy this book as a valuable addition to your mycological library.—Harold W. Keller, Professor Emeritus, Botanist and Mycologist, Botanical Research Institute of Texas, Fort Worth, Texas, U.S.A.