William Dampier's Brazilian botanical observations in 1699

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The English privateer and navigator William Dampier collected specimens, made species lists and recorded ethnobotanical information about the plants growing in and around Salvador (Brazil) in March / April 1699. However, Dampier's role as a collector in the history of Brazilian botany has been overlooked. In this paper, Dampier's visit to Brazil is summarized, his approach to collecting is reviewed, his extant specimens are identified and the plant names mentioned in his species lists correlated with modern names. The place of Dampier's specimens in the history of Brazilian botany is critically reviewed.

FOLLOWING the discovery of Brazil, Portugal's main interests lay in establishing a foothold in the Americas and securing a supply of the dye wood brazil.[1] Specific mention of Brazilian plants started to appear in print, and in manuscript communications to the Portuguese court, from the mid-sixteenth century, for example, André Thevet's *Singularités de la France antarctique* (1558) and Jean de Léry's *Histoire d'un voyage faict en la terre du Bresil autrement dite Amerique* (1578).[2] Thevet gives the earliest recognizable descriptions of cassava, pineapple, peanut and tobacco. However, it is the German astronomer Georg Markgraf, at the beginning of the seventeenth century, who is credited with the first scientific investigation of Brazilian plants.

Markgraf was a member of Johan Maurits van Nassau-Siegen's entourage, charged with establishing a government in Dutch Brazil (present-day northeast Brazil), between 1637 and 1644.[3] In addition to Markgraf, Nassau's retinue included the physician Willem Piso and the artists Frans Post and Albert Eckhout. Markgraf systematically catalogued plants and animals, Piso studied medicine, whilst Post and Eckhout painted the colony's landscapes, peoples, animals and plants. Markgraf died in 1644 but his edited notes were posthumously published as part of Piso and Markgraf's *Historia Naturalis Brasiliae* (1648), establishing him as the most important natural historian of early modern Brazil. Furthermore, Markgraf was the source of much of Carolus Linnaeus's information on the Brazilian plants described in *Species Plantarum* (1753).[4]

Scientific study of Brazilian plants was not taken seriously until the activities of the Italian-born naturalist Domenico Vandelli, working at the University of Coimbra, Portugal, at the end of the eighteenth century.[5] Ignatius Urban gives no details of the itinerary and activities of any seventeenth-century plant collector other than Markgraf,[6] but at least one other seventeenth-century visitor to Brazil collected and recorded details of plants; the English privateer and navigator William Dampier.[7]

The purpose of the present paper is to document the plants Dampier collected or reported seeing during his four-week visit to Brazil in March /April 1699. Five primary sources are relevant: Dampier's account of his voyage; Ray and Plukenet's catalogues, where some of Dampier's plants were catalogued and illustrated; the plant specimens Dampier returned to Britain; and Sherard's *Pinax* or plant catalogue.[8]

William Dampier the man

William Dampier was born into a family of tenant farmers in East Coker (Somerset), probably in August 1651. Following an education at a local school, Dampier was apprenticed to a seaman, fought briefly during the third Anglo-Dutch War, was employed on a Jamaican sugar plantation and, by 1675, was trading the dye logwood in the Bay of Campeche (Mexico).[9] The logwood trade paid poorly, so Dampier turned to the life of a privateer, raiding the Spanish towns along the Campeche coast. By 1678, Dampier was wealthy enough to return to England and marry. A year later, he was back in Jamaica but soon returned to piracy and became notorious for his attacks on the Spanish along the Atlantic and Pacific coasts of Central America. Between March and May 1686, Dampier navigated Charles Swan's ship the *Cygnet* from Mexico across the Pacific to Guam. The crew explored the South China Sea and the coasts of South East Asia, Western Australia, Sumatra and India. Dampier arrived back in England in September 1691, the first seventeenth-century Englishman to circumnavigate the globe.

Dampier capitalized on his notoriety and success by publishing *A Voyage around the World* (1697), a graphic account of the flora, fauna and people he encountered. The book captured the imagination of merchants, politicians and naturalists who saw commercial, political and scientific opportunities in exploration of the Pacific. Furthermore, Dampier became acquainted with powerful members of the fledgling Royal Society such as Samuel Pepys, John Evelyn, Hans Sloane and John Woodward. In 1699, the English Crown gave him command of HMS *Roebuck* to circumnavigate *Terra*

Australis (present-day Australia) and investigate its commercial potential. Dampier returned to England from his second circumnavigation in 1701, and published a popular account of his voyage, *A Voyage to New Holland, &c. in the Year 1699* (1703). Between 1703 and 1707 Dampier was once again harrying the Spanish in the Pacific; this time unsuccessfully. Dampier's expertise as a navigator and his knowledge of the Pacific meant he was soon in demand, this time under the command of the young English seaman Woodes Rogers. Dampier left on his third circumnavigation in 1708, in a tiny flotilla comprising two ships, the *Duke* and the *Dutchess*; he returned to England in 1711. This time the voyage was a triumph and Dampier could afford to retire. He died in 1715, his place of burial unknown.

Dampier's own accounts of his voyages are characterized by detailed descriptions of the natural world and human cultures, together with care to distinguish things he witnessed and things reported to him.[10] Consequently, he rarely compares his experiences or conclusions with those of other travellers; he leaves his readers to draw such general conclusions. Dampier's reputation as a mariner and observer meant his written work was being used well into the nineteenth century as a source of information on ethnography, geography, climate and hydrography in the tropics. In recent years, the evocative image of the pirate-naturalist has come to the fore, especially as the first cataloguer of the Australian flora. In 1699, Dampier spent a few hours on Australian soil, grabbing botanical curiosities that eventually made their way back to Britain.[11]

Dampier in Brazil

On 22 February 1699, as William Dampier left Santiago (St. Jago; Cape Verde), his reasons for visiting Brazil were matter-of-fact. He 'thought it requisite to touch once more at a cultivated Place in those Seas, where my Men might be refresh'd and which might have a Market wherein to furnish themselves with Necessaries.'[12] Furthermore, he wanted to wean his inexperienced crew to the realities of circumnavigating the globe. Initially he chose Recife (Pernambuco), the most northerly of the three great Brazilian harbours. However, by the time his ship crossed the equator, Dampier's plans had changed; Salvador (Bahia de Todos los [*sic*] Santos), the historic capital of colonial Brazil, became his destination. The reasons for Dampier's change of plan during this 'Vexatious Voyage' appear to have been 'Discontents and Backwardness'[13] among some

crew members. Dampier and his crew arrived off the 'rather low than high' coast of Bahia on 23 March 1699. The coast, 'checker'd with Woods and Savannahs', was replete with 'Sandy-Bays', whilst inland there were 'many very white Spots of Sand, appearing like Snow'.[14] Two days later, he entered the town's harbour, moored close to a small fort, undertook the formalities required of a gentleman and started to explore the town and surrounding countryside.

All of Dampier's botanical observations were made in the immediate vicinity of Salvador, an area he considered very equitable: 'for the most part a pretty flat even Ground, not high, nor yet very low: It is well watered with Rivers, Brooks and Springs, neither wants it for good Harbours, Navigable Creeks, and good Bays for Ships to ride in. The Soil in general is good, naturally producing very latge [*sic*] Trees of divers sorts, and fit for any uses. The Savannahs also are loaden with Grass, Herbs, and many sorts of smaller Vegetables.'[15]

Dampier detailed the geography of the harbour and its defences, and provided his English audience with a glimpse into the region's economy and the lives of its people. He observed that the quality of the people's houses was high but their gardens were 'order'd with no great Care nor Art'.[16] The chief European imports were linen and woollen cloth, together with trade goods, such as iron tools, pewter-ware, mirrors and beads. Cotton cloth imported from Santiago was re-exported to Africa, together with rum and sugar, via the 'Guinea Trade'; traders returned from Africa with gold, ivory and, importantly, slaves, Brazil's primary power source. As a keen entrepreneur, Dampier highlighted the rarity of English ships in the harbour and emphasised that the English might profitably import wheat flour, silk, wine and salt-beef.

Just after the festivities of Holy Week, on 23 April 1699, Dampier hurriedly left Brazil, his departure precipitated by continuing discontent among his crew and self-imposed restrictions on his movements ashore. Dampier was accustomed to going ashore daily either on business or to 'recreate' himself 'in the Fields'.[17] However, he became pre-occupied with being murdered or apprehended, following rumours that he had been denounced to the Inquisition by some of his crew[18].

Dampier passed along the Brazilian coast for a second time in late November 1708 and made brief visits ashore at Angra dos Reis (Angre de Reyes), south of Rio de Janeiro, and the nearby island of Ilha Grande (Grande). However, he left no personal account of this voyage. The published accounts of the voyage contain scant botanical information,

naming only common fruits and staples, such as pineapple, guava, orange, maize and cassava[19].

Dampier's approach to collecting

Approved techniques for making herbarium specimens were in circulation among European natural historians for about 150 years before Dampier set out on his second circumnavigation.[20] In 1586, the English naturalist William Turner refers to the herbarium of John Falconer, a pupil of Luca Ghini, the Pisa-based developer of the method for preparing specimens.[21] On 5 November 1665 Samuel Pepys describes his surprise at being shown John Evelyn's *Hortus Hyemalis* – 'leaves laid up in a book of several plants kept dry, which preserve colour . . . better than any Herball'.[22] By the time Dampier dined with Pepys and Evelyn on 6 August 1698,[23] herbaria had become desirable objects for the curious.[24] In Montpelier, Paris and Leiden, institutions were busy building herbaria, and in England, gentlemen were constantly searching for novelties to augment their own substantial collections.[25] The nurseryman William Darby of Hoxton even used herbarium specimens in lieu of a sales catalogue.[26]

Herbarium specimens, the gold standard of botanical documentation, provide physical evidence for the occurrence of a species at a particular point in time and space. Specimens avoid the problems of translating written records of vernacular names – or interpreting poorly executed images – to establish scientific names across time and cultures. The preparation of good plant specimens in the field is a simple process but requires attention to detail.

In the early seventeenth century, the Flemish anatomist Adriaan van den Spiegel gave short instructions for herbarium specimen preparation, but detailed manuals were lacking – despite the demand for natural history collections[27]. When Dampier returned from his second circumnavigation with a 'good number of Plants, dried between the leaves of Books',[28] he appears to have been relying on the advice of John Woodward in his *Brief Instructions for making Observations in all Parts of the World*, presented to the Royal Society in 1696:[29]

> To *preserve* these Samples of Plants, put them each *separately*, betwixt the leaves of some large *Book*, or into a Quire of brown *Paper*, displaying and spreading them *smooth* and even. The *next day*, and *afterwards three or four times* at due distance, *shift* them into *other Books* or *Paper*, till they are *sufficiently* dryed, when a *weight* may be laid upon them to press and smooth them; and so

keep them, in some *dry place*, till they be sent over, sending them in Quires of brown Paper, and writeing on the outside *in what Country* the inclosed Collection of Plants were *gathered.*[30]

Woodward emphasised the importance of collecting information on all parts of the natural world and in all seasons, although he was pragmatic about getting travellers to collect data:

'tis not expected that any one *single Person* will have *leisure* to attend to *so many things*, and therefore 'tis only requested that he make such Observations and Collections, more or less, as may be best *suitable* to his Convenience, and to his *Business.*[31]

He even went as far as to recommend that the physical collection and preservation of natural history objects could be delegated to the '*Hands of Servants*', although, prudently, in 'their spare and *leisure times*'.[32] Nothing was to be neglected; 'the most *ordinary* and *trivial*; the *Commonest* Peble or Flint, Cockle or Oyster-shell, Grass, Moss, Fern, or Thistle, will be as *useful*, and as *proper to be gathered* and sent, as any the rarest production of the Country.'[33]

As with modern advice to plant collectors, the collection of fertile duplicates was encouraged:

As to *Plants* . . . *four Samples of each kind* . . . will be sufficient. Where the Plant is large, as in *Trees*, *Shrubs*, and the like, a *fair sprig*, about a *foot* in length, with the *Flower* on . . . may suffice: but of the *lesser Plants*, such as *Sea-Weeds*, *Grasses*, *Mosses*, *Ferns*, &c. take up the *whole Plant*, root and all. Chuse all these Samples of Plants *when they are in prime*, I mean in *Flower*, *Head*, or *Seed*, if possible; And if the *lower* or *ground Leaves* of any Plant de *different* from the *upper leaves*, take two or three of them, and put them up along with the Sample.[34]

However, despite Woodward's instructions that specimens should be large, Dampier's specimens were usually no more than fragments of larger plants; the largest of the Brazilian specimens would fit within the borders of a sheet of A4 paper. Woodward emphasized the importance of collecting information about species biology, such as habitats and habits, and use (ethnobotany).

Woodward was particularly concerned with packing specimens such 'that the things be not *broken*, or *rifled* and *confounded* by the *Custom-house Officers* and *Searchers.*[35] In

the event, Dampier had no need to worry about such niceties; the *Roebuck* sank on the return leg to England in 1701 off the Ascension Islands[36].

We do not know how many specimens Dampier collected in total and how many might have been lost or 'spoil'd' during his journey or in the three centuries since they were collected, although Dampier reported that 'many of my Books and Papers [were] lost' when his ship sank.[37] At least two Brazilian specimens appear to be missing from Sherard's herbarium (online Table 1). In the Oxford University Herbaria there are today sixty-six specimens (twenty-seven from the Americas, twenty-seven from Australia; nine from South East Asia and three unlocalized) attributed to Dampier (online Table 1).[38] Two sterile shoots, 'from the new Island in the East Indies discovered by Dampier', are in the Sloane Herbarium.[39] In addition, Dampier recorded the names and detailed information on the uses of seventy-three plants he encountered in Brazil (online Table 2). He used English names when these were available but when using unfamiliar names he was careful to inform his readers that they were recorded 'as they were pronounc'd to me'.[40] However, Dampier was often trying to record the unfamiliar sounds of Tupi or Portuguese names using seventeenth-century English sounds, rendering this anglicized orthography unusual by modern standards. There are five cases where the details of the plants and their names were reported to him by 'an *Irish* Inhabitant of Bahia',[41] rather than through his own direct observation.

Dampier's botanical specimens

Dampier returned to England in August 1701 with a collection of plants. Initially, they were promised to the antiquary, geologist and professor at Gresham College, John Woodward, FRS.[42] The 'ingenious' Woodward gave his plant collection – including the specimens collected by Dampier – to William Sherard some time before the latter's death; Sherard eventually donated his entire herbarium to the University of Oxford when he died in 1728.[43] In 1873, Marmaduke Lawson dismissed Dampier's collections as possessing 'no particular points of interest, for owing to some reason or other the specimens were in some instances mixed and their localities confounded.'[44] However, in the twentieth century, the significance of Dampier's collections became apparent.[45]

In addition to Woodward and Sherard, Dampier's specimens were studied by two early modern naturalists, John Ray and Leonard Plukenet. In 1703, Dampier presented the results of his second circumnavigation to a general audience. In contrast to his

previous account, Dampier appears particularly proud to present his 'Curious Reader' with images of the plants and animals he saw, since there had been on board his ship 'a Person skill'd in Drawing'.[46].

Woodward, a strong advocate of the importance of experimental and observational evidence over the authority of ancient learning, had a strong interest in fossils; he would have been a natural ally of Dampier, who was eager that his readers should take his observations seriously.[47] In 1710, Woodward had a public falling-out with Hans Sloane, which may explain why Dampier's specimens are part of Sherard's rather than Sloane's Herbarium.

The English naturalist John Ray, elected to the Royal Society in 1667, had by the time Dampier left on his second circumnavigation published two volumes of his *magnum opus*, *Historia generalis plantarum* (1686, 1688). In the supplement to the third volume of the *Historia* (1704) Ray formally described eighteen plants collected by Dampier, of which four were stated to have come from Brazil[48]; these are the same plants described and illustrated by Dampier.[49] Dampier's illustrations indicate they were prepared from dried rather than fresh specimens, and were then engraved. Given the prominence of Ray amongst contemporary naturalists, he was the natural person to name Dampier's plants. Despite intellectual disagreements between Ray and Woodward,[50] Ray must have had access to the dried specimens associated with the illustrated plants, since he makes direct reference to them when describing three Australian plants.[51] These comments imply that Ray was supplied with little – if any – additional information by Dampier or Woodward.[52] Likewise, Dampier had access to at least part of Ray's work before publication,[53] although in his paraphrase, Dampier occasionally adds his own comments.[54] For example, the leaves of 'Crista Pavonis Brasiliana Bardanae foliis' are 'represented too stiff and too much serrated'[55] and, in the description of *Pachira insignis*, Dampier translates Ray's general term 'purpurascente' as the more descriptive adjective 'Murrey-colour.'[56]

In 1705, a further twenty of Dampier's plants were described and illustrated in Leonard Plukenet's *Amaltheum botanicum* (1705).[57] By the turn of the seventeenth century, Plukenet, Queen's Botanist from about 1689, had a reputation for the size of his private herbarium and the quality of his printed, illustrated catalogues of the world's plants: *Phytographia* (1691-6), *Almagestum botanicum* (1696) and *Almagesti botanici mantissa* (1700). He had access to Dampier's specimens through his 'great friend, the

erudite'[58] Woodward, but appears to have chosen not to illustrate all the remaining plants (online Table 1).

The Englishman William Sherard, one of the foremost naturalists of his day, was elected FRS in 1720, and cultivated lasting friendships with the major figures of European botany. The herbarium he amassed was described as 'perhaps, after that of Linnaeus, the most ample, authentic, and valuable botanical record in the world.'[59] During his lifetime, Sherard actively worked with the specimens in his herbarium, adding polynomial names to specimens, including many of those collected by Dampier, as he constructed his *Pinax*[60]. John Ray used Sherard's herbarium when he was preparing the third volume of his *Historia*, whilst Sherard made significant contributions to the final text.[61] When Sherard acquired Dampier's specimens they were probably unmounted since: (1) reverse surfaces are shown on some of the printed images relative to current specimen mounting (e.g., 'Jasminum Brasilanum luteum'[62]); and (2) the specimens are mounted on three different types of paper, two of which are common in the Sherard herbarium. Specimens may have remained unmounted for some time after they were given to Sherard, since some complete or partial specimens appear to have been lost.[63] Sherard habitually relabelled specimens, often omitting collection localities, which, combined with their being unmounted when given to Sherard and their subsequent treatment by curators, makes precise determination of specimen provenance difficult, a factor that contributed to Lawson's dismissal of them in 1873.[64]

Despite their publication in well-known books of the period, only one of Dampier's Brazilian specimens became part of nineteenth century interest in Brazilian botany, albeit not attributed to him. In 1813, Michel Félix Dunal published the name *Solanum brasilianum* Dunal, based on a plate in the Appendix to Plukenet's *Amaltheum Botanicum* (1705), and slightly expanding Plukenet's description.[65] In 1846, Dunal's name was incorporated into an Appendix of armed Brazilian *Solanum* species in Otto Sendtner's account of the Solanaceae, together with a longer description derived from Plukenet's figure that included the phrase 'aculeo uno recurvo ad folii basin'.[66] In 1852, Dunal made additions to Sendtner's description but retained the statement that the plant was armed, despite placing *S. brasilianum* in a list of poorly known unarmed *Solanum* species.[67] Plukenet's figure, based on specimen Sher-0451-a, shows a prickle just above the second leaf but his artist apparently misinterpreted the bud showing it as

a prickle. There is no evidence Dunal or Sendtner saw Dampier's original specimen or indeed visited the herbarium in Oxford.

Dampier described the features of three plants ('cotton trees'), which have their seeds surrounded by loose hairs (kapok; online Table 2); probably *Pseudobombax tomentosum* (Mart. & Zucc.) A. Robyns and species of *Ceiba* and *Eriotheca* (Malvaceae).[68] In addition, a single herbarium sheet, labelled 'Cotton flower from Baya in Brasile', comprises the detached petals and androecia of probably *P. tomentosum* and *Pachira insignis* (Sw.) Savigny (Malvaceae; online Table 1)[69]. Confusingly, although *Pachira* is malvaceous, its fruit does not produce kapok and was not one of the plants described by Dampier;[70] he illustrated the 'Cotton-flower from Bahia in Brazil' based on five petals and an androecium from *Pachira insignis*. Ray wrote a clear Latin description of the *Pachira* fragments, which was subsequently paraphrased by Dampier[71]. Ray's misinterpretation of Dampier's specimen is surprising, since he correctly described an intact *P. insignis* flower, from a specimen in Sherard's herbarium, and compared it that collected by Dampier.[72] Ray also reports Dampier's assertion this species was the cotton tree with large fruits, which would appear to imply that Dampier thought he was referring to *Pseudobombax tomentosum*. Unfortunately, Dampier had collected fallen petals and androecia from two different species, without recognizing the differences. The confusion and misunderstanding was maintained when the specimens were eventually mounted. The 'cotton' produced by the trees around Salvador was used to 'fill Pillows and Bolsters.'[73] Previously, the French traveller de Léry described how Brazilian Amerindians, from the area around present-day Rio de Janeiro, used fibres from the fruits of shrubby species of *Cochlospermum* (Bixaceae) as 'cotton'.[74] Long-staple cotton, which a century later would become an important crop in northeast Brazil, was used only as an imported item of trade for the slave trade.[75]

Dampier's ethnobotany

Seventeenth-century European society recognized the direct economic and medicinal importance of plants. Consequently, authors such as Woodward and James Petiver exhorted travellers to record information on plant use.[76] However, Dampier hardly needed such encouragement; the account of his first circumnavigation is replete with details of the multifarious ways people used plants.[77] In Salvador, when not on board the *Roebuck*, Dampier was in the company of other European sailors, expatriate

residents or traders but makes no comment on having seen any indigenous Amerindians, despite many of the indigenous names he anglicized being of Tupi origin.

Details of the Brazilian sugar-production techniques were well known in Europe having been described by Markgraf and Piso and having been exported to the Caribbean following the expulsion of the Dutch from the north east of Brazil in 1654.[78] However, presumably due to his experiences on Jamaican plantations and because of the importance of sugar to the English economy, Dampier became fascinated by the process of producing the high quality, clayed (white) sugar exported from Bahia.[79] Unsurprisingly, Dampier was concerned with issues that affected the welfare of mariners, for example, the supply of timbers (e.g., *comesserie*, *guitteba*, *sapiera*, *serrie*) for repairing ships and the availability of fresh fruit (e.g., *arisah*, cashew, *jennipah*, *mericasah*) to combat scurvy. The palm *tresabo* (*Attalea funifera* Mart.) produces both an edible fruit and a fibre used to make shipping cables, 'very serviceable, strong and lasting; for they will not rot as Cables made of Hemp, tho' they ly exposed both to Wet and Heat',[80] which enterprising Brazilians hired to European sailors passing through Salvador.

Dampier reported many introduced food plants that were cultivated in European gardens – e.g., turnip, potato, onion and cabbage – or which he had seen on his previous travels – e.g., cinnamon and China orange. However, mango trees, which are today commonplace throughout Brazil, were rare in seventeenth-century Brazil; Dampier found none outside of 'the *Jesuit*'s Garden'.[81]

Conclusion

For observations and research to have scientific impact they must be published, and then become part of the scientific mainstream. Despite Dampier publishing his Brazilian botanical observations and making his specimens available to the scientific community, his Brazil botanical work failed to attract widespread scientific attention. Historically, Dampier's collections: (1) provide insight into the activities of early modern, tropical naturalist history collecting; (2) illustrate the routes by which natural history data were incorporated (or not) into the corpus of biological knowledge; and (3) show the types of plants that attracted European travellers. Dampier's botanical records form a snapshot of plants being cultivated and used by the people of Salvador in 1699, and show the persistence of popular plant names. Furthermore, Dampier moved beyond the mere

listing of Brazilian economic and medicinal uses of Brazilian plants to collecting specimens. However, after a brief flurry of interest, they were more or less lost in William Sherard's herbarium. Even the images, created and published from the specimens, failed to enter the botanical mainstream as Linnaeus's eighteenth-century botanical revolution took shape.

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[25] Morton, op. cit. (note 21).

[26] W. Hamilton, 'A short account of several gardens near London, with remarks on some particulars wherein they excel, or are deficient, upon a view of them in December 1691. Communicated to the Society by the Reverend Dr. Hamilton . . .', *Archaeologia* 12 (1796), pp. 181-92.

[27] A. van den Spiegel, *Isagoges in rem Herbariam Libri Duo* (Padua, 1606), pp. 79-81.

[28] Dampier, op. cit. (note 7), p. 72.

[29] S. K. Marner, 'William Dampier and the history of his botanical collections', *Oxford Plant Systematics* 7 (1999), pp. 6-8.

[30] J. Woodward, *Brief Instructions for Making Observations in All Parts of the World: as also for Collecting, Preserving, and Sending Over Natural Things Being an Attempt to Settle an Universal Correspondence for the Advancement of Knowledge Both Natural and Civil* (London, 1696), p. 12.

[31] Ibid., p. 15--16.

[32] Ibid., p. 16.

[33] Ibid., p. 10.

[34] Ibid., p. 12.

[35] Ibid., p. 16.

[36] W. Dampier, *A Continuation of a Voyage to New-Holland, &c. in the Year 1699* (London, 1709), pp. 191-6.

[37] Dampier, op. cit. (note 36), p. 196.

[38] The specimens are mounted on sixty-four sheets. Images of all the sheets are available from the Sherard Herbarium database website (http://herbaria.plants.ox.ac.uk/bol/Sherard).

[39] Sloane Herbarium, Natural History Museum, London, H.S. 94, fol.135

[40] Dampier, op. cit. (note 7), p. 63.

[41] Ibid., p. 71.

[42] Ibid., preface.

[43] Clokie, op. cit. (note 24), p. 65 reports that Sherard probably acquired the specimens from Woodward in 1710, presumably basing this statement on a letter from Woodward to Sherard in Smyrna, dated 24 August 1710 and received by Sherard on 18 January 1711 (Royal Society, Sherard Papers MS 252/645). However, Marner, op. cit. (note 29), p. 7) argues that Sherard probably physically acquired the specimens from Sherard in 1718.

[44] M. A. Lawson, 'Remarks on plants collected by the voyager Dampier', *Journal of Botany* 11 (1873), p. 343. Despite Lawson's verdict on the significance of Dampier's specimens, George, op. cit. (note 14) emphasized the role of his collections in creating interest in Australian plants.
[45] B. M. H. Rogers, 'Dampier's voyage of 1703', *Mariner's Mirror* 10 (1924), pp. 366-81. Clokie, op cit. note 24), p. 66 states a description of Dampier's collections in Oxford was to be published in *Kew Bulletin*; no such article has been traced.
[46] Dampier, op. cit. (note 7), preface. Dampier presents five plates (fourteen angiosperms; one fern; three algae) of copper engravings. 'The Plants themselves are in the Hands of the Ingenious Dr. *Woodward*. I could have caused many others to be drawn in like manner, but that I resolved to confine my Self to such only, as had some very remarkable difference in the shape of their principal Parts from any that are found in *Europe*'.
[47] Dampier, op. cit. (note 7), preface.
[48] Ray, op. cit. (note 8), Appendix, p. 225 in section entitled 'Plantae à D. Gulielmo Dampier in Brasilia, Nova Hollandica, Timor & Nova Guinea, observatae & collectae' includes eighteen specimens attributed respectively to Brazil (4); Australia (11), Timor (1) and New Guinea (2). In fact five plants must have been collected in Brazil (see online Table 1); the mistaken localizations must have been Dampier's, since they were not changed from the Ray's *Historia*, despite Dampier no doubt checking the proofs to his own publication.
[49] Dampier, op. cit. (note 8), pp. 155-61.
[50] C. E. Raven, *John Ray Naturalist. His Life and Works* (Cambridge, 1950), pp. 449-51.
[51] Paraphrase by Dampier, op. cit. (note 7), pp. 157, 158, 160, paraphrase of Ray, op. cit. (note 8), Appendix, p. 225. The plants are *Conostylis stylidioides* F.Muell. (Haemadoraceae; tab. 3, fig. 1), *Diplolaena grandiflora* Desf. (Rutaceae; tab. 3, fig. 3) and *Olearia* sp. (Asteraceae; tab. 4, fig. 3), respectively. Since Ray does not describe any additional plants, he appears to have had access only to part of Dampier's collection.
[52] It is unknown whether Ray received the unmounted specimens directly from Dampier or indirectly from Woodward. The specimens, however, were obviously returned to Woodward.
[53] 'Mr. *Ray*'s Supplement to his History of Plants [Ray, 1704] now in Press', Dampier, op. cit. (note 7), p. 159.
[54] Dandy, op. cit (note 24), p. 123 states the paraphrases were made by Woodward.
[55] Dampier, op. cit. (note 7), p. 156, tab.1, fig. 3.
[56] Ibid., p. 156, tab.1, fig. 1.
[57] Plukenet, op. cit. (note 8), p. 184 (Appendix) names twenty species collected by Dampier respectively in Brazil (13); Australia (6) and Guinea (1). One of the plants ('Ricinus brasiliensis . . .') attributed to Brazil was probably collected in Australia and another in south east Asia (see online Table 1).
[58] Plukenet, op. cit. (note 8), Appendix.
[59] Dandy, op. cit. (note 24), p. 200; Clokie, op. cit. (note 24).
[60] Sherardian Library of Plant Taxonomy, University of Oxford, MS Sherard 44 to MS Sherard 173.
[61] Ray, op. cit. (note 8), preface; Clokie, op. cit. (note 24).
[62] Oxford University Herbaria, Herbarium specimen Sher-0002-a, illustrated in Dampier, op. cit. (note 7), tab. 1, fol. 2.
[63] 'The Flower of a sort of Cotton tree from Baya D^{r} Sherrard had y^{e} Coton Pods young, & y^{e} Flower. Baya' (Oxford University Herbaria, Sher-0001-a, label in an unidentified eighteenth-century hand). Today there are no young pods of either *Pachira insignis* or *Pseudobombax tomentosus* in the Sherard herbarium.
[64] Clokie, op. cit. (note 24).
[65] Plukenet, op. cit. (note 8), tab. 454, fol. 4, M. F. Dunal, *Histoire Naturelle, Médicale et Économique des Solanum et des generes qui ont été confondus avec eux* (Paris, 1813), p. 239.
[66] O. Sendtner, 'Solanaceae', in *Flora Brasiliensis*, vol. 10, ed. C. F. P. Martius (Leipzig, 1846), pp. 9-113 at pp. 111-12.
[67] M. F. Dunal, 'Solanaceae', in *Prodromus systematis naturalis regni vegetabilis*, vol. 13, ed. A. P. de Candolle (Paris, 1852), pp. 1-690 at p. 372.
[68] Dampier op. cit. (note 7), pp. 65-6.
[69] Oxford University Herbaria, Sher-0001-b.
[70] Dampier, op. cit. (note 7), pp. 65-6.
[71] Ray, op. cit. (note 8), p. 225; Dampier, op. cit. (note 7), p. 156.
[72] Oxford University Herbaria, Sher-1471-a, and Ray, op. cit. (note 8), p. 130. Paraphrasing Ray, Dampier, op. cit. (note 7), p. 156 confirms that 'there is one of this genus in Mr. Ray's Supplement which agrees exactly with this in every respect, only that is twice larger at the least.'
[73] Dampier, op. cit. (note 7), p. 65.
[74] J. de Léry, J. *Histoire d'un Voyage faict en la Terre du Brésil* (La Rochelle, 1578), p. 106.
[75] Dampier, op. cit. (note 7), p. 54.

[76] Woodward, op. cit. (note 31); J. Petiver, *Brief Directions for the easie Making, and Preserving Collections of all Natural Curiosities* (London, n.d.), was a single sheet issued as part of J. Petiver, *Jacobi Petiveri Opera, Historiam Naturalem Spectantia; or, Gazophylacium.* vol. II (London, 1764).
[77] W. Dampier, *A New Voyage round the World* (London, 1697); Boxer, op. cit. (note 3).
[78] W. Piso and G. Markgraf, *Historia naturalis Brasiliae* (Lugdun, Batavorum, 1648), pp. 49-51.
[79] Dampier, op. cit. (note 7), pp. 55-6.
[80] Ibid., p. 64.
[81] Ibid., p. 67.