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Source: *Taxon*, Vol. 31, No. 3 (Aug., 1982), pp. 529-534

Published by: [International Association for Plant Taxonomy \(IAPT\)](#)

Stable URL: <http://www.jstor.org/stable/1220684>

Accessed: 18/06/2014 18:33

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MARIA SIBYLLA MERIAN (1647–1717) AS A BOTANICAL ARTIST

William T. Stearn¹

Summary

An outline of the life of Maria Sibylla Merian, better known as an entomological than as a botanical artist, with identifications of the wild and cultivated plants of Surinam, northern South America, illustrated in her *Metamorphosis Insectorum Surinamensium* (1705).

Best known as a pioneer entomological artist and investigator of the metamorphoses of European and South American insects, Maria Sibylla Merian (1647–1717) has also an honoured though less conspicuous place in the history of botanical illustration; she was among the first to portray a range of tropical plants and to publish coloured engravings of them for the delight, interest and education of naturalists and bibliophiles in Europe. Her fame rests primarily upon her folio *Metamorphosis Insectorum Surinamensium* (1705), but this had a significant predecessor in her *Der Raupen wunderbare Verwandlung* (1679). She was interested above all in Lepidoptera: plants provided their nourishment and thus she came to draw both insects and their associated host plants with equal care. This perception of their close interrelationship, almost unique when she began, had its origin in her childhood when as a girl in Frankfurt am Main she reared silkworms and watched their development from clusters of eggs to voracious caterpillars, their change into cocoons of silk and the surprising ultimate emergence of moths, with each stage wonderfully different from its predecessor. Her curiosity aroused, she collected caterpillars from the countryside and gardens around Frankfurt and fed them with the plants on which they had lived, not knowing what would result. The butterflies and moths to which they gave rise challenged her artistic skill by their beauty and diversity. Without any textbook or teacher, she became a self-taught naturalist, keenly observant, able to distinguish many plants and insects and to record her observations graphically with paintbrush and pen but lacking names for those objects of study. Later she was to have the same experience in Surinam. Then she introduced totally nameless creatures to the learned world. The life of Maria Sibylla Merian provides a remarkable story, now many times related in a general manner (cf Lendorff, 1955; Nienhus-Stuldreher, 1945; Stearn, 1978) and recently augmented by the biographical research of the German art historian, Elisabeth Rücker, but seemingly little known to botanists and zoologists who consult her work.

Maria Sibylla Merian was born on 4 April 1647 at Frankfurt am Main, West Germany, her father being the Swiss engraver and topographical artist and publisher, Matthaeus Merian the Elder (1593–1650); he died when she was only three years old, but she inherited his artistic talent and his illustrious name. His widow married in 1651 Jacob Marell (1614–1681), an artist of the Utrecht School, who taught Maria the arts of engraving and painting. Another teacher was Abraham Mignon (1639–1697) who himself painted insects. Thus she grew up among artists at Frankfurt am Main, a busy commercial and cultured city, as was contemporary Nürnberg. From

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the latter there came to Frankfurt another artist, Johann Andreas Graff (1637–1701), who had earlier been a pupil of her stepfather. She was married to him on 16 May 1665, at the age of eighteen, and gave birth to a daughter, Johanna Helena, on 1 January 1668. Graff returned to Nürnberg in 1670, accompanied by his wife and their child. She evidently contributed to their livelihood by engraving, painting, embroidery and teaching but found time to investigate the insects and plants of the neighbourhood and to draw them. Their second daughter was born in 1678. The first result of her entomological investigations, begun in 1660, was *Der Raupen wunderbare Verwandlung und sonderbare Blumennahrung nach dem Leben abgemahlt, ins Kupfer gestochen und selbst verlegt von Maria Sibylla Gräffin, Matthaei Merians der Eltern Seel. Tochter* (1679). This had 50 engraved plates with arabic numerals in the top righthand corner. A second part, having 50 plates with roman numerals in the top righthand corner, followed in 1683. Each plate has an accompanying text in German, describing vividly and in detail the nature and habits of the insect in its various stages, all of it firsthand, much of it new to science and certainly owing nothing to any other author. Johannes Goedaert (1620–1668) had earlier recorded and illustrated the life-histories of Lepidoptera in his *Metamorphosis naturalis* (c 1662–1667) but not their food-plants. Maria found that some caterpillars could eat a variety of plants but others only one kind. A species having a special requirement she figured with that plant itself, e.g. the peacock butterfly (*Irachis io*) with the stinging nettle (*Urtica dioica*), the lime hawk-moth (*Mimas tiliae*) with the small-leaved linden (*Tilia cordata*). Dutch still-life painters had portrayed a few insects with their bouquets of flowers but incidentally, for decorative purposes only. Maria's careful and deliberate association of insect and host plant had no precedent in scientific illustration. She thus began the long line of entomological works having plants and their unbidden guests portrayed together, notably Christian Sepp and Jan Christian Sepp, *De Nederlandsche Insecten* (1762 *et seq.*) and John Curtis, *British Entomology* (1823–1840), one of many modern examples being L. H. Newman and E. Mansell, *The Complete British Butterflies in Colour* (1968). In each of her plates the plant occupies most of the space and is so well portrayed that its identification presents no difficulty; over it crawl or around it fly her beloved insects. As might be expected, the plants themselves are common wild or cultivated species long known to botanists. Aesthetically pleasing and of great entomological interest, *Der Raupen wunderbare Verwandlung* has a botanical relevance only in that it exhibited Maria's proficiency in accurately drawing plants and set the style for her grander and much more important *Metamorphosis Insectorum Surinamensium* (1705).

The genesis of that work may be traced back to some kind of religious and emotional change in her life about 1685. Now aged 38, she parted from her husband and, accompanied by her widowed mother and two daughters, went to Castle Waltha at Wieuwerd, Friesland, Netherlands, where her stepbrother Caspar Merian lived as a member of a religious community, the Labadists, founded by a one-time French Jesuit, Jean de Labadie (1610–1674). This castle had been made available to the Labadists by the owner, Cornelius van Sommersdijk, governor of Surinam, northern South America. Under his protection and with his encouragement, the Labadists had established a settlement, called Providentia, in Surinam: here his sisters lived. Maria saw in Castle Waltha fine entrancing specimens of butterflies from Surinam so much larger and more brilliant than those of Europe with which she was well acquainted. Nobody knew much about them except for their provenance. To Maria, despite her age and potential hardships, their investigation in Surinam offered an alluring prospect. For the Dutch the time was part of their "Golden Century" with commercial prosperity and artistic development at home and successful imperial expansion in the East Indies and northern South America. They could not wrest Brazil from the Portuguese but they held Surinam. Wealthy burghers in Amsterdam formed little private museums with sea-shells, stuffed birds, minerals and showy butterflies from the Dutch tropical possessions, of which Surinam was the nearest. In 1691 Maria and her two daughters left Castle Waltha for Amsterdam. Here she

came to know the botanists, Caspar Commelin (1668–1731), the medical professor, Frederic Ruysch, and important city officials, such as Nicolaas Witsen and Jonas Witsen, and to examine their collections.

In July 1699 she achieved her ambition of sailing to Surinam with her daughters. For a woman to risk her life in an unpleasant tropical country with all its hazards to health simply to investigate and paint insects and plants was extraordinary indeed at this time, but Maria was an extraordinary woman. They reached the capital, Paramaribo, after an uncomfortable voyage lasting two months. She was now 52 and found the heat of Surinam almost unendurable, the luxuriant vegetation and teeming insect life bewildering, the attitude of the Dutch settlers uncongenial; in her opinion, they thought of little but the cultivation of sugar, were lazy and selfish and treated brutally their African and Amerindian slaves and servants. Nevertheless, despite illness and discomfort, she stayed in Surinam until June 1701, collecting caterpillars and feeding them with the plants on which they lived, observing and painting their stages of development, especially the mature insects. Presumably the plants came mostly from the gardens and the jungle around Paramaribo, although in April 1701 she traveled up river to the Labadist settlement, Providentia. Her interest was in the insects, only incidentally in wild plants; she painted the plants both wild and cultivated as settings for insects but with the same care as in her *Der Raupern wunderbare Verwandlung*, though on a much grander scale, and thereby achieved her standing as a pioneer botanical artist in the tropics. After nearly two years of such work, she decided her health would stand it no longer. She reached Holland again on 23 September 1701.

Back in Amsterdam with her drawings and paintings, notes and specimens Maria was at first uncertain what she should do with them, for she evidently needed money. According to her own statement, several amateur naturalists saw her paintings of Surinam insects and plants and persuaded her to get them published. This was a costly and difficult undertaking but resulted in the publication in 1705 of the superb folio work, *Metamorphosis Insectorum Surinamensium*, one version with text in Dutch written by her, another with text translated into Latin presumably by Caspar Commelin who supplied botanical notes to both versions, issued with the 60 copperplate engravings either plain or carefully hand-coloured. She hoped to have versions also with the text in German and English, but plans for these had no success.

This work brought to naturalists and book-collectors of Europe vivid and surprising portrayals of tropical plants and animals such as no publication had ever done before. The plates were decorative quite apart from their high scientific interest. Most of the insects were new to science. As regards the plants, those introduced from Europe, such as the pomegranate (plates 9, 49), the fig (plate 33), the grapevine (plates 34, 47) and the castor-oil plant (plate 30), were well-known and had been illustrated already, but nowhere better. Her plates provided fine illustrations of the citrus fruits: lime (plate 17), citron (plate 28), shaddock or pomelo (plate 29), Seville orange (plate 52). Here too were illustrations of tropical economic plants then little-known or unknown in Europe, such as the pineapple (plates 1, 2), manihot (plates 4, 5), prickly custard-apple (plate 14), cacao (plate 26) and sweet potato (plate 41). Truly wild plants received less attention but they included *Solanum stramonifolium* (plate 6), *Erythrina fusca* (plate 11), *Bursera simaruba* (plate 20), *Hippeastrum puniceum* (plate 22), *Vanilla planifolia* (plate 25), *Solanum mammosum* (plate 27), *Muellera frutescens* (plate 35), *Costus arabicus* (plate 36), *Ludwigia octovalvis* (plate 39), *Heliconia psittacorum* (plate 41), *Duroia eriopila* (plate 43), *Ipomoea alba* (plate 50), *Inga ingoides* (plate 51), *Heliconia acuminata* (plate 54), *Eichhornia crassipes* (plate 56), *Sesuvium portulacastrum* (plate 59) and *Pachystachys coccinea* (plate 60). These alone would establish Maria Sibylla Merian as a botanical artist even though she made some curious mistakes; thus when a ripe fruit of cashew, *Anacardium occidentale*, was brought to her, she mistook the swollen fruit-like pedicel for the fruit itself, which is small, and attached it to the stem upside down in her plate 16. There exist, however, many other coloured plant illustrations by

her, some, such as those at Leningrad, which have been recently published, some others in the British Library Department of Prints and Drawings, which have never been published. Exposed to excessive light on a stairway in Rosenborg Palace, Copenhagen, other unpublished plant illustrations by her have been allowed to deteriorate. All display her delight in the world of nature and her meticulous craftsmanship. She preferred to work on vellum, particularly the costly fine white vellum, on which she could paint with the precision especially required in the delineation of insects. The extent of her published botanical achievement with tropical plants can be judged from the list below of identifications of her *Metamorphosis Insectorum Surinamensium*. This won her international renown before her death in Leiden on 13 January 1717; it remains a splendid lasting memorial of a remarkable woman, one whose ability and industry would certainly have gained her high appreciation at any later period but whose enterprise, originality, determination and courage stand out especially against her 17th-century background.

Plants Illustrated in Merian's 'Metamorphosis Insectorum Surinamensium' (1705)

Linnaeus was well acquainted with Merian's work, which he cited for a few species of plants in his *Species Plantarum* (1753) and for many species of insects in his *Systema Naturae*, 10th ed. (1758). Thus he cited her plate 21 under *Passiflora laurifolia*, plate 13 under *Spondias mombin*, plate 25 under *Epidendrum vanilla*, plate 26 under *Theobroma cacao*, plate 31 under *Hibiscus mutabilis*, plate 36 under *Costus arabicus*, plate 45 under *Poinciana pulcherrima*. Presumably he ignored some excellent plates because they represented species already well-known, such as *Ricinus communis*, *Punica granatum* and *Vitis vinifera*, and some because they represented species, such as *Muellera frutescens* and *Erythrina fusca*, completely unknown to him. He cited plate 22 under *Amaryllis belladonna* (cf. Tjaden, 1981).

The help of Dr. Jan C. Lindeman (Utrecht), Mr. David Philcox (Kew) and Dr. Roger M. Polhill (Kew) in identifying some of the plants depicted is gratefully acknowledged.

1. <i>Ananas comosus</i> (L.) Merr.	Pineapple
2. <i>Ananas comosus</i> (L.) Merr.	Pineapple
3. <i>Annona squamosa</i> L.	Sweetsop
4. <i>Manihot esculenta</i> Crantz	Manihot
5. <i>Manihot esculenta</i> Crantz	Manihot
6. <i>Solanum stramonifolium</i> Jacq.	
7. <i>Malpighia puniceifolia</i> L.	Trinidad Cherry
8. <i>Plumeria rubra</i> L.	Frangipani
9. <i>Punica granatum</i> L.	Pomegranate
10. <i>Gossypium barbadense</i> L.	Cotton
11. <i>Erythrina fusca</i> Lour.	
12. <i>Musa paradisiaca</i> L.	Banana
13. <i>Spondias mombin</i> L.	Hog Plum
14. <i>Annona muricata</i> L.	Prickly Custard-apple
15. <i>Citrullus lanatus</i> (Thunb.) Matsum. & Nakai	Watermelon
16. <i>Anacardium occidentale</i> L.	Cashew
17. <i>Citrus aurantiifolia</i> (Christm.) Swingle	Lime
18. <i>Psidium guineense</i> Swartz	Guava
19. <i>Psidium guineense</i> Swartz	Guava
20. <i>Bursera simaruba</i> (L.) Sarg.	
21. <i>Passiflora laurifolia</i> L.	Yellow Granadilla
22. <i>Hippeastrum puniceum</i> (Lam.) Voss (<i>Amaryllis belladonna</i> L., pp. ?)	Amaryllis
23. <i>Musa paradisiaca</i> L.	Banana

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|--|-------------------------------|
| 24. <i>Argemone mexicana</i> L. | Mexican Poppy |
| 25. <i>Vanilla planifolia</i> Andr. | Vanilla |
| 26. <i>Theobroma cacao</i> L. | Cacao |
| 27. <i>Solanum mammosum</i> L. | Nipplefruit |
| 28. <i>Citrus medica</i> L. | Citron |
| 29. <i>Citrus maxima</i> (Burman)
Merr. | Shaddock, Pomelo |
| 30. <i>Ricinus communis</i> L. | Castor-oil Plant |
| 31. <i>Hibiscus mutabilis</i> L. | Cotton Rose |
| 32. <i>Cassia occidentalis</i> L. | Styptic Weed |
| 33. <i>Ficus carica</i> L. | Fig |
| 34. <i>Vitis vinifera</i> L. | Grape-vine |
| 35. <i>Muelleria frutescens</i> (Aublet) Standley | |
| 36. <i>Costus arabicus</i> L. | |
| 37. <i>Hibiscus sabdariffa</i> L. | |
| 38. <i>Jatropha gossypifolia</i> L. | |
| 39. <i>Ludwigia octovalvis</i> (Jacq.) Raven | |
| 40. <i>Carica papaya</i> L. | Pawpaw |
| 41. <i>Heliconia psittacorum</i> L. fil.
<i>Ipomoea batatas</i> (L.) Lam. | Parrot Flower
Sweet Potato |
| 42. <i>Abelmoschus moschatus</i> Medikus | Musk Mallow |
| 43. <i>Duroia eriopila</i> L. fil. | |
| 44. <i>Bixa orellana</i> L. | Annatto |
| 45. <i>Caesalpinia pulcherrima</i> (L.) Swartz | Barbados Pride |
| 46. <i>Jasminum grandiflorum</i> L. | Royal Jasmine |
| 47. <i>Vitis vinifera</i> L. | Grape-vine |
| 48. <i>Genipa americana</i> L. as to fruit | Genip |
| 49. <i>Punica granatum</i> L. | Double-flowered Pomegranate |
| 50. <i>Ipomoea alba</i> L. | Moonflower |
| 51. <i>Inga ingoides</i> (Rich.) Willd. | |
| 52. <i>Citrus aurantium</i> L. | Seville Orange |
| 53. Plant unidentified | |
| 54. <i>Heliconia acuminata</i> Rich. | |
| 55. <i>Capsicum annum</i> L. | Red Pepper |
| 56. <i>Eichhornia crassipes</i> (C. Martius)
Solms-Laub. | Water-hyacinth |
| 57. <i>Psidium guineense</i> Swartz | Guava |
| 58. <i>Inga species</i> | |
| 59. <i>Sesuvium portulacastrum</i> (L.) L. | |
| 60. <i>Pachystachys coccinea</i> (Aublet) Nees | |

Editions of Merian's Metamorphosis Insectorum Surinamensium

- 1705A. Dutch text. 60 plates. Amsterdam
 1705B. Latin text. 60 plates. Amsterdam
 1719A. Dutch text. 72 plates. Amsterdam
 1719B. Latin text. 72 plates. Amsterdam
 1726. Latin and French text. 72 plates. The Hague
 1730. Dutch text. 72 plates. Amsterdam
 1771. Latin and French text. 72 plates. Paris

Bibliographical details of these editions will be found in Max Adolf Pfeiffer's *Die Werke von Maria Sibylle Merian* (Meissen, 1931) which was, however, limited to 99 copies.

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