
INTERNATIONAL JOURNAL OF SCIENCE ARTS AND COMMERCE

On the Periphery: Women, Science and Caribbean Natural History

Aleric Josephs

Department of History and Archaeology

University of the West Indies, Mona Campus, Kingston 7, Jamaica.

Abstract

Source guides and catalogues attest to the fact that Caribbean natural history has inspired curiosity and study for centuries. If we confine ourselves to published treatises, however, it appears that women participated very little in exploring and documenting the region's natural environment. A very different picture emerges, however, when we turn to women's letters, travelogues, and drawings, where they recorded their observations of Caribbean flora, fauna, rocks, and fossils and through which they shared their findings with the wider community. Focusing on the eighteenth and nineteenth centuries, this paper, "On the Periphery: Women, Science and Caribbean Natural History" recovers these forgotten efforts of women who lived in and visited the Caribbean and examines them in the larger context of women working on the periphery of European science.

Keywords: Caribbean, Women, Sources, Natural History, Science, Environment

Introduction

The natural history of the Caribbean has fascinated Europeans since the sixteenth century. The catalogue of the West Indies Collection of the Main Library of the University of the West Indies lists a number of texts on the natural history of the Caribbean which dates back to the sixteenth century. Special expeditions were mounted during the eighteenth century for scientific research, for the collection of samples of natural history. Given the gendered organization of European society and the increasing institutionalization of the idea of separate spheres from the eighteenth century, women seemed to have been excluded from such expeditions but they found ways to share in garnering information on the regions beyond Europe. By the eighteenth century there was a trend toward separation of popular and professional science which increasingly

excluded women from the professional branch and shifted the image of science from feminine to masculine (Schiebinger, 1991, pp. 20, 146). Yet women remained a part of the European tradition as scientists, albeit, on the periphery supposedly as amateurs, outside the academy, practicing science as ‘an appropriate pastime’. This meant a focus on natural history with particular reference to botany. By the nineteenth century, natural history as botany was seen as ‘feminine science’ as it was linked with some of the traditional domestic activities of women, and suited to the level of their intellectual development: It is not surprising that botany was thought appropriate for women, for it (like pharmacy) was closely allied with ...herbal healing and gardening – fields in which women had long been active...Botany was thought an appropriate pastime for young middle-class women because it took them out into the air and taught them a certain intellectual discipline. (Schiebinger, 1991, pp. 241-242)

As in so many areas of their lives, women pushed the boundaries of the proscription and so what may have been allowed as an appropriate pastime was honed into a skill. Some of these women visited the Caribbean and documented aspects of its natural history. The Caribbean gave the naturalist the chance to indulge his or her interest, but while the work of men such as Hans Sloane (1701), Patrick Browne (1789) and Phillip Henry Gosse (1851) were published as treatises on natural history, women’s study of botany and other natural sciences were rarely published as such until the twentieth century. Women’s observation of Caribbean flora, fauna, rocks, and fossils have survived in their women’s letters, travelogues and drawings. Focusing on the late eighteenth and the nineteenth centuries, this paper recovers some of these forgotten efforts and examines them in the larger context of women working on the periphery of European science.

Voyages to the Caribbean

The Caribbean was part of the itinerary of women such as Maria Riddell, Lydia Byam, Hon. Amelia Murray and Emelia Russell Gurney who travelled outside of Europe in the eighteenth and nineteenth centuries. Their observations suggest an interest beyond mere fascination with the new and exotic; they were in search of specific species of life forms. Of these four women only one used natural history in the title of her publication; Maria Riddell’s (1792) travelogue *Voyages to Madeira, Leeward Caribbean isles*, has a sub-title, “with sketches of the natural history of these island.” Publication more than likely facilitated by the eighteenth century Scottish poet Robert Burns and William Smellie, a member of the Antiquarian and Royal Societies of Edinburgh to whom the manuscript was sent for review. The publication as natural history suggests that her work was received as scientific, beyond the salons of women.

Riddell’s (1792) residence in the Antigua in the late eighteenth century was not for frivolous amusement (Riddell, 1792, p. vi); she devoted much time to the study of the botany, zoology and geology Antigua, St Kitts and Barbuda even though the demands of domestic life meant limited time for study of the environment. Riddell’s (1792) knowledge of the sciences and the existing authorities was not incidental. She applied the *Systema Natural* of Linnaeus (Linnaeus is the

Latin name for Carl Linné, an eighteenth century Swedish naturalist) as well as Pennant's method of classifying the plants and animals of Antigua (Riddell, 1792, p. vii, pp. viii, 58-61). Lydia Byam seemed to have been in Antigua at about the time when Riddell was publishing her text and produced two sets of drawings, *A Collection of Fruits from the West Indies* (1799?) which she dedicated to Princess Elizabeth and *A Collection of Exotics, from the Island of Antigua* (1800) to one Viscountess Galway. Little is known about Lydia Byam beyond her illustrations. The dedication of the collections to members of the nobility suggests that she was an elite woman. Byam's unpublished illustrations indicates an important skill which women brought to the study of the natural history of the Caribbean and although considered an amateur by at least one critics of her day, her work is a graphic record of some of the plants and fruits of one Caribbean island. Hon. Amelia Matilda Murray was a naturalist who went to Cuba in the 1850s to study its natural history and to collect specimens of flowers, shells and fossils. Her *Letters from the United States, Cuba and Canada*, published soon after her return to London, were intended as records to refresh her 'memory at home.' (1856, 1969) Little information has been found to date on Hon. Amelia Murray, but she was obviously of England's elite. She published a number of books between 1847 and 1869 with at least one being an illustrated text on natural history. Her interest in the field seemed to have been serious enough for her to travel in search of exotics; she travelled from Nova Scotia in North America to Cuba by way of Florida searching for particular plants and collecting specimens for the London Museum of Practical Geology. She wrote of "packing up a box of fossils and recent corallines for the London Museum of Practical geology" (pp. 254, 268). She also attempted to identify the species she found by reference to J. C Loudon's (1835) *An Encyclopædia of Gardening*. Murray's (1969) claim that her travel was for 'information and amusement' (p. 240) reinforces the view that botany was an "acceptable pastime" for women. Emelia Russell Gurney (1903) admitted to being a homeopathic and appeared to have been an amateur botanist. From Jamaica in the 1860s she wrote to her mother of the familiar and strange plants she saw (Gurney, 1903, pp. 296, 304). She made no reference to any established schema nor attempted to classify the species she identified, but collected specimens and sketched plants such as the bamboo, coconut palms and cotton tree (Gurney, 1903, pp. 295, 299, 313/314, 316 -17). There is no evidence that the drawings survived.

These women who visited St. Kitts, Antigua, Cuba and Jamaica were obviously of the leisured and elite class who came to the Caribbean for extended vacations or resided for a time. They would have been encouraged to take up botanical studies as an 'appropriate pastime' and would have been part of the informal network of 'scientists' who, "before the advent of the scientific journal" shared information through letters and discussion in their homes of "news of discoveries and observations." (Schiebinger, 1991, 45) This practice in part accounts for the 'hidden' work of women in Caribbean natural history as they employed letters in the tradition of sharing their discoveries with friends. The dedication of a collection of Byam's illustrations to Princess Elizabeth and Viscountess Galway speaks to the role of such women in facilitating the informal discourse. The illustrations printed (between 1799 and 1800) but not published seemed to have

fallen into the hand of other naturalists as her work was criticised in the *Monthly Review*, a catalogue of botany (Volume 30, 1799, pp 333 -334).

Whether they were mere tourists entranced by the exotic and captivating beauty of a strange landscape, or short term residents taking time to study the environment, the accounts of these women, borne of a scientific interest in natural history or mere curiosity, provide data on another side of the Caribbean past, its natural history, through women's eyes. Some accounts were mere qualitative descriptions; others were quite scientific, applying the established scientific classifications of the day. But even the seemingly literary and descriptive accounts provided important information in live and living colour the life forms in their natural environment. These women, according to Gosse's definition, were "naturalists in the proper sense of the word" (Stewart, 1984, p.viii); they described the glory and the loveliness of the scenes, the habitat of the living things being studied. As naturalists they investigated and recorded "the condition of living things...in a state of nature...their connections with the inanimate world around them" and when they drew they drew from life (Stewart, 1984, vii-viii). They were not armchair scientists, merely giving "careful and minute descriptions, accurate admeasurements, and distinctive names" to specimens sent to them by others in the field (Stewart, 1984, viii). Their sojourn was long enough to allow them to observe the specimens, garner local knowledge and make on the spot graphic descriptions of the habitat of the life forms. Their detailed accounts reflected keen observation and a careful process as they searched for particular items and sought clarification, through consultation with the locals, for careful identification. With horticulture seen as women's work, it was not surprising that they observed and noted the floral array – cultivated in a built environment or allowed to grow wild. Unlike the other women who made passing or no reference to the fauna or geology of the region, Maria Riddell (1792) offered a scientific classification of the zoology of the island of Antigua and described aspects of the geology of both St Kitts and Antigua. In this she demonstrated her scientific bent and her willingness to challenge the proscriptions against her gender.

Women's Accounts of the Botany of the Caribbean

From Riddell to Gurney, these women brought to the Caribbean some knowledge of botany and Riddell (1792) in particular brought knowledge of zoology and geology as studied in Europe. While their observations appeared to have been 'hidden' because of the way they were communicated and survived, the knowledge gained was passed on through the informal networks of women on the periphery of European science for consideration by other naturalist. In a 1792 letter to William Smellie, Riddell (1792) claimed that she was invited to submit her work for examination, that it was originally written for the "entertainment and information of friends" and that it was 'by no means as correct as [she] could have wished.'" (pp. v, vi) She seemed apologetic for daring to produce such scientific observations which might have been a reflection more of her knowledge of the gender proscriptions than her belief that her study could not stand up to examination by those who were in the academy. Riddell (1792) told of her "almost total

seclusion from society and dissipation” and her submission to “domestic occupations” as a wife, (p.vi) echoing Lydia Byam’s critic in the *Monthly Review*: “they show that the leisure hours of this lady are better employed than they often are by the dissipated part of her sex.” (Catalogue 46, 1958, Library of British Museum -Natural History) The publication of her observations speaks of the quality of work done by this eighteenth century woman.

Riddell’s (1792) journalistic account of the natural and built landscape of St Kitts, Antigua and Barbuda did not have the effusive literary quality of the accounts of Murray (1856,1969) and Gurney (1903); it bordered on a scientific presentation of facts, yet the pictures were no less graphic. Of the mangrove trees she said:...the most enchanting prospect imagination can paint disclosed itself to our view...whole banks are bordered with tufts of mangrove trees; these flourish only in marshy situations, and by the sea, or in any stream of salt water; out of their spreading branches issue a number of small filaments that descend and penetrate into the earth, take root, rise again above ground, shooting into new branches and leaves. Thus a single mangrove trees can in time produce a whole forest ...these mangroves have the thicket foliage imaginable, a most lovely verdure; the effect they produce by the side of the lake is beautiful beyond description.(Riddell, 1792, p.38)

Her account is more than journalistic; adding an important scientific dimension to women’s study of the region, she took her study a step beyond the ‘on the spot reporting’ to produce a ‘treatise’ on the botanical history of Antigua. In this treatise she provided details not necessarily captured in the illustrations given by Byam. The richness of her work rests in the application of “the Linnaean names to every plant where [she] undoubtedly ascertained them to be the proper ones” while she retained the local names where she uncertain (Riddell, 1792, p.viii). Riddell provided details about habit, appearance, origins, and uses. For food plants, she provided an important indicator of firsthand knowledge, preparation and taste. The comprehensive investigation made possible by her long-term residence in the Caribbean and her obvious scientific knowledge no doubt augmented the knowledge of Caribbean natural history in the scientific discourse of Europe. Amelia Murray (1969), less obviously scientific than Riddell, documented much of Cuba’s natural history. She went to Cuba in search of particular specimens and for knowledge of particular plants, such as palms, the many varieties of which were the most frequently mentioned specie of tree in the women’s accounts. From Murray’s (1969) account, there were “tall Arecas and Palmettos, which [were] probably the same as those of Florida; there [was] the Date (Phoenix), and the Sago Palm, and the Bactris” (Murray, 1969, p.251; Gurney, 1903, pp. 259, 296, 299, 313, 314, 317). The ‘cocoanut’ (sic) seemed to have fascinated the women, but unlike the other women who mostly just mentioned the different types of palms they saw, Amelia Murray (1969) was particularly interested in identifying the ‘real’ or ‘true’ coconut palm:

For the first time I saw cocoanuts; some were gathered, and I drank some of the juice which looked like clear water, and tasted nearly the same, with a slight soupçon of sugar. I was quite surprise to see a green nut ... pouring forth such a bright, innocent-looking liquid, I supposed it

would always have a milky hue. The nuts enlarge by degrees; but it was a long time before I could find out which of the palms was the cocoa-nut tree. Some said this was, and others doubted, and said it was a tree resembling the one that produces the nut, whereas, there is only that single cocoa that I have yet seen here. (p.251) She had confused the coconut with the Royal Palm: “that is not a coca at all. I shall find out its botanical designation at last. I suspect it is what I first suppose, an Areca (Betel-nut) (Murray,1969, p.257). Although she had extensive botanical knowledge of palms, she still found it difficult to classify what she found in the island as names differed: “Areco oleacea is the palm which has given me so much trouble here... this palm,designated *Oresodoxa Regia*,” in Cuba was know as Areca in London (Murray,1969, pp.261-262)

The interest in the palms may have been due to the potential economic value. Julia Woodruff made reference to Humboldt who declared that the palm was the crown of all vegetable creation and the many Caribbean varieties might have had many uses dormant in the “stately trunks and graceful boughs” (Woodruff, 1871, pp. 290-291). The full descriptions of the nature of the plants and fruits, notation of their use, origins and their habitat must have been invaluable to naturalists who never visited the region. Gurney (1903) provided in descriptive terms much data on the nature and context of the foliage she observed in St Thomas in the Vale, St Thomas in the East and St Andrew in Jamaica in the 1860s and so painted a picture of an island bursting with forested growth. Jamaica in 1860s must have been still heavily forested, even after the clearing of land for sugar cane cultivation, to have evoked such descriptions. Gurney (1903) drove through “tangled uncleared county” (p.309) and described the abundant variety of plants: “the country...looked like botanical gardens utterly neglected and overgrown and dusty...they are the kind of trees you see in a conservatory, only with more abundant blooms” (p.296). She wrote of “monstrous cotton trees with stems growing out like buttresses of a church” (Gurney, 1903, p.296) and of the plants that could be found in swampy areas: “there grew new kinds of fat luscious leaves, some large ferns, rushes, mosses” (Gurney, 1903, p.296). Much attention was given to describing the flowers in their setting and their effusion in the “wild, uncleared, primeval looking country” (Gurney, 1903, p.297):

Great weird luscious trees down to the water’s edge; tangle masses of creeping plants covered with pale delicate flowers spread themselves everywhere; some seemed split on the ground, others were tangled like traveller’s joy in England; cups of a kind of large convolvulus were spreading towards the sun. A buff tropioloa with chocolate eyes was rampant in all directions. A large waxen yellow jessamine, a pure bright blue convolvulus filled the nooks of the broken earth.” (Gurney, 1903, p. 297)

These effusive descriptions not only documented the variety of species but told of the number of strange trees, many of which were flower-bearing or fruit-bearing: she saw “at every turn some new tree or plant or flower” (Gurney, 1903, pp. 298, 306). She learnt the names and described some for posterity: the star apple was “something like a gigantic orange tree, only the leaves are lined with a burnished copper; the light coming through them looked like a shower of gold” and

“bristling cacti ... seemed like numerous caterpillars creeping up the stem” (Gurney, 1903, pp.298,300). Others were recognisable as parasites, ferns, bananas, mangoes, fan-leaved palms, ‘wonderfully handsome’ breadfruit trees, ‘poynsettias’(sic), long thin aloes with a beautiful pink at the tip or penguins ‘as they are here called’ and cedar-like acacia with light soft green foliage (Gurney, pp.298, 301, 309). Of the genapp tree she wrote: “[it] grows once a year, and its leaves drop off in a day. It buds the next, the buds swell the third day, and on the fourth morning it has burst forth in full leaf” (Gurney, 1903, 298). We learn that the bamboo grew to a gigantic size by the edge of a river, that the silk cotton tree was beautiful and majestic but, she thought, its delicate and fragile fibre and pithy wood was of no value (Gurney, 1903, pp.300, 320). Byam (1799?) described the silk cotton as bearing a flower with a long filament of great fineness but did not comment on its usefulness. The language of the description provides a useful ‘portraiture’ of the varieties of plant life which would certainly be of help in botanical classifications for those who operated from laboratories.

The women’s horticultural interest was obvious. Gurney’s (1903) description of the flowers, suggest that they were in innumerable abundance; Some were unfamiliar, but there was the familiar tropiola with chocolate eyes, large waxen jessamine, a pure light-blue convolvulus (pp.296-297). In Cuba, Murray (1969) also found familiar plants growing in wild profusion as well as novelties such as a heliotrope smelling like jasmine, a holly-shaped leaf prickly shrub, a flower resembling a Dryandra, which she understood could only be found in Australia (p.225). From her account we know that many of the familiar plants were not indigenous to England: “I found numerous flowers from our gardens and hot houses; among them the pretty *Asclepias tuberosa*, *Ipomœas* of all colours and sizes, a lilac, a scilla, a solamena, and other things new to me...” (Murray, 1969, pp. 240-241).

Byam used illustrations to document her observations. Her illustrations in twelve hand coloured plates of trees and vines of Antigua were plants which were not indigenous to England as well: the silk cotton tree, wild *Ipecacuan*, the Flower fence, the *Lignum vitae*, *Racou*, the castor, cut-leaved lilac and the logwood, the wild cinnamon, the acacie bush, the cankerberry, the papaw tree, the potato vine and coffee tree. She presented them as exotics, foreign to Europe. Her Collection of Exotics (1799?) were scientific and labelled. Her knowledge of botany was obvious from the botanical names assigned, but she was not merely routinely classifying the plants; she tried to interpret the ‘stranger’ plants. The botanical name she assigned to the cut leaf lilac, “*Syringa Lacimata*” was queried by a critic, reinforcing her own doubt: This plant, if we judge from the figure, belongs to the natural family of the meliae; consequently, it is as far as possible from being a syringe. The author herself has been sensible that, whatever it might be, it certainly was not a species of this genus; - so why then give it this name? (Monthly Review, Vol 30, 1799)

For the critic, this might have suggested her amateur status, but her rationale for the classification was indicative of a mind operating beyond rote learning. Her classification of the cut leaf lilac was not based on the usual appearance but on scent, which she found to be not unlike that of the English plant (Byam,1799?; Schiebinger, pp.271, 273). The pictorial

representation captured reality in a way even detailed descriptions could not. The illustrations were like the specimens collected and sent abroad by the visitors and so the classification could be evaluated. Thus her critic could place the plant in the right classification. Women's contribution to European science had often been in this area of illustrations: female naturalists were sometimes known for their "botanical and anatomical illustrations, or their mapmaking" (Schiebinger, p.27; Anderson and Zinsser, p.187; Wiesner, p.169). It was this skill that Lydia Byam brought to the documentation of the plant life of Antigua. These images no doubt found their way into European scientific community through the elite women to whom they were dedicated. From their own account we know that other women also drew/sketched things which caught their fancy (Gurney, 1903, pp.295, 316 -17; Russell, pp. 314, 324; Murray, 1969, pp. 240, 249).

Byam (1800) and Murray (1969) noted and documented the wide variety of 'strange' fruits of the Caribbean (Murray, p.296). The scientific approach to the study of these fruits is demonstrated in Byam's (1800) drawings of transverse sections of some fruits: she drew and coloured 'from nature' nine plates representing fruits of the West Indies: sorrell hibiscus, acajou or cashew, granadilla, avocado pear, dates, smooth cerassee, sea-side grapes, rose apple and wythe apple. As Riddell, she noted their flavour and their usefulness (A Collection of Fruits. 1800; Riddell, 1792, pp. 81-105). In Byam's (Byam 1799, 1800).accounts, we learn of poisonous plants (wild ipecacuum and cut leaved lilac, the medicinal qualities of the lignum vitae, the valuable West Indian production of the oil from castor beans, the purple dye from log wood, and gum from the acacia bush. There was remarkable correlation between the works of Byam (1799, 1800) and Riddell although Riddell's (1792) documentation was more extensive. The similarity suggests that both used the Linnaean scheme for identifying plants (Linnaean, 1735, 1758). Using an alphabetical approach based on Linnaean names, Riddell (1792) documented the history of the plants of Antigua without making a distinction between fruits and other plants. She described among others, aloes, the ginger plant, cashew, a variety of apples, oranges, water melon, the calabash, numerous cacti, wild cinnamon, the silk cotton trees, pineapple, physic nut, yam vine, the East Indian banyan tree, cotton shrub, lignum vitae, cerasée, manioc, coconut and the cabbage tree (Riddell, 1792, pp.85-105). Like Byam she provided information on use of some of these plants.

The knowledge of the usefulness of the plants was most likely gained from discussion with locals. Gurney (1903) noted that locals "all seem to know about trees and herbs and what is good for medicine, and what for food and what for poultices" (p.323). There were some plants that even Riddell (1792) could not place in the existing European system of classification, and used and preserved their local names. The lack of knowledge of many plants suggests the possibility that there were still a number of indigenous plants to be found in the Caribbean, but there were also indications of imported plants from other areas of the world such as Australia and Brazil which confirmed what is established, that the Caribbean landscape by the nineteenth century was informed by global links. It also suggests that there were a number of plants in the Caribbean that

had not yet been included in the naturalist handbooks used by the women. Their description of the 'strange plants' and even the mere listing of them offered to the European naturalists new information to explore. Thus these women took to the European community the information they garnered from local consultations although Amelia Murray (1969) and Emelia Russell Gurney (1903) suggested that there was little interest in natural history of the Caribbean. Murray stated: So little attention is paid to natural history here, that I can get no assistance as to the botanical names of trees, flowers, or shrub, as many of the former are yet without bloom, it is difficult to make them out even with the assistance of Loudon; it is the same with out-of- the way fruits... (p.250)

Emelia Russell Gurney reported in the 1860s that the things she noted and took an interest in went 'utterly unheeded' in Jamaica (p.314). Gurney must have been making reference to the white women as during her four months in the island she met and benefited from local male naturalists: Mr Bravo was pleased to find I was homeopathic, and said that he had been practicing it for twenty years with wonderful success; they had quite ceased to dread yellow fever since it had been treated homoeopathically. He took me into a little laboratory, where he prepared his own medicines. (p.304)

By the nineteenth century, the practice of medicine had become more professional and women were excluded from the medical academy, but women did not suddenly stop practicing (Shoemaker, 1998, pp. 181-182). Gurney (1903) no doubt benefited from the encounter with another homeopathic, albeit a male. She also met Richard Hill, a renowned naturalist with whom Phillip Gosse, also a noted naturalist, had consulted during the 1840s (Stewart, 1984). Hill was very helpful: A fine brown old naturalist has called upon me, Mr Hill, a stipendiary magistrate.... He has made beautiful paintings of the birds, fishes, and flowers of Jamaica, and has lent me some nice books on the subject. He will show me the leaf of life which may be shut in a drawer or hooked on a nail, or torn in half; but it does not mind, but will send out its fibres, and grow and live again in new rootlets and leaves do what you will to quench it (Gurney, 1903, pp.310-311).

In St Thomas-in-the East she met Mr Douet, a local who told her the names and natures of some of the "the strangest and most splendid trees" (Gurney, 1903, p.313). Another botanist, Mr Wilson, also brought her some fibres and told her the names of some ferns she had collected (Gurney, 1903, p.317). Thus Gurney, and no doubt the other women extended their network across the Atlantic and from these fragments indicated that, while interest in natural history might not have been pervasive, there was continuing interest in the flora of the island. The extent to which there was interest might not have been reflected in the accounts of these women because of the limited number of persons with whom they associated during their sojourn. The homeopathic knowledge was common to all Afro-Caribbean people during the period of slavery and there were even specialists known as 'doctresses' whose cures depended on the plants in their environment.

The Fauna of the Eighteenth and Nineteenth Century Caribbean

It would appear that fewer women were interested in the zoological side of natural history. While most made reference to some examples of the animal life of the Caribbean, the data provided was much less than for the flora. This might have been a natural outcome of the comparable fewer animals to study as well as the fact that the women were transients who did not have the time to devote to seeking out insects and birds for example. The socialisation of the women can not be overlooked as a factor. Eighteenth century Europe encouraged women in the study of botany as a way to enjoy the great outdoors but saw entomology and geology as not suitable for the 'delicate spirit' of females (Schiebinger, p.142). However, there were women who rejected this view. Maria Sibylla Merian may be the most well known of these ladies as her visit to the Caribbean came after she was established as a naturalist in Europe. Her work depicted plants and insects which she observed in Europe and the Caribbean when she visited Suriname from 1699 to 1701 and made collections, notations and sketches to produce 60 engravings. Her work has been discussed in texts on women and Natalie Demon Davis has written her biography (Anderson and Zinsser, 1988; Schiebinger, 1991; Davis, 1995). Maria Riddell (1792) also overlooked the strictures about what branch of science was appropriate for women and went beyond the other women's incidental references to and descriptions of the fauna which populated these islands. In 1792 she wrote:

I have adopted the zoological classification of Mr Pennant, as being more elegantand better adapted to the simplicity of my plan, than the grand scale upon which....Linnaeus has erected his *Systema Natural*. I have, however, always made use of his generic and specific names, because they are now more universally received by naturalists. (Riddell, p.vii) Riddell (1792) not only made incidental references, and even then in more detail than Gurney (1903) and Murray (1969), she actually set out a classification of the animals she found in Antigua in particular. Using Pennant's (1766) classification she identified, described and explained the nature and usefulness of a variety of animals, whether they were indigenous or imported, available in abundance or almost extinct. She identified quadrupeds in four divisions (whole and cloven hoofed, digitated, pinnated and winged quadrupeds), birds in two divisions (land and water birds) with several orders within each division; amphibious animals, with fishes classified in three divisions and she listed insects, including soft sea insects (Riddell, (1792, pp.53-58). Riddell's (1792) documentation merits more detailed investigation for a fuller discussion of the specific animals and their usefulness, but competence was demonstrated in the comparison throughout of Pennant's scheme and the Linnaean system. Her documentation of the types of animals and their usefulness was more helpful than the incidental references and descriptions which merely told of the animals which populated the islands. Occasionally however the less scientific records provided detailed descriptions as to the nature of some animals which caught the fancy of the observers. Birds were among the more obvious animals which might have drawn the attention of the visitor to the Caribbean which offered a vast variety of birds for study by those who were interested in ornithology. Gurney (1903) described a few she encountered as she moved around

in search of plants. For example, she was entranced by the antics of the hummingbird and her description of such antics helped to add to the understanding of the nature of such birds. Gurney (1903) did spend a little time watching two hummingbirds and described them:...two hummingbirds I have been watching: ... their moments are so strangely delicate. They have been chasing one another, and playing in the most fantastic manner around the patodia tree; darting about, and then poising for long in the air against the sky: the movement of their wings seemed to make a veil round them. (pp.320-321)

She described the hummingbird as having “every gradation of deep purple, dark green and gold” (Gurney, 1903, p.306). With the help of locals she learnt more about the nature of the hummingbird and recorded her findings. Gurney (1903) was able to describe the nest of a hummingbird as one was taken to her by a brown woman: “it is large enough to put two thimbles in; very neatly made, encrusted with bassi-relievi of light green lichen, and lined inside with the silk cotton fibre” (p. 320). Riddell’s (1792) study of birds was more extensive as the length of her stay facilitated identification and classification beyond what short term visitors such as Gurney could have achieved.

With the exception of Riddell (1792), the other three women were less interested in the zoology of the Caribbean, yet there is much to be found out by the careful mining of their texts - about such animals as flying fishes, porpoises, the spouting whale, carrion crows, and even poultry. The information, though sketchy, provided “real knowledge of animals” (Stewart, p. viii) for the European circle of naturalists. To use Phillip Gosse’s words, they “communicated in graphic language. We consequently possess the living portraitures of ...animals” (Stewart, p.viii). These female naturalists of the eighteenth and nineteenth centuries provided information about them as seen in their natural habitat, beyond the scientific schema, but no doubt adding prime examples to the existing schema.

Beyond Botany and Zoology

European gender ideology proscribed women’s role in science to botany, but women, including those who visited the Caribbean, did not ignore other branches of science. The women travellers to the Caribbean revealed their interest in such areas as astronomy which was seen as natural philosophy (Schiebinger, p.135). They were determined to find out what the tropical environment had to offer, so their narratives included snippets of information about the stars, the clouds, meteorology and comparison of the seascape of the tropical Atlantic to the Mediterranean and European sea coast. They observed strange fishes and the variety of tropical birds and took note of the changing colour of the sea and sky (Gurney, 1903, pp.294, 295; Riddell, 1792, p.19). Through their eyes we see the Sargasso Sea - the phosphorescent light, the very dark indigo, the deep sapphire and the “long garlands of seaweeds floating on the water” (Gurney, 1903, pp.289, 290). As naturalists they were aware of the nature of the sea but still found the tropical sea extraordinary:

The phenomenon of the luminous sea, well known to naturalists, is almost constantly observed in this part of the ocean; its appearance is beautiful as it is extraordinary;...the sea itself is studded with myriads of little radiant stars or dots of azure and gold, and, if the night prove remarkably dark, you fancy yourself sailing through an ocean of liquid fire. (Riddell, 1792, p.20)

The interest in and the knowledge of astronomy is revealed in the descriptions of the tropical sky: "...we went upon deck and saw the Southern Cross just above the hills. The stars are the size of the Great Bear, and as there are no others of the same size very near, the Cross stands out very distinctly" (Gurney, 1903, p.294). The graphic description of the sky, by day, at sunset or at night from different vantage points, must have provided data for comparison for those interested in astronomy. Gurney (1903) described the sky over Spanish Town, Jamaica during moonlight: The sky instead of losing its colour and becoming dark grey, as ours does, is a deep ultramarine blue, and the moon gilds rather than silver the objects it shines upon. I found I could read small print by its light...all the experience people tells us that the night air, especially in moonlight is injurious. (p. 306)

Her observation of the difference have emphasised that she was indeed in the tropics. Invariably as the women moved about the region, observed the geological and geographical features; the sandy but fruitful soils, stony soils which supported the low undergrowth of eastern Jamaica, "ravines clothed with magnificent trees" and "grey rock crowned with fan leave palms, and of many sweet streams" (Gurney, 1903, pp.299, 311). Riddell (1792) gave geological details; she wrote of hillocks in St Kitts in scientific terms: Tetrahedral chrystals [sic] of sulphur, alum in an efflorescent appearance, and likewise mineralised with iron, are abundant in crannies of these little hills, and a very pure argillaceous and magnesian earth are to be found in great quantities; Calcined lava, and the lava informis of Linnaeus are the only ones commonly seen, though a species of petroleum, or jet, has been found mixed with a hard stone of calcareous kind, but very rarely. (p.22) Riddell's (1792) account of these islands indicates clearly that she was a scientist, knowledgeable about many aspects of natural history.

Conclusion

Gosse lamented in the 1840s: "...how little is really known ...even of the zoology of England's vast colonial possessions!" (Stewart, p. viii) Women who travelled to the Caribbean helped to reduce this ignorance by describing, illustrating and sending specimens to the 'cabinets of Europe' to be catalogued (Stewart, p. viii) and left for posterity living portraiture of the plants, animals and geological features, described and drawn from life. Women like Maria Riddell and Lydia Byam in fact took what was considered an appropriate past and transformed it into scientific studies even though they were excluded from the academy of science. As travellers, they provided invaluable firsthand knowledge of the Caribbean, for those who may have been little more than armchair naturalists studying the specimens collected by travellers to the exotic regions of the world.

References

1. Anderson, Bonnie S and Judith P. Zinsser. (1987). *A History of Their Own, Women in Europe from Prehistory to the Present. Vol. II.* London: Penguin.
2. Bridenthal, Renate, Susan M. Stuard and Merry E. Wiesner. (1987) . *Becoming Visible, Women in European History.* 2nd Ed. Boston: Houghton Mifflin Co.
3. Browne, Patrick. (1789). *The Civil and Natural History of Jamaica.* London.
4. Byam, Lydia. (1799?). *A Collection of Exotics, from the Island of Antigua..*
5. (1800). *A Collection of Fruits from the West Indies, drawn and coloured from nature.*
6. Davis, Natalie Zemon. 1995. *Women on the Margin – Three Seventeenth Century Lives.* Cambridge, Mass: Harvard University Press.
7. Gonzalez, Fernandez Oviedo y Valdes. (1851). *Historia General y Natural de las Indias.*
8. Gosse, Phillip Henry. (1851). *A Naturalist's Sojourn in Jamaica.* London.
9. Gurney, Ellen Mary, ed. (1903) *Letters of Emelia Russell Gurney.* 2nd ed. London: James Nesbitt.
10. Linnaeus, Carl. (1735). *Systema Naturae.*
11. Loudon, J. C. (1835). *An Encyclopædia of Gardening.* London: Longman, Rees, Orme, Brown, Green, and Longman.
12. Murray, Hon Amelia M. (1969). *Letters from the United States, Cuba and Canada (1856).* New York: Negro University Press.
13. Pennant, Thomas. (1766). *British Zoology.*
14. Riddell, Maria (1792) *Voyages to the Madeira and Leeward Caribbean Isles: with sketches of the Natural History of the these Islands.* London: Peter Hill & T. Cadell.
15. Schiebinger, Londa (1991). *The Mind has No Sex? Women in the Origins of Modern Science.* Cambridge, Mass. and London: Harvard.
16. Shoemaker, Robert B. (1998) *Gender in English Society 1650 -1850.* London and New York: Longman
17. Sloane, Han. (1701) *A Voyage to the islands Madeira, Barbados, Nevis, St Christopher and Jamaica with the Natural History of the Herbs and Trees, Four-footed Beasts, Fishes, etc of the last of these islands.* London

18. Stewart, D. B. (1984) *Gosse's Jamaica 1844 –45*. Kingston: Institute of Jamaica Publications Ltd.
19. Weisner, Merry E. *Women and Gender in Early Modern Europe*. Cambridge: Cambridge University Press..
20. Woodruff, Julia Louisa Matilda. (1871) *My Winter in Cuba*. New York: E. P. Cutton & Co.