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Maria Sibylla Merian, naturalist and artist (1647–1717): a commemoration on the occasion of the 350th anniversary of her birth

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Maria Sibylla Merian was born on 2 April 1647 in Frankfurt (Germany) and grew up among artists. She was one of the first who studied the metamorphoses of insects, preceded by the Dutch naturalists Johannes Goedaert (1620–1668) and Jan Swammerdam (1637–1680). From 1674 she began to investigate these metamorphoses systematically, resulting in her first scientific book *Der Raupen wunderbare Verwandlung und sonderbare Blumen-nahrung* [The wondrous transformation of caterpillars and their remarkable diet of flowers]. The first part of this book was published in Nuremberg in 1679, containing 50 plates in quarto, all engraved by herself, and the second part in Frankfurt in 1683. Now she had discovered her definitive style, depicting the life cycle of a butterfly on the caterpillar's host plant in natural size on one plate, in a beautiful lay-out.

In 1685 she entered a Labadist cloister in Friesland, joined by her mother and her two daughters. However, as early as 1691 she left this cloister and settled in Amsterdam. From here she undertook an expedition to Surinam in 1699 to study its superb natural history, accompanied by her younger daughter. She stayed there for only 21 months because she became seriously ill, but she recovered and the publication of her folio volume on the metamorphoses of Surinam insects in 1705 made her world-famous among natural scientists and art historians alike. However, she was also criticized and the reasons for this are discussed.

An additional letter by Merian (17 letters were hitherto known) was discovered in a Parisian collection.

INTRODUCTION

Maria Sibylla Merian was one of the first to study the metamorphoses of insects, preceded by the Dutch naturalists Johannes Goedaert (1620–1668) and Jan Swammerdam (1637–1680). She must have been an exceptionally enterprising and versatile woman. It became her speciality to rear caterpillars and other developmental stages on their host plants and to depict the life cycle of every insect along with its host plant on parchment. She could also engrave such insect life cycles on copper, in a very artistic arrangement. New in her treatment of the subject were her emphasis on

the host plant and the artistic lay-out of her plates. She had developed her ultimate style as early as 1679, the year in which the first part of her “caterpillar book” appeared; the second part was published in 1683. In 1685 she moved to The Netherlands, where she continued her research on the development of European moths and butterflies.

Her main claim to fame is that she was the first to observe the metamorphosis of tropical insects. To this end, she undertook a journey to Surinam in 1699, at the age of 52, accompanied by the younger of her two daughters. Although forced to return earlier than planned because of a serious illness, she managed to have her observations on Surinam insects published in 1705, in a beautiful book with 60 plates in folio called *Metamorphosis Insectorum Surinamensium*. This pioneering work, which was printed in Amsterdam, in Latin and in Dutch, soon made her world-famous. Indeed, it is considered to be one of the most beautiful natural history books ever published. She had a clear, direct style of writing, as appears from her preface to the book, entitled “Maria Sibylla Merian to the reader”, which is given here in translation as it can be regarded as a concise autobiography.¹

From my youth onwards I have been concerned with the study of insects, in which I began with silk-worms in my native city, Frankfurt am Main; then I observed the far more beautiful butterflies and moths that developed from caterpillars other than silk-worms, which led me to collect all the caterpillars I could find in order to study their metamorphosis. I therefore withdrew from society and devoted myself to these investigations; at the same time I wished to become proficient in the skill of painting in order to paint and describe them from life. Thus I depicted all the insects I could find, first of all at Frankfurt and then at Nuremberg, painting in great exactitude on vellum. By chance these paintings were seen by several amateur naturalists who pressed me to publish my observations for the enquiry and pleasure of others interested in natural history. I was finally persuaded to do so and engraved them with my own hand on copper; the first part was published in quarto format in 1679, the second part in 1683. Later I moved to Friesland and Holland where I continued my studies of insects, especially in Friesland, for in Holland I had less opportunity than elsewhere to find what is found specifically in heath and moorland. However, this need was supplied by other amateurs who brought me caterpillars so that I could observe their metamorphosis; in this way I gathered many observations which I was able to add to the two previous parts.

In Holland I saw with wonderment the beautiful creatures brought back from the East and West Indies, especially when I had the honour to be able to see the splendid collection belonging to the Most Honourable Gentleman Dr Nicolaas Witsen, Burgomaster of the city of Amsterdam and President of the East India Company, as also that of the Honourable Gentleman Mr Jonas Witsen, Secretary of that city. In addition I also saw the collection of Mr Frederick Ruysch, Medicinæ Doctor, Anatomes et Botanices Professor, the one belonging to Livinus Vincent, and many others, in which I found these and countless other insects, but without their origins and subsequent development, in other words, how they develop from caterpillars into chrysalises and so on.

All this stimulated me to undertake a long and costly journey to Surinam (a hot and humid land from where the above-mentioned gentlemen had obtained these insects) in order to pursue my investigations further; accordingly in June 1699 I travelled there to carry out more precise investigations; I remained there until June 1701; I then returned to Holland, where I arrived on 23 September. I made these 60 drawings, with corresponding observations, painted on vellum directly from life; both these and the mounted creatures may be seen at my house. I did not find in that land the opportunities I had hoped for to observe the insects, for the climate there is very hot and the heat did not agree with me; for this reason I felt compelled to return sooner than I had planned.

After I had come back to Holland and my paintings had been seen by several amateur naturalists, they pressed me considerably to have them published, for they were of the opinion that this was the first and most remarkable work ever painted in America. The cost involved in carrying out this work dissuaded me at first, but finally I decided to go ahead.

This work consists of 60 copperplate engravings whereon about 90 studies of caterpillars, worms and maggots are depicted, showing how they change in colour and form when they shed their skins

and finally change into butterflies, moths, beetles, bees and flies. All these little creatures were placed on the plants, flowers and fruit which they ate for nourishment; I have also included here species of West Indian spiders, ants, snakes, lizards, rare toads and frogs, all of which I myself sketched and observed from life, with the exception of a few I added on the testimony of the Indians.

In making this work I did not seek to profit myself; rather, I was content merely to cover my costs; I spared no expense in executing this work; I had the plates engraved by the most renowned masters, and used the best paper in order to please both the connoisseurs of art and the amateur naturalists interested in insects and plants. It will also give me great pleasure to hear that I have achieved my aim at the same time as giving people pleasure.

BIOGRAPHY

Maria Sibylla Merian grew up among artists. She was born on 2 April 1647 in Frankfurt am Main, a daughter of the celebrated engraver, publisher and topographical artist Matthaeus Merian the Elder (1593–1650). After the death of his first wife Maria Magdalena (daughter of the engraver/publisher Johannes Theodor de Bry) in 1645, he remarried the next year Johanna Catharina Heim, whose brother was a Dutch Reformed vicar in Hanau. She gave him two more children: Maria Sibylla and a younger brother, who died at the age of 2½. From her father's first marriage, two half-sisters were still alive and three half-brothers, two of which practised the art of painting: Matthaeus the Younger (1621–1687) and Caspar (1627–1686).

After her father's death, her mother remarried in 1651 the successful flower painter Jacob Marrell (1614–1681), a widower who had three small children. They had two more children, who however died young. It was Marrell who encouraged the young girl in her love for animals and plants and her eagerness to draw them by teaching her. His pupil Abraham Mignon (1640–1679) also took pleasure in her enthusiasm and taught her the art of painting and engraving. At the early age of 11 she had mastered the art of engraving on copper (Deckert, 1991: 137). From her "Book of notes and studies" (in the library of the Academy of Sciences in St Petersburg; facsimile with commentary edited by Beer, 1976 — a very important source) we know that at the age of 13 she started her metamorphosis studies with the development of the silkworm, which she reared on mulberry leaves and lettuce.²

On 16 May 1665, at the age of 18, she married Johann Andreas Graff (1637–1701), another pupil of her stepfather, who later specialized in painting and engraving architectural objects. Up to 1670 the couple lived in Frankfurt, where on 5 January 1668 their first daughter Johanna Helena was born. Then they moved to Nuremberg, where according to Von Sandrart (1675; cited from Deckert, 1991: 139) Maria Sibylla seems to have been very active as a painter of still-lives in oil and water-colours, on linen and on vellum and paper. She also prepared her paints and dyes herself and taught the art of flower painting and embroidery to a group of girls in that town. The first instalment of Merian's first book was issued in 1675. It was meant as a book of samples for copying, embroidery etc., hence complete copies of the original edition are nowadays extremely rare. The book appeared in three instalments, each of 12 plates in quarto format, in the years 1675, 1677 and 1680. Its collective title, issued in 1680, reads *Neues Blumenbuch* [New book of flowers]. Though the first part contained seven copies after Nicolas Robert, the other two parts contain only original work. On 16 May 1678 she gave birth to her second daughter Dorothea Maria.

Meanwhile she continued her studies on insect metamorphosis, and as a result her first scientific work, the first part of her “caterpillar book”, containing 50 plates in quarto, all engraved by herself, was published in Nuremberg in 1679. Its title reads *Der Raupen wunderbare Verwandlung und sonderbare Blumen-nahrung* [The wondrous transformation of caterpillars and their remarkable diet of flowers]. Now she had discovered her definitive style, depicting the life cycle of a butterfly on the caterpillar’s host plant in natural size on one plate, in a beautiful lay-out. Sometimes she added other animals in order to obtain a pleasing composition. The insects and other animals were first painted on small pieces of parchment, which she collected in her “Book of notes and studies” that contains the prototypes of nearly all her animal studies. Then she made an artistic composition of the host plant with all the metamorphoses of the insect as observed by her (mostly except its egg), again painted on parchment. Next she engraved this representation on a copperplate. After printing, she got a mirror image of the original representation, which could be coloured by hand or not. She often did the colouring herself. A book that was coloured by the author was a new phenomenon at the time.

In 1681 her stepfather Marrell died, and Maria Sibylla left Nuremberg for Frankfurt to help her mother; her husband followed shortly. Here appeared the second part of her “caterpillar book” with another 50 plates and accompanying text in 1683. At this time evidently, marriage problems began. On 3 June 1685 she writes to Clara Regina Imhoff, one of her pupils in Nuremberg, that her husband wants to go back to Nuremberg and recommends him to her: “if he should need good advice, I beseech you to look kindly upon him, modest though he is, for he will probably need good advice”. The same year she took a decisive step and entered a religious movement called the Labadists, who had a commune at Castle Walta in Wieuwerd, Friesland.³ Accompanied by her mother and two daughters, she joined her half-brother Caspar Merian, who had already been living there since 1677. This step is difficult to interpret, but Maria Sibylla’s piety is evident from most of her letters and prefaces. Moreover, being the niece of a Calvinist preacher, she had been familiar with piety from childhood. Furthermore, the Labadists did not acknowledge a marriage between a Labadist and a non-Labadist as valid, so that this step in her case also led to a divorce. It seems that her husband tried, in vain, to persuade her to return to him after Caspar Merian’s death in 1686. Despite this, Maria Sibylla stayed with her mother (who died there in 1690) and her children at the Walta Castle up to 1691. Here she began writing the text of her “Book of notes and studies”, starting in a calligraphic hand; later her handwriting became more hasty. It is also clear from this journal that she was allowed to continue her investigations. For, in spite of their austere rules, the Labadists had an open mind to scientific pursuits. In 1686 she described the development of frogs’ eggs and the metamorphosis of tadpoles, long before Leeuwenhoek’s observations of the same phenomenon, communicated to the Royal Society in his letter dated 25 September 1699.

During the summer of 1691 Maria Sibylla and her children left Walta Castle and the Labadists. After having surrendered her rights as a citizen of Frankfurt in 1690, she decided to move to Amsterdam, where she and her daughters soon acquired some fame among the numerous cabinet owners in that town as painters of plants and animals, both exotic and indigenous. Here in 1692 her eldest daughter Johanna Helena

married Jacob Hendrik Herolt, who was likewise a former member of the Labadist community in Wieuwerd and traded with Surinam. Maria Sibylla had already seen some of the beautiful butterflies and caterpillars brought from Surinam by members of the Labadist community who had tried to found a missionary colony there, and she desired to study them alive and in their native surroundings. The prospect of an elderly lady travelling to Surinam in order to study and portray tropical insects in their native settings, seemed absurd to her Dutch contemporaries. It was certainly risky: the death-rate caused by tropical diseases was very high in those days. Nevertheless, she pursued her idea to the end and prepared for the voyage skilfully. Apparently, the whole project was financed by herself (Davis, 1995: 169). It seems that her daughters made a preparatory journey, as she writes to Clara Regina Imhoff on 29 August 1697: “. . . Therefore I wish that I and my children, *who are now so far away* [italics ours], may assist you in any way we can, . . .”.⁴ Thus, in June 1699, at the age of 52, after having drawn up her will, she boarded a ship to Surinam with her younger daughter.

She stayed in Surinam for not more than 21 months because she fell ill, probably suffering from yellow fever (Anon., 1962: 37). Fortunately, she already had amassed a fair amount of observations in the gardens around Paramaribo and in the jungle. The jungle was reached after 4 days' rowing upstream on the Suriname River. Here she stayed at the then southernmost plantation “Providentia”, 65 km inland, which belonged to the Labadist family Van Aerssen van Sommelsdijk.⁵ Her daughter Dorothea assisted her in collecting specimens, as did a few native Indians and black slaves. She got hardly any help from the local Dutch owners of sugar plantations, who ridiculed her for seeking anything other than sugar. After collecting caterpillars and their host plants, she reared the caterpillars in splitwooden boxes in her house and waited to observe their metamorphosis into pupa and butterfly, just as she had done in Germany and Holland. She drew the most perishable stages as soon as possible on pieces of vellum, which she collected in her “Book of notes and studies”, and brought back to Holland an extensive collection of natural history specimens. Back in Amsterdam she went on depicting the butterflies and other animals she had brought with her, dry or preserved in alcohol. Then she started drawing the metamorphosis of each species on a separate plate, in an artistic composition, like she had done for the “caterpillar book”. These plates in folio format were much more impressive however, as they gave an unprecedented glimpse of the teeming insect life of tropical South America, with gorgeous butterflies flying around luxuriantly flowering or fruiting plants and with large many-coloured caterpillars crawling over the leaves.

It appears that she carefully deliberated about publication of these plates in a book, daunted as she was by the expense of such a project. She was however persuaded to go ahead, by scientists and art collectors alike, and in the long run enough people subscribed. Furthermore, she was commissioned to draw some missing figures for another folio book, Rumphius's *Amboinsche Rariteitkamer* [Curiosity cabinet from Amboina], published in 1705, and she was engaged in colouring several copies of it, which gave her some experience in publishing a folio work of this kind, meanwhile earning more funds for her own project.⁶ Thus, in 1705 the sumptuous folio *Metamorphosis Insectorum Surinamensium* was printed for the author in Amsterdam, comprising 60 carefully engraved plates (only three of which were engraved by

herself) in two different text editions, in Latin and Dutch. It immediately made her world-famous among naturalists and art collectors. In all, five editions were published from the original plates, the last one in France in 1771. She did not live to see the second edition, which was published in Amsterdam in 1719. In vain she tried to find enough subscribers for an eventual edition in German or English. Probably this dissuaded her from publishing a second folio, treating mainly Surinam's reptiles and amphibians (original drawings for this cancelled project are preserved in the Academy of Sciences in St Petersburg; see Ullmann *et al.*, 1974).

Yet, in the last years of her life, Merian worked on a third European "caterpillar book", which her daughter Dorothea Maria published posthumously in 1717. Merian also translated the first two volumes of the "caterpillar books" into Dutch and published them in 1713 and 1714, and she continued to work actively until she had a stroke in 1715. After a long illness, she died in her house in Amsterdam on 13 January 1717. In the register of deaths she was listed as a pauper but in spite of this she had her own grave (which no longer exists).

Just before she died, Czar Peter the Great had commanded his court physician, Robert Erskine, to purchase original Merian drawings. On 2 January a deal had been closed between Erskine and Merian's intended son-in-law George Gsell, second husband of Dorothea Maria, which is registered in the books of the Treasurer of the Imperial Household: "On the 2nd of January [1717] . . . for two fat volumes containing loose parchment leaves on which are depicted with all the skill of the art of painting all manner of flowers, butterflies, flies, and other creatures (in all 254 parchment leaves), to be paid to the citizen of Amsterdam George Gsell, three thousand Dutch guilders = 1,200 Joachimsthalers, after they are entered in the column for outgoings". This would mean that Merian was not at all poor when she died; however, according to the Julian calendar then in use in Russia, 2 January 1717 in Russia corresponds with 13 January elsewhere in Europe, so that the Czar's purchase occurred on the last day of her life. This may explain the fact that she was registered as a pauper but still had her own grave. It appears that Erskine also bought a very fine collection of Merian drawings for himself, among which was the "Book of notes and studies". Ultimately, this collection also became the property of the Academy of Sciences in St Petersburg, which at present possesses the best collection of original Merian drawings in the world. (The two next best collections are in London, viz. in the Royal Library at Windsor Castle and in the British Museum; these holdings go back to the great collectors Richard Mead and Sir Hans Sloane, respectively.)

Not only did Czar Peter the Great purchase a large Merian collection, acquaintance with the work of Merian and other Dutch masters even led to the founding of an Academy of Arts in St Petersburg (Lukin in Ullmann *et al.*, 1974: 138). To this end, he persuaded her daughter Dorothea Maria to move to St Petersburg. She and her husband George Gsell became art teachers at the newly-founded Academy of Arts as well as advisors to the Czar on art acquisitions.⁷

EVALUATION OF HER WORK

Merian's work, comprising the worlds of both science and art, was considered extremely valuable by an encyclopedic collector like Czar Peter the Great. Likewise,

Jonas Witsen, Secretary of the city of Amsterdam and his brother Nicolaas Witsen, burgomaster of the city, who was one of the last encyclopedic collectors in Holland, had a high regard for her talent. After her return, some of the specimens she collected and some of her drawings were on display for a while in the town hall of Amsterdam (Kerner, 1992: 116).



Figure 1. Reproduction of the original water-colour on vellum for plate 5 of *Metamorphosis Insectorum Surinamensium* present in the Windsor library. Caterpillar and moth of *Manduca rustica* (Fabricius) on the cassava, *Manihot esculenta* Crantz. Merian added the garden tree-toad *Corallus enhydris* (L.) to complete the decoration of the plate. (Reproduced from the original drawing owned by Her Majesty The Queen; copyright The Royal Collection.)

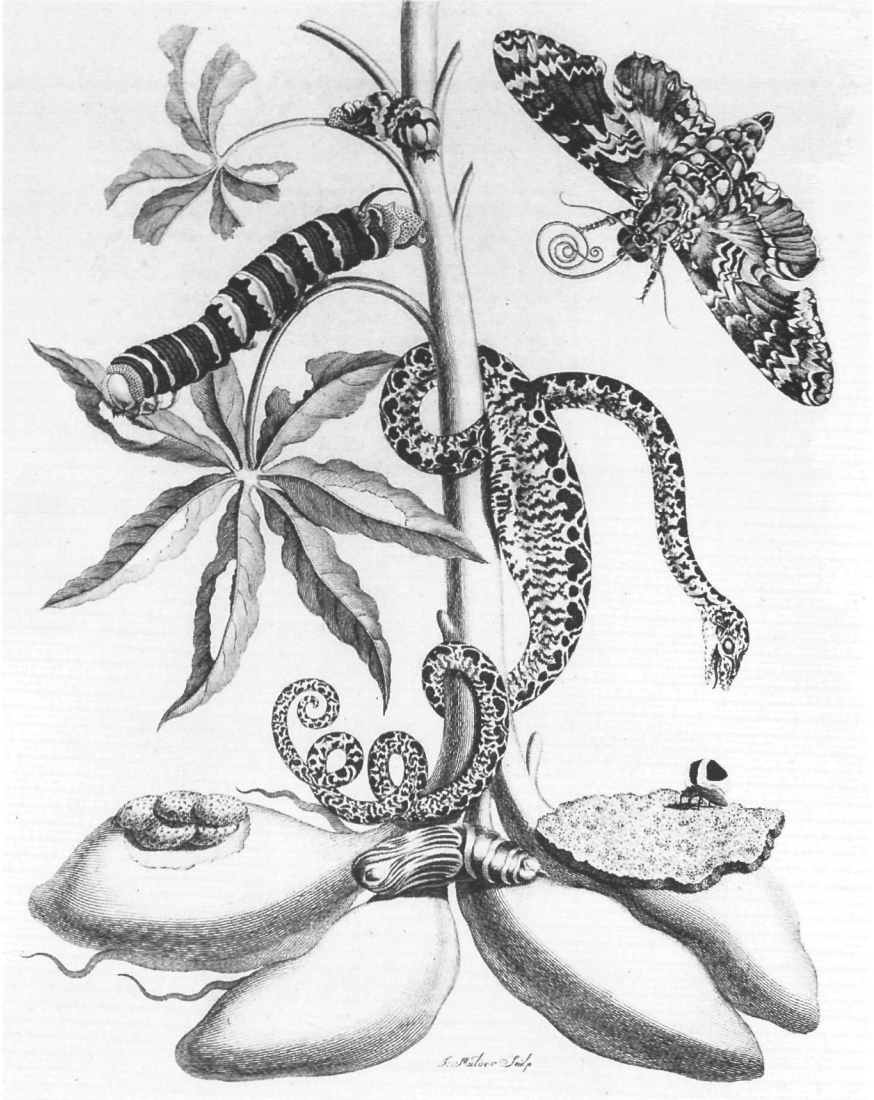


Figure 2. Reproduction of an uncoloured engraving of plate 5 of *Metamorphosis Insectorum Surinamensium*. Please note that this print is in mirror image with respect to the original and signed by the engraver: “J. Mulder Sculp.” Furthermore, the margin of the plate can be observed on the original engraving, but is not visible in the present reproduction. (Photo Artis Library, University of Amsterdam.)

Art critics praised her talent and painting technique, yet found her handbook-like treatment of all stages of an insect, as we find it in many pages of the “caterpillar book” for example, a little offensive. She also acquired fame for her hand-coloured counterproofs, a technique already known at the time but brought to great refinement by her. Counterproofs (also called “transfer prints”, in French “contr’épreuves”, in German “Umdrucke” or “Abklatsche”, and in Dutch “tegendrukken”) were made by pressing a blank sheet of paper against the still wet print of a copper engraving. After

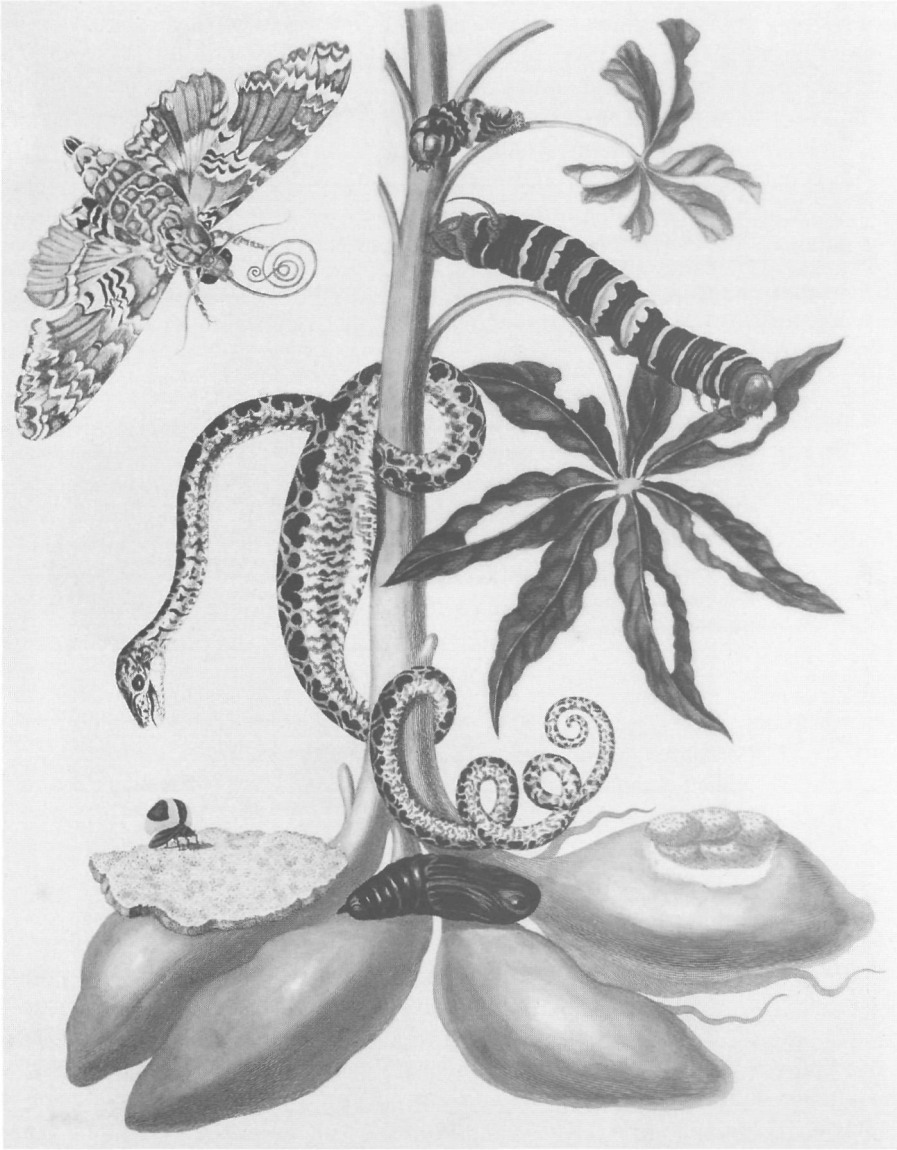


Figure 3. Reproduction of a coloured transfer print of plate 5 of *Metamorphosis Insectorum Surinamensium*. Transfer prints are not printed directly from the copper plate, but impressions are taken from the freshly-printed engraving on which the ink is still wet. They show the engraving in reverse, which corresponds once again to the original water-colour (cf. Figure 1). Furthermore, they do not have the margin of the plate, nor the engraver's signature. The lines are far paler than in the engraving, so that they are more like the underdrawing for a painting (Rücker in Rücker and Stearn, 1982: 58). Please note that there are several changes in composition with respect to Figure 1. Rücker (*op. cit.*: 45–53) made an extensive comparison table of the differences between the engravings and the water-colours in the Windsor library. The copy of the water-colour of plate 5 of the collection in St Petersburg shows fewer differences in composition when compared with the transfer print (cf. Ullmann *et al.*, 1974: pl. 65). However, one should not conclude from this example that the Petersburg water-colours are the “real” originals, as in other cases the Windsor water-colours look more like the plate. (Photo Artis Library, University of Amsterdam.)

colouring, these transfer prints with their soft ink lines looked like original drawings (compare Figures 1–3). She used this technique especially for “de luxe” copies of her Surinam book. Presumably, much of the colouring was done by her two daughters, who seem to have had the same artistic talents as their mother. Nowadays, such colouring activities would probably lower the reputation of an artist, but at the time they were highly appreciated. In any case, her unique drawings on vellum found an avid circle of art collectors in Europe and nowadays her work is scattered worldwide among numerous museums, libraries, and private collectors.

On the other hand natural scientists, though appreciating her acute gift of observation, felt constrained to censure errors. It is true that, in dealing with the insects of Surinam, Merian made a few mistakes, but such mistakes were almost inevitable under the conditions in which she worked. The few mistakes occur particularly in the association of larvae or pupae of one species with mature stages of another insect. In the second edition of her Surinam book, which appeared 2 years after her death, 12 plates were added, two of which were not hers, but engraved after designs in the collection of the pharmacist, merchant and collector Albert Seba (1665–1736). Certainly it would be difficult to attribute the latter two plates to her, textually, artistically, or scientifically (Anon., 1962: 37): here we see American frogs metamorphosing into fish, while in the text it is stated that American frogs metamorphose the other way round, as compared with European frogs! Though it is clear that this mistake may not be attributed to her, the book was nevertheless severely criticized for this reason.

Furthermore, the scientist was accustomed to a formal arrangement of objects on a plate. The way she combined animals of diverse taxa on one plate was decidedly different from the arrangement in classical works like those of Jonston (drawn and engraved by her half-brothers Matthaeus and Caspar Merian!), Willughby, Rumphius, Swammerdam, and others. Worst omission of all, in the eyes of contemporary collectors of natural history specimens: she did not give names to the animals she observed. Merian was merely interested in the biological facts. She painted exactly what she observed and her accompanying texts are concise. Systematization was foreign to her, and names occur with her only in an ethnological context. In the following period of systematization, starting with Linnaeus who cited her illustrations for a few plant species and at least 100 animal species (Stearn, 1978: 18), the scholars active in this study had no use for her pioneering work in the field of biology and thus her work nearly fell into oblivion during the nineteenth century. Besides, her books were very rare, editions probably not exceeding 100 copies, and consequently very expensive for scientists — especially the coloured copies: the subscription prices of a coloured versus an uncoloured copy of her book on Surinam insects were 45 and 15 Dutch guilders. Even Linnaeus complained about the prices of her books.⁸ She mentions these prices in her correspondence, which is published in its entirety as far as traced (17 letters in all) by Rucker in Rucker and Stearn (1982: 61–75). For price comparison, the pay of a Dutch ocean-going sailor came to 9 guilders a month during the entire seventeenth and eighteenth centuries (Roelof van Gelder, pers. comm.).

Incidentally, we discovered another, unpublished Merian letter in the collection of the Fondation Custodia in Paris.⁹ The envelope reads: “A Monsieur/Monsieur Christian/Schlegell groszgünstig/in/Rastadt”. The text of the letter reads (cf. Figure 4):

Amster. d. 2. October. 1711.

Edler Herr!

Insonderr Hochgeehrter Herr, dessen angenehmen Brief vom 19. Septem-
ber habe wohl erhalten, und darauß ersehen, daß begehret wird ein
Exemplar von meinen Indianischen Insecten, corios Illuminirt,
so berichte in freuntlicher gegen antwort, das ein solches Illuminirtes komt
das negste vor 45 fl. Sage vñnf und fertzig Gulden Holländisch, und
von den Ambonischen habe ich noch eines auch corios Illuminirt, das
komt das negste vor 60 fl. Sage sechsßig hollandische Gulden, von dem
Ambonischen werde ich in das künftige ein and unse machen, aber ich
habe auf einen Theil von dem Hochdeutschen in quart herausgeben,
die auch corios Illuminirt seint, das Stück vor 10 Gulden, wan
man sie aber haben will gemahlt so kost das Indianische 75 fl
holländisch und das in quart 20 fl. hollandisch, deren ein in
& erwogen hoffe gethan zu haben erwarte deßwegen eine günstige
antwort, so werde auf

Maria Sibylla von Merian.

Figure 4. The newly-discovered Merian letter in the Fondation Custodia, collection Frits Lugt (cf. note 9).

Amster. d. 2. October. 1711.

Edler Herr!

Insonderr Hochgeehrter Herr, dessen angenehmen Brief vom 19. September habe wohl erhalten, und darauß ersehen, daß begehret wird ein Exemplar von meinen Indianischen Insecten, corios Illuminirt, so berichte in freuntlicher gegen antwort, das ein solches Illuminirtes komt das negste vor 45 fl. Sage vñnf und fertzig Gulden Holländisch, und von den Ambonischen habe ich noch eines auch corios Illuminirt, das komt das negste vor 60 fl. Sage sechsßig hollandische Gulden, von dem Ambonischen werde ich in das künftige keines mehr machen, aber ich habe auch einen Theil von dem Hochdeutschen in quart herausgeben, die auch corios Illuminirt seint, das Stück vor 10 Gulden, wan man sie aber haben will gemahlt so kost das Indianische 75 fl Holländisch und das in quart 20 fl. hollandisch, deren eines in & erwogen hoffe gethan zu haben erwarte deßwegen eine günstige antwort, so werde auf

bevehl die Bücher an Herren von der berg einhendigen gegen richtige bezahlung, und nebst freuntlicher Begrüzung und empfehlung Göttlicher Obhut, verbleibe des Herrn

in allen Ehren dienstgeflissene
Maria Sybilla von Merian

It appears to be a business letter, translated more or less literally:

To Monsieur
Monsieur the generous Gentleman
Mr Christian Schlegell
in
Rastadt
Amster[dam], October 2nd 1711

Mylord!

With regard, most esteemed Sir, to your kind letter of September 19th, which was received in good condition and from which is understood that you wish to have a copy of my Indian Insects, curiously illuminated, I kindly reply that such an illuminated copy may now be obtained at the price of 45 florins, in words forty-five Dutch guilders, and from the Ambon [book] I still have one copy left, also curiously illuminated, which can be had for 60 fl, in words sixty Dutch guilders. I will not make more copies of the Ambon [book], but I also [do have available] a volume I have published in high German in a quarto edition, curiously illuminated too, 10 guilders a volume. When, however, one wants them painted, the Indian [book] [amounts to] 75 Dutch fl and the quarto [book] 20 Dutch fl.

[I] have made this offer in honest hope and therefore expect an affirmative reply, so that, if indeed required, the books may be delivered to Mister Van der Berg against proper payment. Concluding with friendly greetings and commended with God's blessing, [I] remain faithfully mylord's

obedient servant
Maria Sybilla von Merian

The newly-discovered letter is important because here the prices of all her scientific books are mentioned, so that they can be compared. Moreover, she states that she has only one “curiously illuminated” copy left of Rumphius's book *D'Amboinsche Rariteitkamer*, which supports our assumption that she had been mainly engaged in the colouring of it (cf. note 6). Most important is the fact that she mentions here two different prices for a coloured copy of her book on Indian insects (*Metamorphosis Insectorum Surinamensium*), viz. curiously illuminated fl 45, and painted fl 60. The same applies to coloured copies of the book in German (*Der Raupen wunderbare Verwandlung*): curiously illuminated fl 10, and painted fl 20, per volume. In our opinion, the only explanation for these differences in price can be that “curiously illuminated” copies are handcoloured engravings and “painted” copies are handcoloured transfer prints, that look painted as if they were original drawings (cf. Figures 1 and 3).

Summarizing the contemporary evaluation of her work, we could say that what repelled the natural scientist attracted the art connoisseur and vice versa: the first valued her work for its artistic merits in particular, while the second considered it mainly from the scientific point of view. Finally, the failure of her contemporaries to see Merian as a scientist finds its origin in the simple fact that she was a woman. The following quotation from the preface of a manuscript entitled “Description of caterpillars, chrysalises, butterflies, worms, beetles, and lizards by Albertus Seba” testifies to the criticism made of her:¹⁰

The famous Miss Merian has published a booklet in quarto about these bloodless animals, that she has written in Germany, and engraved in copper there. In this booklet cannot be perceived many substantial things, as it is not clear which kinds of caterpillars, or butterflies and moths she is describing.

Likewise, it looks as if it is sufficient to her when she is merely famous, because she has given a book to the world.

With the second book of the above-mentioned lady, a large book in folio, she did better. For that purpose she chose the best masters to engrave her caterpillars, worms, butterflies and moths into copper and she has supplemented and embellished her plates with many kinds of flowers and herbs on which these little animals are arranged.

What an experience has such a lady to stay for a while in such a country like Surinam, to creep in forests and shrubs in order to collect there such little animals and to find out their properties. And that such a tender lady — her sex does not permit this, because a well-armed man has difficulties enough to free himself in order to be not attacked and surprised by a tiger. . . .

Otherwise, this contemporary reviewer of Merian's work could detect only one mistake in her Surinam book, viz. the development of a cicada into a lanternfly. Indeed, in her accompanying text to plate 49 she states that the Indians had assured her that these "flies" develop into lantern flies, so this must be one of the few metamorphoses that she had not observed from life, but which she added on testimony of the Indians, as she admits in her introduction. The reviewer concluded from this: "If all her experiences are accordingly so, they are nothing but expensive pictures."

Apart from that, she was not considered a good example for young ladies, as appears from the Dutch version of a German reading-book by M.G.C. Raff entitled "Natural history for children", adapted by the Dutch lecturer in natural history Johannes le Francq van Berkhey (Berkhey, 1781: 339–340; our translation):

I will show our nephews, nieces, and cousins the illustration and description in the book of Miss Merian.—You will greatly oblige them by communicating them work of this lady, who undertook quite a journey to search for insects in that hot country.—I would not like to go away on such a journey.—It should also be considered as something peculiar, that a lady ventures on going to countries so full of noxious animals.—However, she has acquired much praise.—Sir, I admit this, but I myself would rather do without the ample praise of a *femme savante* for the praise of a modest and experienced housekeeper, which is more proper to our sex, and possibly of greater use; and I choose the knowledge of insects and of natural history only for distraction, because I have observed that one gets entangled in the endless objects to such an extent, that one loses sight of civilian utility in society.—Dear lady, you are judging very wisely, because although this science provides many benefits, it costs time and experience, and if one devotes oneself to it entirely, one has to neglect household duties absolutely. . . .

Notwithstanding all the criticism, her pioneering work has never entirely sunk into oblivion and scientists have honoured her by naming for her at least six plants, nine butterflies, two bugs, one spider (Stuldreher-Nienhuis, 1945: 169–170) and a very large New World lizard, *Tupinambis merianae* (Dumeril & Bibron, 1839) (K. Adler, pers comm.). Only now, after a "Merian-renaissance" during the last quarter of the twentieth century, when many of her original drawings were published for the first time (Valiant, 1993) can we reassess the real value of her pioneering work in the ecology and developmental biology of insects, and her ability to reflect the finest structures of nature visible with the naked eye and the use of lenses in accurate, magnificent drawings.

ACKNOWLEDGEMENTS

We have been fascinated by Maria Sibylla Merian ever since we first saw her original work and her name on the façade of the Artis Library, University of Amsterdam. This lady is honoured here by a marble plate with her name among 35 men of science.¹¹ We shared our fascination for her especially with the late Prof. Dr H. Engel of the



Figure 5. “Rejuvenated” version of a portrait of Maria Sibylla Merian, originally drawn by George Gsell, on a banknote of 500 DM issued in 1992 (cf. Kerner, 1992: pls IX and XVI). Gsell’s portrait seems to be the only reliable portrait of M.S. Merian. Recently it has been proven that the renowned portrait of her in Basle, formerly attributed to her half-brother Matthaeus, cannot represent her. After a recent restoration it appeared that the Basle portrait must be dated around 1655, when she was only 8 years old (Elisabeth Rücker, pers. comm.).

University of Amsterdam (1898–1981), who urged the first author to subscribe immediately to the valuable books by Ullmann *et al.* (1974) and Beer (1976) and discussed their impact with her. Unfortunately, he died before the publication of Rücker and Stearn’s (1982) monumental work.

Our fascination with Merian was encouraged by Rosemarie Tillisch and Gitte Neergaard, who organized an exhibition and a seminar on Merian in Helsingør (Denmark) in 1994 and invited us to present a paper at the seminar. Furthermore, we owe many thanks to Prof. Dr A.D.J. Meeuse, Marianne Arentshorst, Janet Bell Garber and the late Sjouke Pinkster (curator of Crustacea at the Zoological Museum Amsterdam and husband of the first author, who died on 14 October 1996) and Ben van Wissen (head of the exhibition department of the Zoological Museum Amsterdam, who died on 7 February 1996) for their useful comments on the manuscript. We are also grateful to Mária van Berge-Gerbaud, Director of the Fondation Custodia in Paris, for sending us a photograph of the Merian letter and allowing us its publication, and to Saskia Goedmakers for translating parts of Lukina’s book.

The first author felt very honoured when she was invited to give a special presentation on Merian on the occasion of the 350th anniversary of her birth at the International Conference “The natural bridge — the transatlantic exchange”, organized by the Society for the History of Natural History in Charlottesville, Virginia in April 1997. The present paper is essentially based on that talk. We are particularly grateful to Kathryn Morgan and Jean Hammer of the organizing committee at the University of Virginia for assisting us in various ways, before, during and after the conference. Likewise, we owe many thanks to Mrs Rachel Lambert Mellon for allowing us to visit her Oak Spring Garden Library in Upperville (Virginia) with a good collection of Meriana, including one original drawing on vellum.

Shortly before the conference, the Artis Library was visited by Elisabeth Rücker, who was extremely helpful with the transcription of the newly-discovered letter; furthermore we had a wonderful discussion. We were also encouraged by Kurt Wettengl of the Historisches Museum in Frankfurt am Main, who organized an exhibition on Merian that opened at the end of 1997 (Wettengl, 1997). Moreover, we wish to thank some other Merian specialists for sharing our enthusiasm: Corien Barneveld in Hoek van Holland (Netherlands), Tomomi Kinukawa in Madison (Wisconsin), Toos de Peyer in Winchester (U.K.), Londa Schiebinger at Pennsylvania State University (U.S.A.), and Prof. Dr W.T. Stearn (Richmond, U.K.). Finally, we would like to express our gratitude to Dr A.C. van Bruggen (Leiden), Dr L.B. Holthuis (Leiden), Prof. Dr P. Smit (Grootschermer), and the late Prof Dr J.H. Stock (who died on 17 February 1997) for encouraging our research.

NOTES

¹ Quoted from the scrutinized translation of *Metamorphosis Insectorum Surinamensium*, based on the original texts in Dutch and in Latin, in Rücker and Stearn (1982: 85–86).

² Other well-documented biographical sources are: Davis (1995), Smit *et al.* (1986: 180–181), Rücker and Stearn (1982), and Stuldreher-Nienhuis (1945). We have consulted numerous other biographies, e.g. Ludwig (1996), Schiebinger (1993: 203–204), Valiant (1993), Kerner (1992), Valiant (1992), Treue (1992), Deckert (1991), George (1990), Schiebinger (1989: 68–79), Ricci (1986), Rücker (1984), Rücker (1980), Lukina (1980), Engel (1979), Stearn (1978), Ullmann in Beer *et al.* (1974: 15–75), Deckert (1967), Nebel (1964), Anon. (1962), Lendorff (1955), and Schierbeek (1952) omitting some recent novelistic books and many short articles in Dutch and German magazines. For the present biography, we have mainly used Beer (1976) and the four very well-documented sources mentioned above.

³ The Labadists, named after their founder, Jean de Labadie (1610–1674) were one of the numerous groups in the seventeenth century attempting to infuse new life into the rigid orthodoxy of Lutheran faith. They lived in their commune like the first Christians, sharing all their possessions.

⁴ Such a journey of the two daughters to Surinam in 1697 cannot be further substantiated. However, it is certain that just as the mother was adventurous, so too were the daughters. Johanna Helena had left for Surinam by 1711 and may have stayed there with her husband Hendrik Herolt during the rest of her life (Davis, 1995: 200–201 and notes 236, 237 on pp 333–334). The date of her death is unknown. For the fate of Dorothea Maria, see note 7.

⁵ According to Davis (1995: 171), Providence Plantation had become essentially a rental property for the Wieuwerd Labadists at the time. She adds: “This is important to stress in the context of Merian’s life, for previous studies have assumed that the Suriname Labadist community remained a going concern and was part of the attraction for her 1699 journey”. Merian also visited several other plantations.

⁶ The Artis Library, University of Amsterdam, owns a transfer-print copy of Rumphius’s book that is coloured by M.S. Merian herself (Pieters and Rookmaaker, 1994: 20–24, figure 6). We want to stress here that the discovery of 54 unsigned drawings in the former collection of Czar Peter the Great, that look like original drawings for Rumphius’s book, provides no proof that Merian made them originally: two original drawings signed by Pieter de Ruijter can be found in an album with original drawings for Rumphius’s book, owned by the Royal Library at The Hague (see Holthuis, 1959: p 67 and compare the drawing representing *Odontodactylus scyllarus* (L.) on photo 10 nr. 4 bearing De Ruyter’s signature, with figure 90 in Ullmann *et al.*, 1974, attributed to Merian). Probably Merian used these 54 (out of 60) drawings as masters for colouring of the engravings (cf. Rücker in Rücker and Stearn, 1982: 43, who explains that this is the most likely argument for executing copies of original drawings).

⁷ Dorothea died in St Petersburg on 5 May 1743 and her second husband Gsell died there in December 1740 (Stuldreher-Nienhuis, 1945: genealogic table). She left one daughter, Salome Abigaël, who married Leonhard Euler in 1776, and at least two sons (Lukina, 1980: 148–150). Dorothea’s first husband Philip Hendriks probably died in Amsterdam after 1711 (Stuldreher-Nienhuis, 1945: genealogic table); anyhow,

she signed an act of sale of 28 September 1717 as “Dorothea Maria Merian, widow of Philip Hendrix” (Davis, 1995: 333, note 232).

⁸ Linnaeus complained in the dissertation *Incrementa Botanices* (Jacobus Buur respondent, 2 June 1753): “And those who have treated zoology, though they are few, have now nevertheless raised the prices of books in that science to such an extreme, that only students supported by great wealth can acquire them; by way of example we will cite Rumphius, Gualtieri, d’Argenville, Buonanni, Lister on the Testacea; Swammerdam, Réaumur, Roesel, Albin, Edwards, Mme. Merian, Wilkes, Willughby, and a long line of others on Insects and Birds, whose total cost certainly exceeds a thousand ducats.” (Quoted from Heller, 1983: 241.)

⁹ Inv. nr. 7578. Provenance: Messrs J. Pearson & Co. (cf. London, Sotheby, 23 June 1924, No. 53 to Maggs); Maggs (cat. 457, Christmas 1924, No. 2282; Gentili de Giuseppe; Hoepli, Milano; Frits Lugt, acquired 20 November 1961).

¹⁰ Seba’s authorship is questionable (Engel, 1937), frontispiece signed “Otmar Elliger June 1725”, present in the Artis Library, University of Amsterdam, inv. No. Leg. 37 (our translation).

¹¹ For the names of all the men on the façade, see Pieters (1988: 4). The plate is reproduced in Pieters *et al.* (1997), along with the announcement of a “Merian event” organized by the Artis Library on 2 April 1997 on the occasion of her 350th birthday (thus not 4 April as mentioned by several sources — that was the day of her baptism). The Artis Library has a rich collection of “Meriana”, among which are two original gouaches on vellum (reproduced in colour in Stuldreher-Nienhuis (1945: pls. A. 1 and A. 2) and Schierbeek (1952: pls. 23 and 24)).

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