



Maria Sibylla Merian

Changing the Nature of Art and Science

Edited by Bert van de Roemer, Florence Pieters, Hans Mulder, Kay Etheridge & Marieke van Delft





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During Merian's lifetime, two calendar systems were used in Europe: the old Julian and the modern Gregorian calendar. In Germany, the Julian calendar was in use until 1700, and in some German regions even longer, whereas in the Dutch Republic (except for Utrecht, Friesland and Drenthe) the Gregorian calendar was used since the end of the sixteenth century. The difference between the two calendars was ten days during the seventeenth century. For instance, Maria Sibylla was baptized on 4 April Old Style, which coincides with 25 March New Style. For the present book, exact Julian dates are given for events up to 1691 because these dates are well-known from primary German sources. For all exact dates ever since, the modern Gregorian calendar system is used in this book.



Maria Sibylla settles with mother and daughters in the Labadist community at Waltha Castle. in Wieuwerd, Friesland, where half-brother Caspar Merian already resides



Official divorce between Maria Sibylla 1694 and Johann Andreas Graff





Unsuccessful attempts by husband Johann Andreas Graff to gain acceptance in the Labadist community

Death of half-brother Caspar Merian in Wieuwerd

1690 Death of mother Johanna Sibvlla in Wieuwerd

> Move of Maria Sibylla and daughters to Amsterdam

1691

1692 Marriage of first daughter Johanna Helena to Jacob Hendrik Herolt (ca. 1660–1715?), former Labadist colony member and trader with Suriname: registered 28 June



1699 Voyage from Amsterdam to Suriname with second daughter Dorothea Maria; embarkment in June

1701 Return voyage from Suriname to Amsterdam with Dorothea Maria and a Native American woman

> Marriage of Dorothea Maria to surgeon Philip Hendricks from Heidelberg

1686

Contact between Merian and London-based pharmacist James Petiver about promoting her work there and translating it into English



1703





1711

Visit of Frankfurter patrician Zacharias Conrad von Uffenbach to Maria Sibylla in Amsterdam; 23 February

Emigration to Suriname of first daughter Johanna Helena and husband Jacob Hendrik Herolt



Publication of Metamorphosis Insectorum Surinamensium in Amsterdam, in Dutch and Latin (two editions); January/February

Publication of Georg Everhard Rumphius's D'Amboinsche Rariteitkamer

> Publication of Charles Plumier's Traité des Fougères de l'Amérique



Publication of two parts of Der Rupsen Begin, Voedzel en Wonderbaare Verandering in Amsterdam, a shortened Dutch translation of the two German Caterpillar Books

1705



Publication of *Erucarum Ortus* in Amsterdam, a Latin edition of the three Caterpillar Books, translated from the Dutch editions





Marriage of second daughter Dorothea Maria to Georg Gsell (1673–1740) from Sankt Gallen, her second husband

1715

1717

1718

Death of Maria Sibylla Merian in Amsterdam; 13 January

Sale of part of Merian's drawings to the collection of Peter the Great, Tsar of Russia, in Saint Petersburg

Publication of Der Rupsen Begin, Voedzel en Wonderbaare Verandering in Amsterdam, the third Caterpillar Book in Dutch, facilitated by Dorothea Maria

Emigration of Dorothea Maria and husband Georg Gsell to Saint Petersburg as part of an employment contract with Peter the Great; 13 October

Publication of the first part of Mark Catesby's Natural History of Carolina, Florida and the Bahama Islands



Dactyls in Maria's Book of Notes and Studies

translucent butterfly bordered in black thistle with girdled abandoned cocoon

thorn-laden branch of the Mexican lime wild and ungrafted pale sprig of a plum

juvenile lizard omnivorous ground dweller melons that ripen on sand just like cucumbers

brown-breasted hummingbirds drink from bright shrubs frogs float with fertilized eggs on their backs

sociable weevils lie next to each other in heaps circle and separate nimble as mercury

Cynthia Snow

The World of Maria Sibylla Merian

Kay Etheridge

In recent years, Maria Sibylla Merian's story and her contributions to art and science have attracted widening interest, both scholarly and popular, and she has inspired the creative endeavors of a number of artists and writers. In 2017, the tercentenary year of her death, an international conference in Amsterdam celebrated the conjunction of new scholarship and artistic works related to Merian, which led to the publication of this volume. The objectives of the collection herein are to provide new insights into Merian's life and work, to re-examine the existing canon, and to explore her influence on the contemporary arts. Contributing authors variously investigate the settings in which she lived and worked, her personal networks, her processes and products, and her influence on art and natural history. Her work is compared to that of artists and scientists that both preceded and followed her, as well as to that of a variety of contemporaries, both female and male.

This chapter will introduce the contents of the volume, beginning with a scaffold on which to place these diverse offerings. Arthur MacGregor's preface eloquently frames Merian's work within her period, and I will describe her contributions to the study of natural history in the context of what came before her. I also will provide a brief overview of her biography, her research on insects, and the books that she wrote, illustrated, and published to disseminate her work. Many rich sources can provide additional historical detail on her life and work, but Merian's own books provide the best insights into her accomplishments as an artist and naturalist.¹ A time line is included in this volume as a guide to this necessarily compact account of decades of biography and accomplishment, and it includes the chronology of related natural history works discussed in this volume.²

Before Merian

While it is true that Merian was an exceptional artist whose subject matter was unusual for a woman of her day, it is her contribution to our understanding of the natural world that sets her apart. Before Merian's 1679 *Raupenbuch* (Caterpillar Book), which is described more fully below, European naturalists addressed insects and plants separately. Herbals



Fig. 1 Unknown copyist after M. Merian the Younger and C. Merian, Lepidopteran adults and caterpillars, in J. Jonston, *Naeukeurige Beschryving van de Natuur der Gekerfde of Kronkel-dieren*, Amsterdam 1660, plates 6 (left) and 20 (right), hand-colored etching, 29 x 17.5 cm (plate). Artis Library, Allard Pierson, University of Amsterdam, AB 126:23.

featuring medicinal plants stretch back long before the advent of the printing press. Flower Books (*florilegia*) proliferated somewhat later, as gardening grew in popularity. Aristotle and Pliny described several common insects, and the first printed books with content on insects referred to these classic sources. Insect encyclopedias by Ulisse Aldrovandi (1522–1605), Thomas Moffet (1553–1604), Jan Jonston (1603–1675), and others added some new information, but each subsequent volume copied from earlier works.³ These encyclopedias, like others on animals, reiterated classical knowledge and presented basic descriptions and some early classification schemes. In this period, insects were investigated separately from the plants on which they depend for food and shelter, and the various life



Fig. 2 J. Goedaert, Three stages of the metamorphosis of the peacock butterfly (*Aglais io*), in J. Goedaert, *Metamorphosis Naturalis*, Middelburg 1660, plate 1, etching. Artis Library, Allard Pierson, University of Amsterdam.

stages of these small animals, if studied at all, were usually presented independently. An example may be seen in Jonston's 1653 insect encyclopedia, which was illustrated and published by Merian's half-brothers, Matthäus Merian the Younger (1621– 1687) and Caspar Merian (1627–1686), and published in more than one edition (Fig. 1).⁴

The Dutch naturalist and painter Johannes Goedaert (1617–1668) was the earliest to study metamorphosis to any great extent, and his three volumes on the insects he collected and raised in his Middelburg home provided a reference



Fig. 3 M.S. Merian, The metamorphic cycle of the peacock butterfly (*Aglais io*) on a common nettle, in M.S. Merian, *Der Raupen wunderbare Verwandelung*, Nuremberg 1679, plate 26, etching. Spencer Collection, New York Public Library.

for Merian. Goedaert often mentioned the plants on which the larvae fed, but without much detail, and he usually did not illustrate this relationship (Fig. 2). Merian's "novel invention", as she terms it in the full title of her 1679 *Raupenbuch*, was to place caterpillars on their host plant. The difference in presentation from that of Goedaert is evident in Merian's depiction of the same species of peacock butterfly, with its life cycle arranged around the common nettle, a preferred food of this caterpillar (Fig. 3). Her image includes an intact pupa and another pupa with the butterfly begin-



Fig. 4 J. Marrel, Portrait of two tulips (1640), in *Album with drawings of tulips*, watercolor and bodycolor on vellum, 265 x 335 mm (vellum sheet). Rijksmuseum, Amsterdam, RP-T-1950-266-41-1.

ning to emerge, as well as a fly often found with the caterpillars.⁵ Unlike the static images in Figures 1 and 2, her moths and butterflies fly or perch on plants, and if the wings are patterned differently on two sides, she shows both, providing another important aid to identification. Merian's dynamic compositions worked hand in hand with her informative text, in which she described ecological interactions of her insect subjects with the plants they lived on. She sometimes included interactions between insects as well, such as parasitism and predation, and unlike Goedaert and other predecessors, she made it clear that caterpillars hatched from eggs after the mating of the adults. Her writings and images were influential in a number of ways discussed elsewhere, and are further investigated in this volume.⁶

A Brief Biography

How did a young German woman with no formal education come to make such breakthroughs in natural history studies? Maria Sibvlla's family situation and the timing of her birth provided fertile ground for a budding artist and naturalist. Born into a family of publishers and engravers in Frankfurt am Main, she grew up in a city that was home to book fairs, gardens, and a silkworm industry, each of which played a role in developing interests leading to her eventual career. It was not atypical for German girls to participate in an artisanal family business, and Merian received training from her family members. What was unusual for a young girl was for her to become so captivated by the insects that she was learning to paint, that she spent more than five decades dedicated to their study.

As indicated in the time line, Merian was just thirteen when she began to record the metamorphoses of butterflies and moths. Her tenacity and powers of observation were formidable, and these were coupled with her ability to convey what she saw through her art and careful notation. Her well-known father. Matthäus Merian the Elder (1593–1650), died when she was just three, and much of her artistic training and inspiration was provided by her stepfather. Painter Jacob Marrel (1614-1681) married her mother when Maria Sibylla was four years old, and one can see echoes of his work in her earliest compositions of plants and insects. Marrel was one of many artists who painted "tulip portraits", but his were atypical in that they were usually enlivened by insects, snails, or spiders (Fig. 4).7

Her half-brother Caspar and one of Marrel's apprentices, Johann Andreas Graff (1636–1701), may also have instructed young Maria Sibylla in the arts. At eighteen, she married Graff, ten years her senior, and less than three years later she gave birth to their first daughter. Johanna Helena, followed soon after by a move from Frankfurt to Graff's family home in Nuremberg. There, she taught painting to female students, continued with her own paintings, and began an intensive period of research, capturing and then raising caterpillars through metamorphosis and recording their transformations and food plants. Maria Sibylla seemed to remain close to her half-brother Caspar, who may have influenced her later move to Wieuwerd, as well as to her stepfather. A portrait identified as Merian at age 32 is attributed to Marrel (see the frontispiece of this book), who stayed with her and her husband in Nuremberg during part of 1679.

The thirteen years in Nuremberg (1668–1682) were richly productive. In addition to the birth of a second daughter, Dorothea Maria, in 1678, Merian produced three sets of decorative flower plates, the Blumenbücher, as well as her first natural history work, the 1679 Raupenbuch (Caterpillar Book). It was in Nuremberg that she also completed much of the research for her second and third caterpillar volumes. The Blumenbücher she etched served as models for embroidery and painting, primarily by young women such as Merian's students.⁸ The production of the decorative plates between 1675 and 1680 overlapped with the beginning of her intensive inquiries into metamorphosis and other aspects of the lives of insects.9 The

title of her first research publication, the 1679 *Raupenbuch*, describes it as being "for the benefit of naturalists, artists, and garden lovers", acknowledging the connections that she recognized between the various aspects of her work.

After Jacob Marrel's death in 1681, Maria Sibylla and her daughters moved to Frankfurt to assist her widowed mother, while Johann Andreas Graff traveled back and forth between Frankfurt and Nuremberg. Two years later, she published her second Caterpillar Book; it was printed in Nuremberg, where she had completed most of the research for it.¹⁰ Strains on the marriage as well as other factors may have precipitated another move around the turn of the year between 1685 and 1686. Maria Sibylla, together with her daughters and her mother, joined her half-brother Caspar at the Labadist colony at Waltha Castle in Wieuwerd, Friesland (a province of the Dutch Republic) (Fig. 5). Much text has been spent in speculation about her motives for the move and the state of the Graff marriage, but one result of her five-year

Fig. 5 J.A. Graff, *Grundriß vom bekanten Busch zu Wieuwarden* [...], ca. 1686, colored pen and brush drawing, 337 x 420 mm. Staatsarchiv Nürnberg (StaatsAN), Handschriftliche Karten, inv. no. 212, 1686. Courtesy of Staatsarchiv Nürnberg.



stay with the Labadists was the effective end of the marriage. Graff was not permitted by the group to join his wife and daughters there.¹¹

Merian continued her natural history research to some degree while living with the Labadists, as evidenced by dated entries in her Studienbuch, which is her collection of research notes and drawings.¹² While at Waltha Castle, she also took the time to organize and recopy the part of her *Studienbuch* that was the basis of her first two Caterpillar Books.¹³ Another result from her time at Waltha may have been the connections she forged that led her to move to Amsterdam in 1691, upon leaving the Labadist colony. These connections may also have facilitated her eventual travel to the Dutch colony in Suriname.

Amsterdam was one of the largest cities in Europe at the time and a center of global trade and innovations in art and science. The city was home to a vibrant publishing industry and art market and a well-established botanical garden; it also fostered opportunities for immigrants and for women that were not so readily available elsewhere. In this stimulating environment, Merian continued her painting and her natural history studies, and she became involved with the city's rich network of collectors and naturalists. As discussed elsewhere and in chapters within this volume, she was active in this circle, trading and selling specimens, providing paints and paintings, and visiting natural history collections.¹⁴ Spurred by the exotic butterflies she had seen in Dutch collections, she and her younger

daughter, Dorothea Maria (1678–1743), traveled to Dutch Suriname in 1699 for an intensive two years of work in the tropics.¹⁵ Her plan for a longer stay was cut short by serious illness, and she returned to Amsterdam in 1701 to live out her life, continuing her research, art, and writing. As well as publishing the Rupsenboeken. Dutch translations of her 1679 and 1683 Raupenbücher, Merian wrote, illustrated, and published two more original natural history books during this period. The best known of these is her 1705 folio volume Metamorphosis Insectorum Surinamensium. Lastly, her third and final caterpillar volume was published shortly after her death in 1717 by Dorothea Maria, this time written in Dutch rather than German.¹⁶

Merian's fame continued to grow during her final years in Amsterdam, and collectors such as Sir Hans Sloane (1660-1753) and Richard Mead (1673-1754) sought out her work. She corresponded with collectors such as James Petiver in England, and she knew Caspar Commelin (1668-1731), botanist at the Amsterdam botanical garden, well enough to have him provide Latin names for the plants included in Metamorphosis. Merian was also visited by distinguished travelers such as Zacharias Conrad von Uffenbach (1683-1734) in 1711 and Jacopo Guiducci, a legate from Cosimo III de' Medici (1642-1723), in 1714.¹⁷ Around the time of her death, Tsar Peter the Great's physician, Robert Areskin (1677–1718), bought a large portion of her original notes and studies from her heirs, one more indication of the esteem in which her work was held.¹⁸

Merian's Motivation

Her choice of a life's work was arduous. challenging, and never guaranteed to produce a net income. In contemplating what motivated Merian to study insects. some scholars have emphasized her piety: certainly, natural theology (physicotheology) was a factor in stimulating a great deal of natural history study in her time.¹⁹ In fact, Merian's writings are no more pious in tone than many of her contemporaries, and indeed less so than Goedaert, whose language is often overtly religious. Metamorphosis, her Suriname work, contains only one mention of God. However, Merian's time with the Labadist colony at Waltha Castle has provided fodder for the argument that her work was largely devotional in nature. It should be noted that religious fervor was not the only reason to make such a move. For centuries, women retreated to religious communities like convents or beguinages for a variety of reasons, such as widowhood and economic, family, or societal pressures. In Merian's case, family circumstances may have contributed to her decision to move to Waltha Castle; her half-brother Caspar preceded her in joining the colony there, and her mother moved there as well. All of this occurred at a time when her marriage to Johann Graff seems to have been in difficulties.²⁰

Whatever the initial impetus for her work on insects, it was sustained for five decades by her insatiable curiosity. Her primary motivation was that typical of most scientists who make valuable contributions—she delighted in new discoveries. Her writings make this clear, as in this excerpt on the emperor moth (*Saturnia pavonia*) from her 1679 *Raupenbuch*:

Many years ago, when I first saw this moth, large and exceptionally well formed by Nature, I could not marvel enough at its beautiful shadings and contrasting colors, and at the time I often used it in my paintings. But after I discovered the transformation of the caterpillar some years later, by the grace of God, it seemed to me a very long time until the beautiful moth-bird came forth. Thus, when I did obtain it, I was filled with such great joy and was so pleased in my intent that I can hardly describe it.²¹

Her drive to understand the nature of insect metamorphosis was sustained well into her later years. Merian was 52 when she set sail for Suriname to investigate tropical insects for the first time, and a *Studienbuch* entry dated 1710 demonstrates that she was still making new observations when she was 63.

Merian's Process and Publications

As shown in the time line, Merian illustrated three sets of decorative flower plates, the *Blumenbücher*, between 1675 and 1680; researched, wrote, and illustrated three books on the natural history of European insects (*Raupenbücher* in German and *Rupsenboeken* in Dutch) between 1679 and 1717; and in 1705 published her landmark volume, *Metamorphosis Insectorum Surinamensium*, on the



Fig. 6 Pineapple and roaches, in J.Ch. Volkamer, Nürnbergische Hesperides, Nuremberg 1708–1714, plate 1 in supplement, etching. Oak Spring Garden Library Foundation, Upperville, Virginia.

plants and insects of the Dutch colony of Suriname. A number of translated editions of her work were published as well, both before and after her death. After publication of the 1705 *Metamorphosis* in Dutch and Latin, her 1679 and 1683 Caterpillar Books were translated from German into Dutch (likely by Dorothea Maria) and published in 1712. The Dutch editions were shortened and condensed, possibly to save on the cost of printing longer volumes; the earlier German editions with more text used three times as much paper, a major contribution to their cost. Although Merian reached a wider audience with the shorter, translated editions, she undercut her own reputation with later readers, because the text, reduced to about one third of the original, was largely descriptive and omitted her hard-won ecological and behavioral observations. Compounding the problem, these severely truncated versions were the source for editions translated into Latin and French after her death. As will be discussed in this book, the posthumous volumes were a mixed blessing for her legacy; they broadened the reach of her work to a larger audience, while at times doing damage to her scientific reputation through clumsy additions, poor coloring, and other problematic changes to her original work. However, Merian's books were much emulated and her images often copied, in particular those from her dramatic tropical plates in Metamorphosis. For example, her ripe pineapple was copied for the Nürnbergische Hesperides (1708-1714) of Johann Christoph Volkamer (1644–1720) (Fig. 6); as in many cases, she was not credited for the original image, which was the first plate in Metamorphosis.

Merian's productivity was remarkable at a time when some of her contemporaries struggled to publish even one volume of their work. John Ray's *Historia Insectorum* was published posthumously by a colleague and included the work of Francis Willoughby (1635–1675), who predeceased John Ray (1627–1705).²² Similarly, Johannes Swammerdam (1637–1680) published a small subset of his work on insects before his death in

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This book includes material presented at the Maria Sibylla Merian conference of 2017, Changing the Nature of Art and Science. Intersections with Maria Sibylla Merian, and additional new work. The conference was organized by the Maria Sibylla Merian Society (www.themariasibyllameriansociety.humanities.uva.nl), which also supervised this publication.

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