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Maria Sibylla Merian: Recovering an Eighteenth-Century Legend

Author(s): Sharon Valiant

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## A Review Essay

### Maria Sibylla Merian: Recovering an Eighteenth-Century Legend

Maria Sibylla Merian—scientist, artist, explorer—is recognized in Europe for a lengthy list of extraordinary accomplishments. A portrait of this seventeenth-century middle-class woman, one of the founders of modern zoology, now appears on German currency (500 DM). In the eighteenth century, Linnaeus, Goethe, and others consulted the “famed” Merian, but the nineteenth century so destroyed her reputation that few Americans now recognize the name. Merian remained absent from science history until recently; for most of this century it would have been incomprehensible that a woman played a major role in such an important discipline. Between 1974 and 1982, however, three sets of books on Merian appeared in Germany and England, and those publications are the subject of this review. *Leningrad Watercolors* represents the Merian collection of St. Petersburg, founded by Peter the Great. The second set, *Schmetterlinge, Käfer und Andere Insekten*, exhibits more of the Russian holdings. Lastly, *Metamorphosis Insectorum Surinamensium* and Rücker and Stearn, *Maria Sibylla Merian in Surinam*, is the first published English translation of Merian’s

#### Books reviewed:

Maria Sibylla Merian. *Leningrad Watercolors*. 2 folio vols, boxed. Ernst Ullman, ed. New York and London: Harcourt Brace Jovanovich, 1974. Vol. 1, box, 50 sheets, with text. Vol. 2, 319 pp. Text in Russian, French, German, English. Out of print. \$1500. Set also published under the following titles: (German) *Leningrader Aquarelle*. Leipzig: Edition Leipzig, 1974; Lucerne: C. J. Bucher, 1974. (French) *Les Aquarelles de Léningrad*. Paris, 1974. Limited edition of 1750 copies, 200 with English titles, 200 with French, remainder in other languages. Contents of all copies is the same; only title page varies.

Maria Sibylla Merian. *Schmetterlinge, Käfer und Andere Insekten: Leningrader Studienbuch*. 2 vols, boxed. Wolf-Dietrich Beer, ed. Leipzig: Edition Leipzig, 1976; Lucerne: Reich-Verlag, 1976. Vol. 1, box, 120 sheets. Vol. 2, 417 pp. Essays in Russian, French, German, English; facsimile manuscript in German only. Out of Print.

Maria Sibylla Merian. *Metamorphosis Insectorum Surinamensium*; Elisabeth Rücker and William T. Stearn, *Maria Sibylla Merian in Surinam: Commentary to The Facsimile Edition of “Metamorphosis Insectorum Surinamensium” (Amsterdam, 1705) Based on Original Watercolors in the Royal Library Windsor Castle*. London: Pion, Ltd., 1980, 1982. N.p., 199 pp. Text in English and German. \$2000.

classic volume on South America. This *Surinam* was not reproduced from a printed volume, but from the original watercolors. Each set focuses on a collection of Merian's zoological and botanical art that has remained intact since the early eighteenth century.

In the history of biology, study of small life forms has often led to major advances. Gregor Mendel examined peas in the last century, and more recently Nobel winner Barbara McClintock experimented with corn; in the seventeenth century Maria Sibylla Merian investigated caterpillars. Reptiles, amphibians, and birds are also generously scattered throughout her work (animals of a size she could capture were her usual subjects), but Merian's lifelong focus was the metamorphosis of insects. Born in Frankfurt am Main in 1647, her time began when unicorns, mermaids, and dragons populated books on animals, for little was known beyond medieval bestiaries. Then, in a life that led her from Frankfurt and Nuremberg to Friesland and Amsterdam and on to South America, for over fifty years she captured and studied caterpillars—an activity that continued nearly until her death in 1717. This was the first long-term zoological study and an unprecedented body of work.

Merian was also an artist, and in her work art and science were interdependent. Trained by her stepfather, artist Jacob Marrel, she painted her scientific investigations. Her art “differs from that of her immediate predecessors, and links up directly with Dürer” (*Leningrad Watercolors 2*, p. 60) and, as David Freedberg wrote in “Science, Commerce, and Art” (*Art in History, History in Art*, 1991), “Merian raises the portrayal of insects to great art.” Earlier biographies of Merian, true through *Leningrad Watercolors*, assumed that her mature style developed in Nuremberg in the 1670s, where she saw the art of German Renaissance master Albrecht Dürer. When production of *Leningrad Watercolors* was nearly complete, a discovery was made in St. Petersburg: Merian's journal on insects, written in her own hand. The journal, published as *Schmetterlinge, Käfer und Andere Insekten*, provided a dramatically different chronology for Merian's early life and, to be used successfully, the essays of *Leningrad Watercolors* and *Schmetterlinge, Käfer und Andere Insekten* must be studied together. On circumstantial evidence, the earliest group of botanical works in *Leningrad Watercolors* had been dated to her late adolescence; these are now known to have been painted a full decade earlier, when she was about eight years old. Merian's artistic style was fully developed by the time she was thirteen, the date the journal begins (1660), and remained unchanged throughout her life. The Dürer link is now seen through her stepfather, among whose teachers was Georg Flegel, a follower of Dürer. All three sets align Merian to the German Renaissance; in *Surinam*, some Dutch influence can be detected in Merian's ability to “create a composition, to think in terms of pictorial structure” (Rücker and Stearn, p. 40).

The actual journal dates from the 1680s through 1713, but contains dates as early as 1660; at midlife, Merian recopied earlier notes, then continued recording in her new book. In her journal, she noted when and where she found each specimen, along with details on the metamorphosis, for Merian was breeding her captured insects. And she was carrying out experiments, for example, on the diet of caterpillars—some would take any vegetation, while others would only eat one species of plant. Next to each page of journal notes, she placed a watercolor on scrap parchment of the insect life cycle, including everything from eggs to excrement and parasite attacks (with the parasites sometimes illustrated through their cycle); only a few plants are in evidence. Hundreds of tiny masterpieces, all painted from life, fill this scientific document. Merian's *Surinam* (1705) and three volumes on European caterpillars, *Der Raupen wunderbare Verwandlung und sonderbare Blummahrung* (Part I, Nuremberg, 1679; and, with variant titles, Part II, Frankfurt, 1683; Parts I and II combined with Part III, Amsterdam, 1717), were nearly all copied exactly from her journal. In the publications the metamorphosis of the insect was shown on the food plant. The 1679 title explains the contents: "The wondrous transformation of caterpillars and the plants upon which they feed, wherein, by means of an entirely new inquiry, the origin, food, and changes of caterpillars, worms, butterflies, moths, flies, and other small creatures, together with their times, place, and special characteristics, for the service of naturalists, artists, and garden lovers, are diligently investigated, described, depicted from life, engraved on copper and published by Maria Sibylla Gräffin, daughter of Matthäus Merian the Elder." Merian was married to Johann Andreas Graff, and all titles through 1683 appeared under her married name; the two eventually divorced and she returned to her maiden name. All later publications list Maria Sibylla Merian as author.

The journal editors explain that "documentation, not interpretation is the aim" (*Schmetterlinge, Käfer 2*, p. 138), so some clarification is required. In 1669, Malpighi published the European discovery of the metamorphosis of silkworms. The silkworm metamorphosis, which Merian discovered by accident, was the first entry in her journal in 1660, nearly a decade before Malpighi's publication. The second journal entry (again, 1660) she called "my first undertaking," for that study was deliberate. Eggs first appeared on entry five, then throughout the notebook. Aristotle's theory of spontaneous generation—insects developed from decay and filth—was overturned by Redi's theory that insects came from eggs, published in 1668. The journal indicates Merian's knowledge of those eggs years before Redi's book. While the cycles of nature are so obvious to us, the transition from spontaneous generation theory—which continued in some circles until the nineteenth century—to modern zoology was difficult and not at all smooth. Following that shift came another problem: comprehending that small life forms—

insects, spiders, frogs—would reproduce identical species. Eleazar Albin demonstrated the confusion in *A Natural History of English Insects* (1720): clearly hedging, he thought of “insects, *in general*, being produced by Animal Parents of the same species” (my emphasis). By the end of the seventeenth century, Merian knew facts such as these, information that many others did not understand for nearly a century. Breeding the same insects time and again, always able to compare new studies with earlier notes and art in her journal, she gained access to the natural world as no one before her. To emphasize natural cycles, Merian wrote continuously of eggs. For the 1679 caterpillar book, she opened with a mulberry wreath frontis and on two leaves were clusters of eggs. By *Surinam*, eggs were explained for snakes, lizards, ants, spiders, and frogs. Nature, she demonstrated, was not chaos, but a continuous, self-renewing cycle.

In the introduction to her 1679 caterpillar book, Merian discussed the differences that she had discovered between moths and butterflies—and this is the beginning of a system. Supporting the argument that she had a sense of organization in the animal world are several large study sheets published in *Leningrad Watercolors*. The parchments, all of which contain illustrations of two or more species, were often grouped according to classification systems that were developed much later. For instance, one sheet has a lizard plus what appears to be a strangely marked snake—the second specimen is actually a legless lizard. Another sheet contains a scorpion and spider—both arachnids. Other sheets are either all beetles or all lizards. Yet there is little to indicate that Merian attempted to develop a system; it apparently was not a priority for her. Her goal was to demonstrate biological relationships in the world of the caterpillars, and her books were neither organized nor presented as identification/classification guides.

The genesis of *Surinam* was lengthy. Merian moved to the Netherlands in the 1680s, to that land of cabinet collections filled with wonders from the far-reaching Dutch trading empire. There she saw mounted specimens of tropical butterflies, but with no information on their development. Questions must have grown for years, until in June, 1699, at age fifty-two, she and her daughter set sail for the Dutch colony of Surinam on what may be the first European voyage exclusively for scientific field work. The two women traveled alone, and in the South American rain forest spent two years investigating plants and animals, returning to Amsterdam in 1701. The Rücker and Stearn set focuses on the Merian expedition and represents the most extensive study yet undertaken on the voyage and publication of *Surinam*.

The first state of art work for the large folio *Surinam* was in her journal; the actual compositions for the plates were done on returning to Holland. Merian published her book herself, and it was one of the largest volumes ever to appear. With elegant caterpillars crawling over lush tropical plants,

along with the resulting magnificent butterflies and moths, she revealed to Europeans for the first time the astonishing diversity of the rain forest. There are three sets of original watercolors for *Surinam*: one at Windsor Castle, published by Rücker and Stearn; another that belonged to Hans Sloane and became part of the founding collection of the British Museum; and a partial set purchased by Peter the Great to found the first Russian art museum (published in *Leningrad Watercolors*).

With text accompanying each *Surinam* plate, Merian gave glimpses of her life in the tropics—hunting, breeding, painting. In the introduction she explained that in addition to the metamorphosis of butterflies and moths, she included “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 which I added on the testimony of the Indians.” While in Surinam, Merian had expected cooperation from European colonists, but got none and was clearly left to sort out the jungle on her own. What help she did receive was from native Indians and Africans—both peoples enslaved by the Dutch. One plant, she explained, was used by native women to induce abortion so their children would not be born into slavery. *Surinam* is filled with medical remedies, practical uses of plants for food and shelter, and animal studies far in advance of the time. She recognized the existence of animal behavior: these “caterpillars lie together in a heap, the head of each holding tight on the tail of the next; thus they form a circle and if one separates them they run together again as fast as quicksilver.” Elsewhere, she explained bridges made by leafcutter ants. On animal adaptation: “The tip of each toe of [the frog] foot was provided with a sphere with which nature furnishes the animals who live in marshy areas so that they can run over the surface.” Merian’s studies remain valid today, for “she is the only person to have observed and illustrated stages of development” of many tropical insects (*Schmetterlinge, Käfer 2*, p. 65). On Plate 4, a lizard, she announced that were there enough interest, she would publish a book on these creatures. *Leningrad Watercolors* contains many magnificent large study sheets from the Surinam expedition, at least some of which would have gone into a book on reptiles.

Rücker and Stearn opened another cache of primary source material with the publication of newly discovered correspondence between Merian and London apothecary James Petiver (mentioned also in Ruth Perry’s 1986 biography of Mary Astell). The letters indicate that *Surinam* was unsuccessful in the first edition; Merian probably never had the money to publish her second South American volume. From the original plates, *Surinam* appeared again in 1719, 1726, 1730, and 1771; three editions in just over a decade, 1719–1730, suggests the era in which the book found its audience. The 1705 volume appeared in separate Dutch and Latin printings, with German and English editions planned, but never completed. Petiver

was to be English translator not only of the American volume, but also of the European caterpillar books.

*Leningrad Watercolors* features another book with art by Merian: Rumphius, *D'Amboinsche Rariteikamer* (1705), on shells, shellfish, and minerals of the Dutch East Indies—a publication largely responsible for the wide popularity of shell collecting in the eighteenth century. Georg Rumpf (Rumphius), in the employ of the Dutch East India Company, became interested in animal and plant life while living on the Pacific island of Amboina. The art for his volume was shipped to Holland piecemeal, but most never arrived; by the time the losses were realized, Rumpf had died. Merian was commissioned for the new art, but the specimens were taken from Dutch cabinets—many of the models were not from the Pacific. Merian's name appears nowhere on *Rariteikamer*, and there exist several watercolors for this book that are signed by other artists; these are duplicates of the St. Petersburg holdings. *Rariteikamer* was Rumpf's most popular book, and "it is also certain that Merian's illustrations . . . helped him to that fame" (*Leningrad Watercolors* 2, p. 106). By doing the art for Rumpf's volume, Merian got the money to publish *Surinam* herself.

All three sets give some information on later naturalists who used Merian's work, but far more could have been added. French naturalist René Réaumur knew her books, as did Englishman John Ray. Johann Christoph Volkamer, Augustin Roesel von Rosenhof, Pierre Buchoz, the painting Dietzsch family of Nuremberg, and many others openly copied Merian. Other copies appeared in Oliver Goldsmith's *A History of Earth and Animated Nature* (1774). S. Peter Dance in *Butterflies, Moths & Other Insects* (London: Studio Editions, 1991) wrote that the "artistic significance of her achievement becomes apparent when her work is compared with that of Catesby, Ehret, L'Admiral, Meerburg, Harris, Donovan, and Mrs. Bury, each of whom owed something" to Merian. Linnaeus cited her over a hundred times, and his best student Fabricius, responsible for entomological work, used Merian's books even more heavily. Many "lepidopters which are now connected with names of Linnaeus, Cramer, or Stoll should by right bear Merian's name, for these authors frequently took over and described Merian's studies, without ever actually seeing the species themselves, let alone breeding them" (*Schmetterlinge, Käfer* 2, p. 417). Merian trained both of her daughters as artists; one did some botanical paintings for the *Moninckx Atlas*, the other for Johann Buxbaum's book on plants, both sources used by Linnaeus. Charles Wilson Peale, founder of the first American natural history museum, named a daughter for Merian. Alexander von Humboldt, Charles Darwin's role model, had a portrait painted in which he held a flower—a plant species he named for Merian. The presence of her work in the premier collections of the eighteenth

century, along with references to her as “renowned” and “celebrated,” suggests the elevated status her work once enjoyed.

To more clearly position Merian: her art “was unique in the closing stages of the seventeenth century and was a model for illustration in the natural sciences in the centuries that followed” (*Leningrad Watercolors 2*, p. 8). Important innovations in natural history illustration can be traced to this artist, not the least of which was the large, showy, painted book plate that begins with *Surinam*. Prior to her, it was believed that small animals had to be shown “smally;” Merian proved animals could be drawn in any size so long as they are proportioned to the background. And her art placed animals in their environment—another first. Time is also an important element, for what is seen in Merian’s books—the complete life cycle—develops over an extended period. The style of collapsing several time frames into one composition also originated with this artist. By *Surinam*, cycles were also presented for many plants—bud, flower, fruit. Illustrating the entire metamorphosis of an insect on a single plate—a style followed by Christiaan Sepp, J. J. Ernst, J. J. Roemer, John Abbot, Palisot de Beauvois, and numerous other naturalists of the eighteenth-century—originated with Merian.

While Merian’s influence is traceable in both Germany and France, here I will focus on England. Hans Sloane, a friend of James Petiver, had a collection of Merian’s watercolors several years before her death. Sloane’s neighbor, Mary, Duchess of Beaufort (d. 1715) probably used Sloane’s watercolors for the copies of Merian’s work that appeared in Gloria Cottessloe’s *The Duchess of Beaufort’s Flowers* (Exeter, England: Webb & Bower, 1983). At the urging of the Duchess of Beaufort, Eleazar Albin published *A Natural History of English Insects* (1720), the first English book on butterflies and moths. At least some, probably most, of Albin’s volume was copied (uncredited) from Merian’s European caterpillar books. By the 1730s, the Aurelian Society, the first English group devoted to studying insects, was in existence. Moses Harris, a later member and officer, published *The Aurelian* (1766), considered “the most splendid of all English entomological books.” When Harris, however, needed a reference, he turned to work nearly a century old: “Mariana, who has bred them from the caterpillar, says they feed on most sorts of Plants . . .” Harris cited “Mariana” or “Marian” several times—clearly to let his audience and fellow Aurelians know that when he had to copy, it was from the master. Only guesses are possible as to the importance of Merian’s books to this unusually early zoological society.

That Merian was widely admired in the eighteenth century is easy to establish, but the forces that led to the destruction of her work were also shifting into position. As the earliest of the great classic natural history books, Merian’s *Surinam* has had the longest time to become corrupt, and

it has. With each of the five editions, *Surinam* was issued in both painted and unpainted states. First edition copies that were sold with coloring were painted by Merian; known copies are remarkably similar. Many of the unpainted books, however, later had color added, but were used as little more than coloring books—a common problem in old hand painted volumes. And I would argue that the colored copies sold by publishers beginning with the second edition were painted more for beauty than accuracy. For purposes of studying Merian's *Surinam*, the only volumes that can be used are those traceable to her (Nuremberg, Dresden) or the original watercolors.

Added to the color difficulties, many other bibliographic problems plague Merian's published works; most notably, the number of plates per book. For her three volumes on European caterpillars, originally each book contained fifty plates (150 total), plus a wreath frontis for each book; however, it is common to find the series cited as having more plates. Merian was an art teacher, and her first publications were three books of embroidery patterns (1675, 1678, 1680), each with twelve plates, plus frontis for each. The flowers in the embroidery books were largely copied from De Bry's *Florilegium* (1612) and French artist Nicolas Robert's *Diverse fleurs* (1660); using copies to teach was standard practice in the seventeenth century. The insects on the flowers were Merian's. The embroidery patterns, strictly decorative in intent, were added to the 1730 edition of the caterpillar books. Merian presented no life cycles with the insects on the embroidery plates; however, fictitious life cycles appeared on those illustrations in the 1730 edition—they were added by the printer. Linnaeus, who cited Merian extensively, used the 1730 edition, which explains how an embroidery pattern book got into the classification system. In the nineteenth century, when her reputation was destroyed, critics cited these plates as examples of her unreliable work. In a more recent turn, an auction catalog assigned the entire 1730 edition (including Merian's original 150 plates) as originating with Nicolas Robert. Merian's *Surinam* of 1705 contained sixty plates; twelve more were added to the second and all succeeding editions. It has been determined that the first ten of the twelve added plates were Merian's, drawn from existing collections. One of the added plates was recently reproduced in *The Animal Illustrated 1550–1900* (New York: Abrams and New York Public Library, 1991, p. 100), declaring it not the work of Merian. This was indeed her work; the original watercolor for this lizard was published by Rücker and Stearn in 1982. Other problems with the books are traceable to translations. Merian wrote *Surinam* in Dutch; a friend did the Latin translation for the 1705 edition. The French edition was taken from the Latin, and, until recently, the few excerpts appearing in English were drawn from the French. The language trail has, needless to say, introduced misunderstandings into English. An example: for one

*Surinam* plate, Merian described sap running from a tree. She gave the tree no name (nor did the 1705 Latin text); however, by the time the text arrived in French, it was a rubber tree. A lengthy article in *Natural History* (December 1962) then proceeded to note the “rubber tree” identification as a Merian mistake. A strong recommendation for the Rucker and Stearn set is that for their translation they have returned to Merian’s Dutch text.

Turning to Merian’s nineteenth century critics, all of whom were using corrupt editions: the first blast appears to have been from Rev. Lansdown Guilding (d. 1831), who lived on the Caribbean island of St. Vincent, but was never on the South American continent; he noted having a 1726 *Surinam*. His twenty-page discussion appeared in *Magazine of Natural History* (1834), and much succeeding English language “analysis” is traceable to this publication. Guilding’s article was brutal, racist (Merian credited Africans and Indians who helped her), and overflowed with recommendations for his own work. Merian’s art was “useless,” “rude,” “worthless,” “vile,” and “careless.” It “is difficult to imagine how . . . [the insects] could have been prepared, unless they were sketched from memory.” “Every boy entomologist” could understand this rain forest insect. On his plate by plate analysis, Guilding recorded some of the colors in his copy: Plate 13, “the fruit should have been yellow;” Plate 21, the larva “could never produce a red bug,” and others. These all show correctly in Merian’s original work: the fruit was yellow, the insect not red. After eliminating the color problems, there are actually relatively few specific criticisms of Merian, but the overwhelmingly negative and belittling tone of the article suggested far more than was there. On many insects he had not seen, Guilding inserted phrases such as: “The antennae seem fictitious” (my emphasis). What *he* did not know, Guilding suggested Merian lied about.

In a paper given before the London Zoological Society in 1834, William S. MacLeary attacked a specific *Surinam* illustration—a bird-eating tarantula shown attacking a bird (the largest of all spiders, this species of tarantula has a leg spread about the size of a dinner plate). Tests were conducted to prove a spider would not attack a bird. In 1836, James Duncan published “Memoir of Maria Sibilla Merian,” in W. Jardine’s *Naturalists’ Library*. He based his work on Rev. Guilding, boosted by MacLeary, but Duncan must have known that the article contained serious problems; for, while praising the minister, he changed some of the earlier text—i.e., he was using a different corrupt copy, and his book did not match Guilding’s descriptions. Others joined in this debate that ultimately destroyed the life work of Maria Sibylla Merian. That none of Merian’s English critics had been to South America did not slow them down. Adding more insult, Merian had been copied so extensively in the eighteenth century that many lost track of the source. While the nineteenth century damned her into oblivion, they continued unwittingly to copy her. It is of special interest that

this controversy took place in the era when natural history was becoming an academic discipline. The nineteenth century chose to change the history of science rather than to acknowledge the work of a woman, particularly a woman who credited Africans and native Indians who helped her. In this century, writers continued to copy and embellish the nineteenth-century critics. Martyn Rix, in *The Art of the Plant World* (1981), writes that *Surinam* “has a style very much of its own with strange and sometimes mythical insects and spiders.” Wilfred Blunt’s *The Art of Botanical Illustration* (1950), the source of most current American information on Merian, was drawn completely from nineteenth-century writings.

That said, it is true that there are mistakes in *Surinam*, as there are in all old natural history books. But from the nineteenth century on, Merian’s work was often examined only to search for more errors and, given the corruption of *Surinam*, more could always be found. Other natural history books underwent no such scrutiny. Modern day scientists examining Merian’s original work note the ultimate test: can the species be identified?

The number of positive identifications . . . must be rated extraordinarily high. It is the best proof of the comparative accuracy of her work, which far surpasses that of her predecessors, and many of those who came later. We are fully justified in regarding Maria Sibylla Merian’s discoveries in the field of metamorphosis and biology as a pioneering scientific achievement. . . . [M]any species where she discovered the biological relationships and presented a complete illustration of all stages in a metamorphosis . . . [were] described and named one hundred years and more later, and sometimes less completely. (*Schmetterlinge, Käfer 2*, p. 417)

To sharpen the point on Merian’s critics: the nineteenth century had long forgotten that she was responsible for the art in Rumphius, *Rariteikamer* and, as noted before, many of the shells in that volume were from the Atlantic and Indian Oceans. E. M. Beekman in *The Poison Tree: Selected Writings of Rumphius* . . . (Univ. of Mass. Press, 1981, p. 25) quoted American scholar A. S. Bickmore who in 1865, armed with a copy of *Rariteikamer*, sailed to that remote area of the Pacific for “the purpose of collecting the beautiful shells of those seas. I had chosen that in preference to any other part of the world, because the first collections of shells from the East that was ever described and figured with sufficient accuracy to be of any scientific value was made by Rumphius. . . .” Bickmore continued by noting that Linnaeus “referred to the figures in that work to illustrate a part of his own writings.” And he offered the natives “an extra price for . . . [shells] not represented in that comprehensive work.” Did Bickmore ever realize that he was in the wrong ocean? Probably not, for it never would have occurred to him to question the book, but the same group of people would have looked at Merian’s books only to search for errors. Rumpf is often found in books on the history of science; Merian rarely is.

A few lines on Merian often appear in publications on women in art or science and in surveys of old natural history books. Among modern critics writing in English, the only one I located who treats Merian seriously in the context of seventeenth-century art is David Freedberg. In his essay, mentioned earlier, he suggests that the golden age of Dutch painting might be extended beyond Rembrandt, for art shifted to printed books. The two zoological examples on which he based his argument were Merian's *Surinam* and Rumphius' *Rariteikamer*.

The three sets reviewed here only begin the reassessment of Merian's life and work. *Leningrad Watercolors* contains essays by Helga Ullmann, "Maria Sibylla Merian—Her Time, Her Life and Her Work," Wolf-Dietrich Beer, "Maria Sibylla Merian and the Natural Sciences," and Boris V. Lukin, "On the History of the Collection of the Leningrad Merian Watercolors." This group of experts represented art, science, and the St. Petersburg collections; there was considerable disagreement in their analyses. Particularly valuable was Lukin's essay, for he covered information not available outside Russia. Peter the Great invited Merian's daughter Dorothea, who had accompanied her mother to South America, to move to his new city of St. Petersburg. Lukin gives some details of her life there—including training the artists who accompanied Bering on his second expedition, the one on which the Russians crossed over into North America. In 1743 she died at the home of her son-in-law, the famed mathematician Leonard Euler. The czar's large purchase of Merian's work, negotiations for which were completed in Amsterdam on the last day of the artist's life, was in St. Petersburg by the summer of 1717. The collection by the German artist did not leave the city again until the German siege of Leningrad during World War II, when it was moved across the Ural Mountains for safekeeping. The volume 1 box contains fifty separate large folio reproductions; volume 2 contains essays and an additional 146 color reproductions in reduced format. The collection includes some original art for the three European caterpillar books, *Surinam* and *Rariteikamer*, as well as large study sheets from the Surinam expedition, a series each on flowers and herbs that Merian may have intended to publish, plus several early botanical works. Modern zoological and botanical identifications, where possible, accompany each illustration. Biographical material, much of which has been substantially revised, relies heavily on J. Stuldreher-Nienhuis, *Verborgten Paradijzen: Het Leven en de Werken van Maria Sibylla Merian* (2nd edition, 1952). This edition contains a bibliography of important Merian editions, plus secondary sources, many in Russian and German.

*Schmetterlinge, Käfer und Andere Insekten* contains essays by Irina Lebedeva, "On the History of the 'Leningrad Book of Notes and Studies,'" Wolf-Dietrich Beer, "The Significance of the 'Leningrad Book of Notes and Studies' Biographically and in the History of Maria Sibylla Merian's

Work;” Gerrit Friese, “The Identification of Insects in the Drawings. . . .” Volume 1, box, contains 120 separate sheets, with one to three small parchments per sheet; individual parchments contain from one to several watercolors each—a total of about 1500 individual watercolors. These parchments originally faced the written pages of the journal. Volume 2 contains commentary, plus the reproduction of Merian’s journal. Identification of species, where possible, was included, as well as a bibliography of important Merian editions.

The Rücker and Stearn *Maria Sibylla Merian in Surinam*, which accompanies the volume containing the Windsor Castle *Surinam* watercolors, contains essays, translations, all of Merian’s extant correspondence including the recently discovered Petiver letters, along with the frontis added to the second edition. Additionally, the twelve plates added to the 1719 edition are present. Trimmed to the size of the 1705 *Surinam* (large folio), it appends a complete bibliography of all Merian editions.

Rücker and Stearn had the advantage of access to the earlier publications; however, a few errors were introduced in their text. Merian was described as a Lutheran; she was Calvinist. About 1685 Merian joined a religious sect called the Labadists; their earlier famous member was Anna van Schurman (d. 1678). Evidently all three projects had difficulty locating information on the Labadists; it turns out to be in the New York Public Library, for the sect played a role in colonial North American history. The date given for the dissolution of the Labadists, about 1690, is incorrect; the sect lasted into the 1720s (in Holland and North America) and was a major influence on the Ephrata Commune in Pennsylvania. More information could have been added to the Merian-Petiver discussion, for the two met in Amsterdam, July, 1711 (R. Stearns, “James Petiver,” *Proceedings of the American Antiquarian Society*, 1952). And Petiver’s work toward translating *Surinam* into English was eventually published: Jacobi Petiveri, *Opera* . . . (London, 1767). His text, however, attempted to organize *Surinam* into a system, and much of Merian’s focus—life cycles, biological relationships—was removed. Additionally, Rücker and Stearn note forty-two studies for the Rumphius volume in St. Petersburg, but this accounts for the reproductions in *Leningrad Watercolors*, volume 2 only; additional reproductions are in volume 1—a discussion of the St. Petersburg inventories, including Rumpf, appears in *Schmetterlinge, Käfer und Andere Insekten*. Lastly, for identification of insects and plants, Stearn used Lansdown Guilding’s article as starting point, which results in some identifications between the sets in disagreement. Why he did not build on previously published work was not explained. And, instead of focusing on her contribution to zoology, Stearn presented a full discussion of the Linnaean system, which appeared a half-century after Merian’s death. Since publication of this set, the most famous portrait of Merian (Dutch master, 1679), has

been proved by Dr. Paul-Henry Boerlin of Öffentliche Kunstsammlung, Basel, to be of someone else.

While it is easy to criticize, Merian's art is now scattered from Minneapolis to St. Petersburg, with information in Swedish, Danish, German, Dutch, Russian, and French; thus the scope of the problem in Merian studies becomes obvious. With her work so dispersed, the only hope for serious scholars is unusually fine color reproduction, which is what these sets provide. All three publications, errors notwithstanding, add considerably to knowledge of Merian. *Leningrad Watercolors* contains the widest range of work, childhood through old age, while the journal allows access to the first state of the insect studies. The Rücker and Stearn set features the original watercolors along with an English translation of *Surinam*. As mentioned in the beginning, each set is clearly focused, but that leaves much of Merian's art beyond the range of these discussions. A large body of work, especially on reptiles and amphibians, is still scattered in museums and private collections throughout the world and remains unstudied. The door has only started to open on this singular individual who established much of the foundation of modern zoology.

SHARON VALIANT