



FIVE

Maria Sibylla Merian

WONDROUS
TRANSFORMATIONS

(1647-1717)

THE YEAR WAS 1700. JUNGLE UNDERGROWTH clung to the woman's skirts like wet fingers as she squinted at the canopy high above. She wasn't young but in her fifties, a European far from home, in the Dutch colony of Surinam (present-day Suriname, South America) . . . and currently frustrated because she couldn't investigate the treetops. But she wasn't always defeated. On one occasion her hired servants climbed a palm tree and brought down a large web of caterpillars. They carried the whole sticky mess back to her house in Paramaribo so that she could study the insects, take notes, and capture one in a drawing. Her helpers sometimes cut down whole trees to enable her to examine the creatures in their leaves.



MARIA SIBILLA MERIAN
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Not everything Maria Sibylla Merian found was beautiful, and she wasn't content just to seek out attractive caterpillars, butterflies, and plants and draw lovely pictures of them, though she was better capable of doing that

OPPOSITE: *Plate XI* from *Maria Sibylla Merian's Metamorphosis insectorum Surinamensium*, 1705; the plant is a swamp immortal (*Erythrina fusca* Loureiro); the insect moth and larva is a giant silk moth (*Arsenura armida*). LEFT: An eighteenth-century Dutch engraving of Maria Sibylla Merian.

than any other artist of her day. Her passion was studying and recording the lifetimes, life cycles, and lifestyles of insects—which caterpillar changed into which pupa, which pupa into which butterfly or moth, to feed and lay its eggs on what plant. And what might happen to it along the way. Why did some pupae erupt in nasty flies instead of moths? What ate what? She put all of it into her drawings. In the introduction to her book *Metamorphosis insectorum Surinamensium*, she wrote that she “described them from life and placed them on the plants, flowers and fruit on which they were found.”

It had been relatively easy to satisfy her curiosity in her garden and the countryside where she had lived in Frankfurt, Nuremberg, and Amsterdam, and even in the restrictive religious community she joined for a time in Wiewert. She had collected many live specimens so that she could watch them develop and change. But in Surinam, too much of what she longed to study was out of reach. In the jungle canopy there were butterflies that she would never see, and even if one of them *were* to venture into reach or fall from the crown of the trees, it was impossible to discover what caterpillar it had come from or on what leaves it laid its eggs. She left Surinam sooner than she had planned, ill with either malaria or yellow fever, discouraged that she had not been able to accomplish all she’d hoped, but nevertheless able to produce a splendid book of drawings and descriptions. No one before her had chronicled metamorphosis so thoroughly and in such detail, nor shown the connections that link a butterfly—she called it a *Sommervögel* (summer bird)—or caterpillar with its life history and environment.

Who was this woman, so obsessed with these creatures that all her life she kept an eye out for a specimen here, an example there, a new kind here, a mysterious appearance there? Who was she, able to put what she found down on paper, in words sometimes but mainly in magnificent pictures? And why, today, does she tend to be remembered, when she is remembered at all, for her art . . . not for her science?

When it came to skillful drawing and engraving, Maria Merian had been given a head start. Her father’s publishing house and printing shop in Frankfurt produced large, exquisitely engraved maps, colorful drawings and



Maria Sibylla Merian's father, publisher Matthäus Merian, in an engraving, c. 1630.

prints, and expensive books. Matthäus Merian had printed editions of *Les Grands Voyages*—initially the work of his first father-in-law, Théodore de Bry—which told stories of journeys to the New World. The workshop would also have had frequent visits from men working in science, other intellectuals, and more unorthodox and sometimes revolutionary characters, all interested in having their ideas correctly recorded and published in printed books. As Maria Merian's biographer Kim Todd described in his book *Chrysalis*, such an establishment was like “a coffeehouse before anyone in Europe drank coffee, where the heady brew was ink.”

This busy, stimulating environment was the scene of Maria's early childhood. As she grew older, she would have taken her own place in that workshop, at least on the level of an apprentice and probably helping run the business, as women in families like Matthäus's often did. But Matthäus died when Maria was only three years old; and when her mother remarried a year later, Maria found herself in a new kind of household with the possibility of a different sort of education. Her stepfather was Jacob Marrel, an art dealer and painter, a pupil of the artist Georg Flegel, whose drawings of plants and insects, particularly beetles and wasps, were arguably the most convincingly naturalistic before Maria's. Marrel preferred to paint still lifes of flowers.

and plant, or between caterpillar and butterfly. The first book, published in 1675, was a success. Maria produced another volume in 1677 and a third in 1680, grouping them under the title *Neues Blumenbuch*.



Title page from volume 3 of Maria's *Neues Blumenbuch* (New Book of Flowers), 1680.

As Sandrart's mention of "the excrement of worms, flies, gnats, [and] spiders" highlighted, Merian's interest was not confined to the sort of beauty that women who purchased her embroidery patterns would appreciate. For instance, she later described a stroll with a friend. They had expected to admire beautiful insects and flowers but "since we encountered nothing there, we moved to a common weed and found these caterpillars on the white dead-nettle." She took some home and watched at least one change into an exquisite moth.

When Maria and Graff's second daughter, Dorothea, was born in 1678, Maria was putting together a book that she intended to be "a new invention." It has a very long title and description: *The Caterpillar's Wondrous Metamorphosis and Particular Nourishment from Flowers in which for the benefit of explorers of nature, art painters and lovers of gardens though a completely new invention the origin, food and development of caterpillars, worms, summer-birds, moths, flies and other such creatures, including their times and characteristics are diligently studied, briefly described from nature, painted, engraved in copper and published by Maria Sibylla Graff herself, daughter of Matthaus Merian the Elder*. The book, first published in 1679 (there would eventually be three volumes), is often referred to as her *Raupen* (Caterpillars), the first word of its German title.

Raupen described her search for insects in Nuremberg and those she brought home to watch develop. When she discovered pupae in holes in her house walls, she watched the moths emerge and fed them sugar water. She encountered anomalies: two differently colored caterpillars spun cocoons and came out as identical moths; one pupa produced flies rather than the expected moth; some caterpillars thrived on a plant that was considered toxic. An image in her *Studienbuch* showed growths on a poplar branch with long, thin galls spreading in the veins of the leaves. She drew the aphids that lived inside the galls and the larvae of a fly that preyed on the aphids . . . not a pretty picture. Yet in 1679, when Maria wrote the introduction to her *Raupen*, her faith in God and his care of creation was still radiant:

These wondrous transformations have happened so many times that one is full of praise for God's mysterious power and his wonderful attention to such insignificant little creatures and unworthy flying things. . . . Thus I am moved to present God's miracles such as these to the world in a little book.

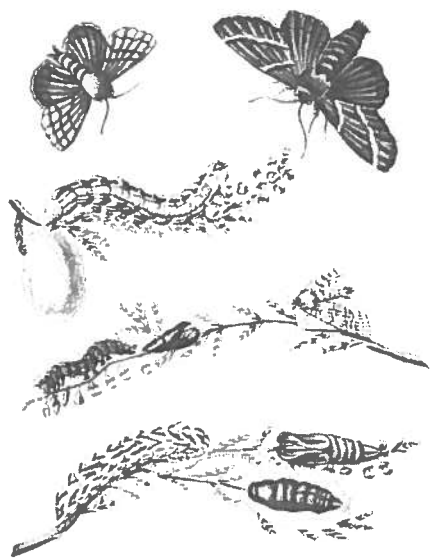


Plate 32 from a 1713 edition of volume 3 of *Der Raupen* (Caterpillars), originally published by Maria in 1679. It depicts the life cycle of a moth on a species of the *Erica* (heath) genus.

Raupen made good on the promise of its title. Maria's interest had shifted almost completely from flowers to insects. Even the roses depicted in *Raupen's* second volume, published in 1683, would be chewed and infested by insects. The whole drama of insect lifetimes and lifestyles was played out in the first volume's

fifty plates, from the laying of eggs on leaves the caterpillar will later eat, to caterpillar, to pupa (again on leaves the butterfly will later eat), to butterfly. It was a stunning, original book, placing each life in the context of other plant and insect life. Nothing like it had been done before, nor would many, except Maria's own, be like it in the future. But she still seemed reluctant to place herself in the same league as her contemporary male scientists. In the introduction to the first volume of *Raupen* she identified herself as a wife working with her husband's permission. Where she might have suggested an explanation for the fact that a fly and moth appeared from the same cocoon, she chose to "leave this to the gentleman scholars."

Maria's thinking was changing in another way as well. Her widowed stepbrother, Caspar Merian, had joined a Pietist religious group led by a man named Jean de Labadie. Pietists preached a simple, devout Lutheranism focused on individual moral choices, rather than on theological debates or church attendance combined with anything-but-Godly lifestyles. Believers didn't require a priest as an intermediary between them and God or Christ or to interpret the Bible for them. Jean de Labadie carried Pietism to

extremes, requiring his followers to divest themselves of all worldly goods and worldly pursuits. A group of "Labadists" lived in a closed community on the grounds of a mansion house called Waltha Castle in the village of Wiewert in West Friesland. The mansion had been loaned to three sisters, Lucia, Maria, and Anna Sommelsdijk by their wealthy brother, Cornelis van Aerssen van Sommelsdijk. He was governor of Surinam, a sugar-producing Dutch colony on the northeast coast of South America, where the Labadists had missions and a plantation.

In 1686, for undisclosed reasons, Maria abandoned her marriage of twenty years, left Graff, and joined the Labadist community at Wiewert in Friesland, taking her elderly mother and her two daughters with her. Dorothea was seven, Johanna seventeen. Maria was thirty-nine.

Men and women who joined the community were encouraged, though probably not strictly required, to abandon lives that had been highly intellectual, active, and fulfilling, rid themselves of all their books, and regard all former learning and accomplishment as vanity. However, hardly any abandoned an intellectual life altogether. Instead, they oriented their passions and intellects toward God. All nationalities were welcome, and sermons were translated simultaneously by those who spoke two or three languages. All levels of society were treated as one (though the Sommelsdijk sisters still lived in the mansion, divested of all ostentatious furnishings) with division only being made based on one's success in adhering to the spiritual aspirations of the community. The Labadists lived in poverty, in rooms that were ice-cold in winter, with food frugally doled out, wearing the simplest dress and hairstyles. They toiled in their common fields and gardens to provide their own food, raised livestock, and produced wool to sell. They pooled all their money and possessions, owning nothing as individuals. Taking undue pleasure in one's work was considered vanity, and, to avoid that, assignments of domestic and farming tasks were often made on the basis of what one *couldn't* do well.

Yet Labadie himself was not a joyless man, nor were many of those who chose to follow him. In words that would have resonated with Maria, he expressed his own interpretation of nature:

Everything we hear or see announces God or figures him. The song of a bird, the bleating of a lamb, the voice of a man. The sight of heaven and its stars, the air and its birds, the sea and its fish, the land and its plants and animals . . . everything tells of God, everything represents him, but few ears and eyes try to hear or see him.

Maria was allowed to keep her books and the materials and supplies she needed to continue her work.

In the summer of 1686, Graff arrived at the gates of the compound to fetch his wife. She refused to return to her marriage. Graff wouldn't leave. He lived just outside the gate, did some construction jobs, and sketched the only picture of the compound that has survived. Eventually he declared himself willing to join a religion that seemed alien to him in order to be with his wife and daughters, but the community refused him. When he became ill, Maria visited him but didn't change her mind. Eventually, Graff departed.

Maria wrote that living in Friesland gave her the opportunity to study "what is found specifically in heath and moorland." Her *Studienbuch* tracked her work meticulously. Two years after the summer when Graff had come, her interest turned again to caterpillars, and this time she became more concerned with questions she had not been able to answer before. Some answers were disturbing and, for a woman absorbed in a religious community, were bound to have caused doubts of a loving God. In paintings



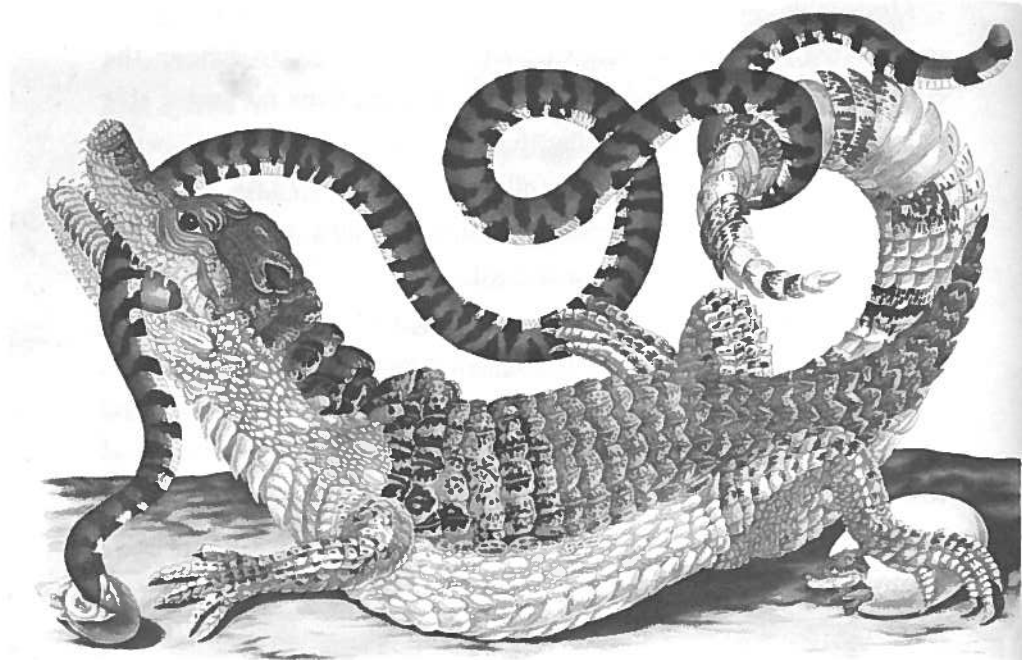
she probably produced at this time, some pupae release flies rather than moths or butterflies. Parasitic flies inside the caterpillar or pupa feed on their living host from the inside out until it dies, then hatch in its place. One of Maria's paintings showed a green-and-yellow caterpillar arching up in its death throes as worms emerge from its back, tiny flies swarming around. There would be no butterfly here. In the same picture, she showed the dead, shriveled-up caterpillar. She described such things as "unnatural."

Labadists had founded communities in the New World, one in the colony of Surinam. During Maria's first years at Wiewert, some of these settlers returned ill and dispirited, and even those who stayed in Surinam sent reports of disease, hunger, and mosquitoes. But others also sent moths, lizards, beetles, and fruit, and once even a twenty-three-foot (seven-meter) stuffed anaconda. The species Maria was studying in Europe did not even begin to hint at the variety and marvels of nature that lay waiting in other parts of the world.

At the same time, the community at Wiewert was beginning to fall apart. The horizons were limited and bleak for young people like Maria's daughters, now thirteen and twenty-three. In the summer of 1691, a serious setback rocked the community when many members became ill and died. In September, Maria and her daughters left Wiewert for Amsterdam. Few cities in Europe could have provided such a dramatic contrast with the secluded community where they had lived for ten years.



Inset detail from a map of Amsterdam by Dutch cartographer Frederick de Wit, c. 1688, showing the port of Amsterdam. Maria and her daughters moved to the city in September 1691.



Merian's hand-colored etching, appearing in Johannes Oosterwyl, ed., *Metamorphosis insectorum Surinamensium*, 1719. Oosterwyl identified it as a dwarf caiman battling a false coral snake. Not every picture that Oosterwyl included in his edition of Merian's book was correctly attributed to Merian, but this one is definitely hers.

While in [Surinam] I painted and described the larvae and caterpillars as well as their food and habits; everything I did not have to paint [immediately] I carried back with me: butterflies, beetles and everything I could preserve in brandy or press I am now painting the way I used to do when I was in Germany, but on vellum in a large format, the plants and creatures life size.

She brought back a crocodile, snakes, iguanas, twenty jars of butterflies, insects, and fireflies. She was able to sell the crocodile, turtles, two large snakes and eighteen small ones, and other insects. Her illustrations would sell for as much as forty-five florins apiece—the equivalent of about \$500 today.

Recovering in Amsterdam and having recouped some of the cost of her passage, Merian took out her *Studienbuch* with the notes, paintings, and sketches she had made in Surinam and set to work on what would be her great book: *Metamorphosis insectorum Surinamensium*, consisting of sixty full-page illustrations and her commentary about each. She would show in meticulously observed detail and vibrant color the life cycles, reproduction, development, and plant environments of caterpillars, moths, butterflies, worms, maggots, beetles, bees, and flies—all in beautifully executed, dynamic paintings, each a separate, exquisite work of art. Merian's style had changed. In these pictures, leaves, stems, and flowers twist and spiral. Plants and insects aren't centered between neat white margins. The riotous abundance of life escapes the boundaries and refuses to obey rules of obvious symmetry. It sometimes seems as though Merian must have craned her neck at uncomfortable angles to see her subjects. Many of these creatures and plants were previously unknown in Europe, and she used the names the Amerindians had given them.

Natural histories written by Merian's contemporaries often included suggestions for medicinal and culinary uses, and Merian followed suit. "One eats [the pineapple] raw or cooked or can make wine or brandy from it." And of the cassava root, "Should a man or an animal drink the extracted juice cold, he or it dies an extremely painful death; but if this water is boiled it makes a very good drink." The root could also be pressed and baked and "has the same taste as a Dutch rusk [Zwieback]."

Merian finished *Metamorphosis insectorum Surinamensium* in April 1705, dedicating the book to "lovers and investigators of nature." In spite of her experience with the violence of the jungle and the "unnatural" parasites that invaded the bodies of living caterpillars, she said in the introduction that she did her work "for the glory of God alone, who created such wonders."

Merian didn't expect anyone to rival her achievement any time soon and wrote in a letter to Volkammer, "this work is rare and will remain rare . . . since the trip is costly and the heat makes living extremely difficult."

The book would place her securely among the scholars of her day, but in her usual deferential manner, its introduction states that

because the world today is very sensitive and the learned differ in their opinions, I have kept simply to my observations; in so doing [providing] material for each individual to draw his own conclusions according to his own understanding and opinion, which he can then evaluate according to his own judgement.

Metamorphosis insectorum Surinamensium was not intended to be a money-making project. Merian knew she would be fortunate merely to cover its costs, for she had decided to make it an extraordinarily beautiful book, a collector's item requiring "the most famous engravers and the best paper so that the connoisseur of art as well as the lover of insects could study it with pleasure and joy." It was a large volume—sixty of the largest-size pages available at the time—and the cost to produce each copy was forty-five florins. To avoid a cash-flow problem, Merian sold subscriptions and advance orders. Always an expert networker and merchandizer of her own work, quick to take advantage of all possible connections, she corresponded with James Petiver, a pro-

digious collector in England, and even suggested that he might introduce her work to Queen Anne of Great Britain. Petiver advertised her books through the *Philosophical Transactions of the Royal Society*. He was no poor merchandizer himself and knew that the oddity of a woman making such an exotic journey was as good a selling point as the paintings. His advertisement read:



Title page of the first edition of Metamorphosis insectorum Surinamensium, 1705.

That Curious Person Madam Maria Sybilla Merian . . . being lately returned from Surinam in the West Indies, doth now propose to publish a Curious History of all those Insects, and their transmutations that she hath there observed, which are many and very rare, with their Description and Figures in large Folio on Imperial Paper, containing 60 Tables, curiously performed from her own Designs and Paintings. These she proposes at thirty shillings a Volume, viz. ten shillings in hand, and ten more at the receipt of one Moity or 30 Tables, and the rest to be delivered on the third payment.

The book was an enormous success, highly praised in intellectual circles, bought by the finest collectors, on display in natural history libraries. It also appeared in aristocratic drawing rooms as what we would call a coffee-table book.

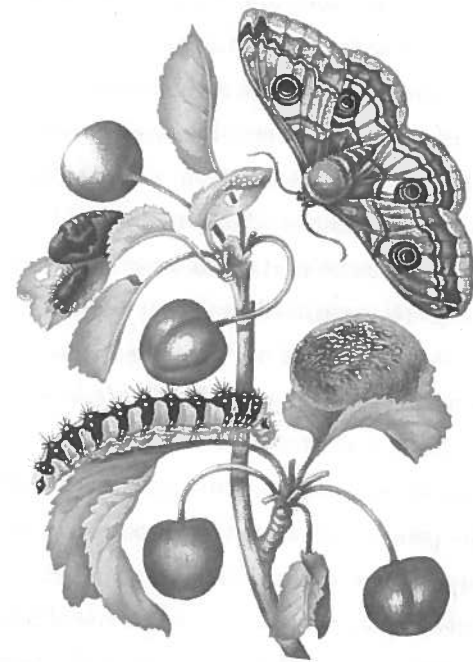


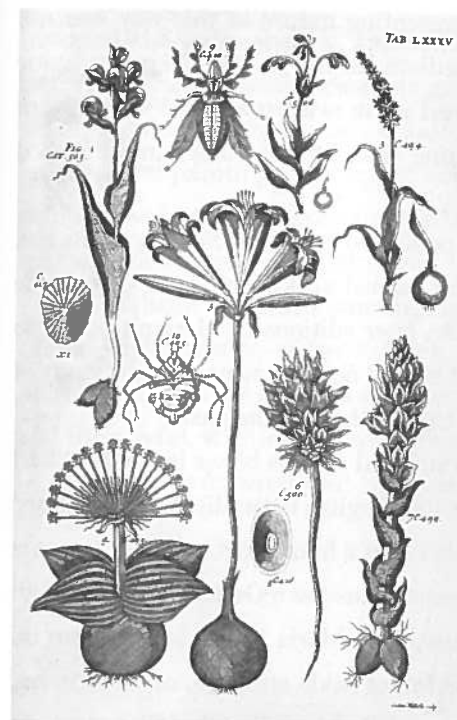
Plate 23 from Der Raupen (Caterpillars), 1679, depicting the life cycle of the small emperor moth (Saturnia pavonia).

With *Metamorphosis insectorum Surinamensium* finished, Merian decided to produce a third volume of her *Raupen*, the caterpillar book, based on her earlier studies in Wiewert. She was able to find examples of the same species she had encountered near the Labadist community and complete investigations she had begun previously. By this time, she'd definitely decided that the flies she had seen emerging from caterpillar cocoons were not the result of spontaneous generation, and she accepted the cruel parasitic process that produced them.

A young scholar from Frankfurt visiting Merian in 1711 wrote that at age sixty-two, she was "still very lively . . . and hard-working, a very courteous woman." The "hard-working" was not to last. After recording that a berry-eating caterpillar emerged from its pupa, Merian made no more entries in her *Studienbuch*. She stopped work on her third *Raupen*, though in 1714 she oversaw the creation of a Dutch edition of the first two volumes with some additional observations, writing in the introduction about the "government of the Creator, which has put such wonderful life and beauty into such small animals that no painter with a brush and paint could achieve as much." In 1715, she suffered a stroke. She died in early January 1716.

In 1717, Russian Czar Peter the Great visited Amsterdam and hired Dorothea's second husband, Georg Gsell, to help him choose art purchases. The Czar bought most of what remained of Merian's work in the Gsell's possession to become part of his own magnificent art collection in Saint Petersburg. He continued to collect Merian's work whenever it became available. Another set of her paintings from the collection of Sir Hans Sloane eventually went to the British Museum and was hung in Windsor Castle.

In spite of this seeming success, Merian's legacy suffered an unfortunate fate. Various people such as Petiver used her material in ways that would have saddened her. Pictures of individual insects and plants that she had carefully placed together in order to make sense of their lives and transformations were extracted from her works and used in a higgledy-piggledy sort of way, or lined up in strict order. Petiver also translated and revised



A page from James Petiver's *Historiam naturalem spectantia*, 1767.

Merian's written words, giving his own names to categories he created. A new, longer edition of *Metamorphosis insectorum Surinamensium* appeared in 1719, published by Johannes Oosterwyk, who added twelve new plates. It is from this edition that the painting of the

caiman and snake in combat comes. Merian had intended it to be part of a reptile book that she never had a chance to produce. Other of Oosterwyk's additions are possibly from another artist and suffer in comparison. Jean Frédéric Bernard in France rearranged the pages of the *Raupen* caterpillar books, added other of Merian's images, took out all her text, and called his book *History of the Insects of Europe*. In these inaccurate reissues, revisions, and many more, the colors in the pictures were sometimes changed or reduced to black and white. As Kim Todd, who traced all these editions, has sadly pointed out, these misrepresentations eventually had a much greater circulation than the originals.

Merian's works undoubtedly continued to influence the representation of nature in art in the eighteenth century, but they were more appreciated as art than as contributions to science. These were the most meticulously drawn and minutely accurate representations of insects, plants, and animals in their environments that anyone produced before the advent of