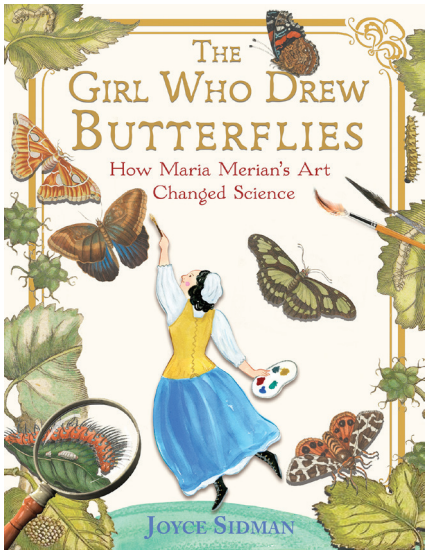
THE GIRL WHO DREW BUTTERFLIES:
How Maria Merian's Art Changed Science

BY JOYCE SIDMAN



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About the Book

"It has often happened that the rarest and most beautiful caterpillars change into the simplest creatures, and the simplest caterpillars become the most beautiful moths and butterflies." —Maria Merian

The Girl Who Drew Butterflies is a gorgeously illustrated middle-grade biography about Maria Merian, a seventeenth-century artist and naturalist, who chronicled the life cycle of butterflies and other insects. Written with clarity, frankness, and poetry, it follows the groundbreaking ecologist from cradle to grave or, more precisely, egg to egg (with pupae and larvae in-between) as Merian undergoes her own metamorphosis, defying the restrictive and often contradictory roles of women during her lifetime.

As a young assistant in her stepfather's studio, Merian emerged as a gifted artist in her own right. Her unquenchable curiosity about caterpillars and butterflies led her to closely document the bug's development when the prevailing theory of "spontaneous generation" insisted that they emerged from "dew, dung, dead animals, or mud." Against considerable odds, Merian published three books of stunningly detailed botanical paintings of entomological transformations and their oft-glorious host flowers explained by straightforward, vigorous prose.

Never fully recovered from her pioneering fieldwork in the lush Dutch colony of Surinam, Maria Merian died in 1717. Her substantial—if largely unacknowledged—legacy lives on in the scientific endeavors of Carl Linnaeus, John James Audubon, and Charles Darwin, as well as this strikingly engaging commemorative treatment. The book is enhanced by a glossary, author's note, timeline, quote sources, bibliography, image credits, and index.

About the Author

Newbery Honor winner Joyce Sidman is today's foremost nature poet for children. Accolades for her books include two Caldecott Honors, a Lee Bennett Hopkins Award, the Claudia Lewis Award, and many stars and "best of" lists. For her award-winning body of work, she won the NCTE Award for Excellence in Poetry for Children. She lives in Wayzata, Minnesota. Visit joycesidman.com.

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Pre-reading Activity

Have students compare the map of Western Europe that appears at the front of the book to a current map, noting changes in the names of countries, as well as the meaning of the ships and sea monsters that appear in the oceans. Then skim the timeline at the back of the book to learn the significance in Maria Merian's life of the European cities that appear in red banners on the 1660-era map. (CCSS.ELA-LITERACY.RI.3.1-3, 3.5; 4.3, 4.7; 5.3, 5.5)

Discussion Questions

CCSS.ELA-LITERACY.L.3.1,3.3; 4.1,4.3; 5.1, 5.3; CCSS.ELA-LITERACY.SL.3.1, 4.1, 5.1 applies to all of the following.

How was Merian's childhood similar to and different from that of most girls in seventeenth-century Germany? (CCSS.ELA-LITERACY.RI.3.1-3.2; 4.1-4.2; 5.1-5.2)

Sidman puts the word "savages" in quotation marks in reference to the stories of European visitors to the New World or Americas during the 1600s. What does this usage reveal about prevailing attitudes toward indigenous peoples then and now? (CCSS.ELA-LITERACY.RI.3.7, 4.7; 5.6; CCSS.ELA-LITERACY.L.3.4-6, 4.3-5, 5.3-6)

How was Merian able to paint such "beautiful, lifelike, and precise" compositions of butterflies, as well as other insects? (CCSS.ELA-LITERACY.RI. 4.1, 5.1)

How does Merian's gorgeous botanical artwork depict "parasitic" relationships, a term defined in the glossary at the front of the book? (CCSS.ELA-LITERACY.RI.3.3-5, 4.2-5, 5.3-4; CCSS.ELA-LITERACY.L. 3.4-5, 4.4-5, 5.4-5)

Which steps in the activity model of scientific inquiry (http://www.nsta.org/publications/news/story.aspx-?id=49494) did thirteen-year-old Merian practice in her study of silk-worms? (CCSS.ELA.LITERACY.RI.3.3, 4.3, 5.3)

Sidman presents several possible reasons why Merian and her husband, the artist and publisher Johann Andreas Graff, became estranged. Which of these makes the most sense to you? Do you have any additional ideas about why they may have split up? (CCSS.ELA-LITERACY.RI.3.6, 3.8; 4.6, 4.8; 5.8)

How does the captioned photograph on page 48 reveal what really happened with the "false change" in caterpillars and pupae directly observed by Merian? (CCSS.ELA-LITERACY.RI.3.5, 3.7; 4.5, 4.7)

What evidence does the book provide that some Europeans in the seventeenth century were moving away from superstitious beliefs toward reason and evidence? What event contradicts this assertion? (CCSS.ELA-LITERACY.RI.3.1-5, 7-8; 4.1-4, 6-7; 5.1-5, 5.8)

What is the relationship between the numerous excerpts from Merian's own writings and the information in the body of Sidman's narrative? (CCSS.ELA-LITERACY.RI.3.9, 4.9, 5.8, 5.9)

What was life like for slaves on sugar plantations in seventeenth-century Surinam, particularly for the women that Merian got to know and respect? (CCSS.ELA-LITERACY.RI. 3.1-5, 7-7; 4.1-9, 5.1-9)

How did Sidman's photographs influence reading of the butterfly poems that open each chapter? (CCSS.ELA-LITERACY.RL.3.7, 4.7, 5.7; CCSS.ELA-LITERACY.RI.3.7, 4.7)

What did you learn about the bookmaking that is described at both the beginning and end of Merian's life? (CCSS.ELA-LITERACY.RI.3.1-5, 7-9; 4.1-9, 5.1-9)

Post-reading Activity

Based on her groundbreaking fieldwork in Surinam, Maria Merian added more than "ninety new insect

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metamorphoses and fifty-three species of plants" to her oeuvre. Compare the old-fashioned map of Suriname on page 85 and the continents on page 83 with a contemporary map, noting relative size of the landforms and distinguishing design features. (CCSS.ELA-LITERACY.RI.3.7, 4.7, 5.7)

Activities

Starting with butterfly eggs or "seeds," have students directly observe and make daily recording—including sketches—of metamorphosis through the pupa, larvae and adult stage. What conclusions can they draw from their data? (CCSS.ELA-LITERACY.W.3.4, 3.7, 3.9; 4.4, 4.7, 4.9; 5.4, 5.7, 5.9)

Dutch painters like Jacob Marrel, Maria Merian's "beloved stepfather and mentor," help set the standard for the still life. After sharing some famous examples of this artistic genre, have students draw or paint a still life that includes everyday, inanimate objects that best represent themselves, a family member, or a friend.

Like the butterfly and the moth, there are other commonly confused animal look-alikes. Working with a partner, assign students one such pair (e.g., frog and toad, alligator and crocodile) to research using print and online sources. Then, ask them to make an illustrated poster with bullet points that highlights the differences in appearance and behavior between the two creatures. (CCSS.ELA-LITERACY.RI. 3.9, 4.9, 5.9; CCSS.ELA-LITERACY.W3.2, 4.2, 5.2, 3.7, 4.7, 5.7.)

Help students locate picture books and illustrated biographies of Carl Linnaeus, John James Audubon, and Charles Darwin in order to ascertain the influence of Merian on their artistry and science. Have students write opinion pieces that support their argument with reason and facts. Include a bibliography of sources. (CCSS.ELA-LITERACY.W3.1, 3.4-5, 3.7-8; 4.1, 4.4-5, 4.7-4.9; 5.1, 5.4-5, 4.7-9)

After discussing such literary elements as imagery, repetition and rhythm in Sidman's evocative verses about the butterfly life cycle, have students observe other insects in nature and/or the classroom. Then, write poems about the bugs to be published in an online class book. (CCSS.ELA-LITERACY.RL.3.4-5; CCSS.ELA-LITERACY.RL.4.2, 4.4; CCSS.ELA-LITERACY.RL.5.5; CCSS.ELA.LITERACY.W.3.6; 4.6; 5.6; CCSS.ELA-LITERACY.L. 3.1-3, 3.5-6; 4.1-3, 4.5-6; 5.1-3, 5.5-6.)

This guide was created by Julie Corsaro.