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Pre-Linnaean references for the Macaronesian flora found in Leonard Plukenet's works and collections

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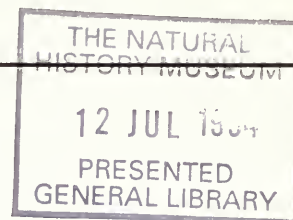
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CONTENTS

Introduction	1
Taxa found in Plukenet's works	3
Taxa found in Plukenet's herbarium but not in his works	29
Discussion	30
References	31
Systematic index	33
Bibliography abbreviations found in Plukenet's works	33

SYNOPSIS. A review of early references to the flora of the Macaronesian region has been carried out through the study of Plukenet's publications and his herbarium collection, now part of the Sloane Herbarium in The Natural History Museum in London. A total of 97 descriptions and 54 drawings of Macaronesian plants has been located in the four published works of this English herbalist that appeared between 1691 and 1705. 131 specimens from Macaronesia representing 87 taxa have been found in his collection; 33 of them do not have obvious descriptions in his published works and five descriptions, supposedly of Canarian plants, seem to have been incorrectly assigned to this region. Phrase-names described by earlier authors that were cited as synonyms by Plukenet have also been studied but few of them proved to be clearly related to Macaronesian taxa. This study reveals that Plukenet's work provides the single most important pre-Linnaean account of the Macaronesian flora, and his herbarium contains one of the oldest known collections of herbarium specimens from this region. The name *Campanula canariensis* L. (= *Canarina canariensis* (L.) Vatke) is lectotypified.

INTRODUCTION

The Macaronesian region comprises the archipelagos of the Canary Islands, Salvages, Azores, Madeira and Cape Verde and has strong links with the northwestern parts of Africa from southern Morocco to Cape Verde. Its flora contains a high number of endemics and has been traditionally regarded as a relic of the flora which existed in the Mediterranean basin during the Tertiary age (Sunding, 1979).

The earliest known reference to Macaronesian natural history was given in the first century AD by Pliny 'the elder' who mentioned the abundance of palm and pine trees in 'Canaria' and how, in what seems to be the island of El Hierro, there were 'Ferulae' trees which precipitated water

(Pliny, 1826a; for reviews of Pliny's work and the eastern Atlantic islands see Steffen (1944), Alvarez-Delgado (1945) and Martínez-Hernández (1992)).

The first European visitors who described the region noticed the peculiarities of its flora in accounts that dated from the fourteenth to sixteenth centuries (e.g. Niccoloso da Recco in 1341 (Bonnet, 1943); Bontier & Le Vernier in the early fifteenth century (Cioranescu, 1980); Gómez de Cintra in the mid fifteenth century (Bonnet, 1940); P. Gómez Escudero also in the mid fifteenth century (Morales-Padrón, 1978); A. de Palencia in the late fifteenth century (López de Toro, 1970), Fernandes in 1507 (Santiago, 1947); Díaz-Tanco in 1520 (Rodríguez-Monino, 1934; Del Río-Ayala, 1935); Nicols (1583); Frutuoso (Serra-Ráfols et al., 1964) and Torriani in 1590 (Torriani, 1978) and Espinosa (1594)). Some of these descriptions were based on the original names given by

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the pre-Hispanic inhabitants of these islands. As early as 1341 Niccoloso da Recco found that the bark of some Canarian trees could be used to produce red dyes. Similar accounts were also reported in the early fifteenth century as extensive areas of scrub of 'higüeres' (*Euphorbia balsamifera* Aiton) in Lanzarote and of 'tarajal' (*Tamarix canariensis* Willd.) in Fuerteventura were found by Bontier and Le Vernier respectively (Cioranescu, 1980).

Nevertheless, the earliest published and most complete list of endemics of the Macaronesian region, appears to have been provided by Díaz Tanco in 1520. This Spanish traveller visited the Canary Islands between 1505 and 1520 (Rodríguez-Monino, 1934) and published a list of at least 12 Canarian endemics, using the original pre-Hispanic names such as 'balos' (*Plocama pendula* Aiton), 'thabbaybas', actually 'tabaibas' (*Euphorbia* spp.) and 'tabinaste', actually 'tajinaste' (*Echium* spp.) (Del Río-Ayala, 1935). Analogous descriptions were given by the English trader T. Nicols who mentioned the local Spanish names of 'taybayba', 'barbusano' (*Apollonias barbujana* (Cav.) Bornm. and 'vinatico' (*Persea indica* (L.) Spreng.), for the latter noting that it was a tree 'exceeding heavie, and will not rot in anie water' (Nicols, 1583). However, the most comprehensive account of the Macaronesian flora from the sixteenth century was given by G. Frutuoso in 1590 (Serra-Ráfols et al., 1964). This Portuguese naturalist apparently visited the Canary Islands late in the sixteenth century and not only listed many of their endemics but also briefly described the vegetation of some of the islands.

Most of these works provided descriptions of the Canary pine (*Pinus canariensis* C. Sm.) and the Lauraceae forests and put special emphasis upon the orchil lichen (*Rocella* spp.), the Canary palm (*Phoenix canariensis* Chab.), the dragon-tree (*Dracaena draco* L.) and the rain-tree or 'garoe' (*Ocotea foetens* (Aiton) Baill.) of El Hierro. In addition, these references gave unique records concerning the use of plants by the pre-Hispanic inhabitants of the islands (García-Morales, 1989) which have been confirmed through the study of archaeological remains. There is clear archaeological evidence of the pre-Hispanic use of *Scirpus holoschoenus* L. (syn. *Holoschoenus vulgaris* Link) and *Phoenix canariensis* as textile species (Galván-Santos, 1980; Rodríguez-Santana, 1989), cropping of barley, wheat, lentil, broad bean and grass pea (Del Arco-Aguilar et al., 1991; Martín-Rodríguez, 1992) and the gathering of *Pinus canariensis* seeds, *Pteridium aquilinum* (L.) Kuhn rhizomes (Mathiensen, 1960) and *Visnea mocanera* L. f. fruits (Del Arco-Aguilar et al., 1991). The latter was quoted by early chroniclers as having its fruits eaten raw or used to make a kind of 'honey' or 'wine' known as 'cuhe' or 'chacerquen' (P. Gómez Escudero in Morales-Padrón, 1978; Espinosa, 1594).

Furthermore these early Canarians were able to make weapons and tools using wood of *Apollonias barbujana* (Cav.) Bornm., *Juniperus phoenicea* L., *Neochamaelea pulverulenta* (Vent.) Erdtman, *Olea europaea* L. ssp. *cerasiformis* (Webb & Berth.) G. Kunkel & Sunding and *Pinus canariensis* (Diego-Cuscoy, 1961).

Although a definitive study of the European knowledge of the Macaronesian flora between the fourteenth and eighteenth centuries has not yet been undertaken, there are reports which suggest that some of the endemic taxa were well-known by naturalists during this pre-Linnaean period. An example can be found in the *Historia general y natural de las Indias* by Fernández de Oviedo (1548). This renowned naturalist gave an extensive description of the 'rain-tree' on the island of El Hierro. Later, in 1590, Torriani reproduced

an original drawing of one of its branches, which facilitated the botanical identification of this species as *Ocotea foetens* (Maynar, 1943). Similarly, in 1576 Clusius gave a detailed description and drawing of *Dracaena draco* based on a tree which he found growing in Lisbon in the garden of the monastery of 'S. Maria a Gratia' (Arber, 1938).

Besides these references, it is also known that soon after the conquest of the islands some species were used as wood for building and firewood for sugar mills (Parsons, 1981). Plants were also exploited for products such as dyes (from *Parmelia perlata* (Huds.) Ach., *Rocella* spp., *Laurus azorica* (Seub.) Franco), soda (from *Zygophyllum fontanesii* Webb & Berth., *Mesembryanthemum crystallinum* L.), perfumes (from *Convolvulus scoparius* L. f.), medicines (from *Dracaena draco*) and pitch (from *Pinus canariensis*) (Schenck, 1907; Viera y Clavijo, 1808; 1866-1869; Lobo-Cabrera, 1988). A strong trade based on these products was established between the Canaries and the most important European ports during the fifteenth and sixteenth centuries (González-Yanes, 1953; Fernández-Armesto, 1982; Lobo-Cabrera, 1988) and many references to the granting of permission for their exploitation are given in official resolutions from the island council or 'cabildo' (Serra-Ráfols, 1949; Serra-Ráfols & De la Rosa, 1952, 1965, 1970). Mention of Canarian endemics can also be found in those documents that were issued to establish the division of the land after the conquest (Serra-Ráfols, 1978; Moreno-Fuentes, 1988). These documents are known as 'datas' and in them names of Canarian plants are usually given, as the plants were often used to indicate boundaries between different areas.

These few examples are drawn from only a small number of pre-Linnaean references on Macaronesian endemic plants. Further research is needed in order to provide a clearer picture of the state of knowledge of early explorers, herbalists and naturalists of the flora of this region.

Leonard Plukenet was one of the most outstanding botanists of the seventeenth century. With its approximately 2000 plant drawings, his *Phytographia* (Phyt.) was one of the most important pre-Linnaean works containing illustrations of plants. This work was issued in four volumes between 1691 and 1694 (Plukenet, 1691a, 1691b, 1693, 1694) and he also had an extensive herbarium with approximately 8000 specimens (Pulteney, 1790) which was the basis for many of his drawings (Dandy, 1958). This large collection was the result of his enthusiastic acquisition of specimens, particularly of those exotic plants then grown in the most important gardens of Britain. He was also in close contact with most of the British herbalists of the time such as Doody, Cuninghame, Ray, Sloane and Petiver and was in correspondence with other botanists from abroad (Pulteney, 1790). Most of his collection is now at The Natural History Museum in London (BM) where it comprises Volumes 84-105 of the Sloane Herbarium. There are also two unnumbered volumes containing his specimens which are titled 'Herbarium Vivum Plukenetianum' (HVP) and 'Thesaurus Botanicus'. Between 1696 and 1705, Plukenet produced three other works (Plukenet, 1696, 1700, 1705) in which he gave descriptions of the plates illustrated in his *Phytographia* and also listed many more plant species for which drawings were not published. These works are *Almagestum botanicum* (Alm.), *Almagesti botanici mantissa* (Mant.) and *Amaltheum botanicum* (Amalth.) in which the taxa are enumerated alphabetically under their polynomial names. Additional illustrations were included in the last two of these works, and so about 2740

figures can be found in Plukenet's works as a whole. It seems that only those plants regarded as exotic were included in the *Phytographia*, and the other three publications contain the rest of his collection (Pulteney, 1790).

The work of Plukenet was greatly admired by Linnaeus who considered his *Phytographia* to be one of the most extraordinary pieces of botanical illustration then published (Linnaeus, 1736, 1751). Linnaeus himself frequently referred to Plukenet's polynomials in describing and naming many of his own species.

In this paper we will review the publications of this English herbalist in relation to the Macaronesian flora. The aim of this study has been to assess what knowledge of the flora of the region was available to the European herbalists in the seventeenth century.

Manuscripts from Plukenet's collection which are held in the Sloane Collection at the Department of Manuscripts in the British Library (BL) have also been studied (see Scott (1904) for the location of Plukenet's manuscripts in the Sloane Collection).

For most of the species listed in his works, Plukenet referred to plant names given by previous herbalists. However references to these authors were given in an abbreviated form and a key for them was presented in the final part of the *Almagestum*. In order to locate possible previous accounts of the Macaronesian taxa, earlier names cited by Plukenet have also been studied. Nevertheless some of the abbreviated references were not listed in Plukenet's key and we have therefore attempted to trace them through the reviews of botanical literature carried out by Linnaeus (1736), Pritzel (1872), Jackson (1881) and Heller (1959) and through the resources of the British Library and the Libraries of the Royal Botanic Gardens, Kew and The Natural History Museum. A list clarifying the abbreviations encountered in those of Plukenet's descriptions that are covered in our study appears at the end of this paper. It is hoped that this will help other researchers to trace some of the early references mentioned in Plukenet's works.

The possible influence of Plukenet's works on subsequent studies of the Macaronesian flora was analysed by reviewing the utilization of Plukenet's names by Linnaeus (Richter, 1835–1840) and Webb & Berthelot (1836–1850). Further research in this area was undertaken through the study of those identifications of Plukenet's drawings provided by Giseke (1779) and Tenzel (1820) and of Linnaeus' annotated copies of Plukenet's works held at the Linnean Society of London.

Taxonomic determination of phrase-names or polynomials given by Plukenet was undertaken after study of his herbarium collection at the Department of Botany (BM). This was facilitated by the fact that many of the specimens were labelled by Plukenet with references to the plate and figure numbers of his works. Plukenet's handwriting was compared with that found in Dandy (1958) and in his correspondence from the Sloane Collection at the Department of Manuscripts in the BL. For those labels which apparently were not written by Plukenet, specimens were checked with the original illustrations found in his works. Labelled specimens which do not seem to be similar to their respective illustrations are also reported in this study. There are also some collections that do not have an obvious description or illustration in Plukenet's published work and there are also Macaronesian specimens which have no label.

It is hoped that the results presented here will help to

encourage further research concerning early references to the flora of the Macaronesian region and will contribute to the understanding of how the natural history of this area was perceived by European naturalists of the seventeenth century.

List of abbreviations. BL = British Library, BM = The Natural History Museum, London (formerly the British Museum (Natural History)), HS = Sloane Herbarium, HVP = Herbarium Vivum Plukenetianum. The following abbreviations refer to the most frequently used references in this study: Alm.: = Plukenet (1696), Amalth.: = Plukenet (1705), Linn. = Linnaeus (1753), Gis. = Giseke (1779), Mant. = Plukenet (1700), Phyt. = Plukenet (1691a, 1691b, 1693, 1694), Ten. = Tenzel (1820), W.B. = Webb & Berthelot (1836–1850).

TAXA FOUND IN PLUKENET'S WORKS

A total of 97 descriptions of Macaronesian plants has been found in Plukenet's works, and each is listed below. In this list each description is given an entry number followed by the polynomial name used by Plukenet in bold. Text not relevant to the actual description has been omitted, and is indicated by '[. . .]'. Reference to Plukenet's published accounts and illustrations is given after the phrase-name including the appropriate page or plate number (abbreviated as 't.'), the latter being followed by the figure number (abbreviated as 'f.'). Plates from *Almagesti botanici mantissa* and *Amaltheum botanicum* are abbreviated using the code 't.'

Information compiled for each entry is treated under five headings:

- (1) Earlier names and references mentioned by Plukenet (coded as Syn.). Names are given in italics followed by the reference author in parenthesis. Untraced names and references are cited as they are found in Plukenet's text followed by '[?]'.
 - (2) Citation of Plukenet's descriptions in works by subsequent authors dealing with the Macaronesian flora (coded as His.). The binomial name with which Plukenet's polynomial has been identified by Linnaeus (1753), Giseke (1779), Tenzel (1820) and Webb & Berthelot (1836–1850) (coded as Linn., Gis., Ten. and W.B. respectively) is given in square brackets.
 - (3) Taxonomic determinations of Plukenet's polynomials (coded as Det.). Labelled specimens used in establishing these determinations (made by us) and their location in HS are given in square brackets. Additional information is given in square brackets. Nomenclature and taxonomy follows Hansen & Sunding (1993); endemic taxa are marked with an asterisk. Illegible handwriting is indicated as [illeg.]. Determinations which are only based on Plukenet's description and not on drawings or specimens from his collection are indicated with '[?]'.
 - (4) Other herbarium specimens (coded as Oth.). Under this heading we list those specimens of Macaronesian taxa found in Plukenet's collection which are not labelled with a corresponding polynomial or a reference to Plukenet's works.
 - (5) Comments (coded as Com.). Under this heading we provide supplementary information including Spanish common names reported by Plukenet, origin of material and other relevant details found in the original description or in

Plukenet's herbarium. This study of Spanish common names given by Plukenet has drawn on the studies of Viera y Clavijo (1866–1869), Ceballos & Ortuño (1951), Kunkel (1971) and Santos-Guerra (1983).

1. *Acetosa arborescens, subrotundo folio; ex Insulis Fortunatis* Alm.: 8 (1696), Mant.: 3 (1700), Phyt.: t. 252, f. 3 (1694).

Syn.: *Lunaria magorum Arabum Ital. Lunaria di Magi Arabi* (Lobelius, 1576), *Lunaria magorum Arabum* (Lobelius, 1581), *Lunaria Oxalidis rotundae folio* (Bauhin, 1596), *Oxalis rotundi folia frequentissima: a Rovillio picta, sed non descripta: sorte Lunaria Magorum Arabum* (Pona, 1601), *Lunaria magorum Arabum quid?* (Bauhin, 1623), *Lunaria magorum Arabum* (Bauhin & Cherler, 1651).

His.: *Rumex lunaria* L. [Linn.; Gis.; Ten.; W.B.].

Det.: * *Rumex lunaria* L. [HS 93: 9, 95: 12].

Oth.: HS 99: 14, HVP: 4.

2. *Adiantum album Canariense, ramosius* Alm.: 11 (1696).

3. *Alsine spuria repens ex Insulis Fortunatis folio Hederae terrestris, molli, & incano* Alm.: 24 (1696), Phyt.: t. 256 (1694).

Com.: None of the drawings published by Plukenet in Phyt.: t. 256 appears to correspond with the description in the *Almagestum* and we believe that the citing of this plate was an error.

4. *Amaranthus Siculus spicatus, radice perenni* [. .] **ex Insula Maderensi** Alm.: 26 (1696), Phyt.: t. 260, f. 2 (1694).

Syn.: *Amaranthus Siculus spicatus, radice perenni* (Boccone, 1674).

His.: *Achyranthes aspera* L. [Linn.; Gis.; W.B.], *A. argentea* Lam. [Ten.].

Det.: *Achyranthes aspera* L. [HS 95: 41; 99: 61].

Oth.: HS 97: 78.

5. *Anagallidis facie Frutex Canariensis* Alm.: 29 (1696).

6. *Anonis viscosa lutea, non spinosa, minor. Ex Insula Pico* Amalth.: 15 (1705).

Syn.: *Anonis viscosa lutea non spinosa minor Lusitanica* (Hermann, 1698).

7. *Anonis viscosa lutea mitis capreolata erecta foliis splendentibus glabris* [. .] **ex Insulis Fortunatis ad nos allata est** Mant.: 15 (1700).

Syn.: Plukenet gave the following synonym: *Anonis (sortè) annua lutea, siliqua glabra breviori* (Morison, 1680). However, the name found in Morison's work is '*Anonis lutea annua recta hirsuta viscosa siliquis hirsutis brevioribus, nobis*'.

8. *Apocynum arboreum ad Elaeagni faciem accedens Canariense, siliquis binis Nerii aemulis, (Cornicar Insulanicus vulgo) apicibus recurvis* Alm.: 35 (1696), Phyt.: t. 260, f. 3 (1694).

Syn.: *Nelem-pala* (Rheede tot Draakenstein, 1689).

Det.: *Periploca laevigata* Aiton [HS 99: 83].

Oth.: HS 95: 55.

Com.: Plukenet reported the common name 'Cornicar'; plants of this species are known as 'cornical' in the Canaries. This species was described twice by Plukenet (see entry 10), this description being based on adult plants.

9. *Apocynum scandens, angustis Rosmarinae foliis, e Maderaspatan. Nannary-chedde Malabarorum. Huic multum convenit Illud, quod ex Insulis Canarinis, olim nobis transmittebatur, & in Almagesto nostro memoratur* Amalth.: 19, t. 361, f. 1 (1705).

10. *Apocynum scandens angusto Rorismarini folio, ex Insulis Fortunatis* [. .] **Henio Hispanis vulgo** Alm.: 37 (1696), Mant.: 17 (1700), Phyt.: t. 261, f. 2 (1694).

Syn.: *Naru-nindi* (Rheede tot Draakenstein, 1690), *Apocynum Hispanicum frutescens Linariae folio* (Tournefort, 1694), *Apocynum fruticosum scandens, Genistae, Hispanicae facie, floribus luteis odoratis* (Sloane, 1696). According to the description (Mant.: 17) the name *Apocynum (forte) caule tenui alte scandens capsulis echinatis* was used by Banister (1693). However, we have been unable to find this name in this work.

Det.: *Periploca laevigata* Aiton [HS 99: 85].

Com.: The Spanish common name 'Henio' is mentioned by Plukenet. However, plants of this species are known as 'cornical' in the Canary Islands. The species was described twice by Plukenet (see entry no. 8), this second entry being based on young plants which are morphologically rather different from adult individuals.

11. *Aquifolium laeve non spinosum, angustiore folio Lauri; ex Insula Palma* Amalth.: 19 (1705).

Det.: * *Ilex canariensis* Poir. [?].

Com.: Determination based on the description and on a specimen found in HS 189: 12 in J. Cuningham's collection from La Palma, made on the island in the late seventeenth century.

12. *Aquifolium amplissimis foliis Minus corrugatum ex Insulis Fortunatis* Alm.: 38 (1696), Mant.: 18 (1700), Phyt.: t. 262, f. 1 (1694).

His.: *Ilex platyphylla* Webb & Berth. [W.B.].

Det.: * *Ilex perado* Aiton ssp. *platyphylla* (Webb & Berth.) Tutin [HS 95: 60].

13. **Arbor Americana amplioribus subrotundis duris & nervosis foliis, fructu pugni majoris magnitudine. Insulis Fortunatis & Jamaicensibus nostratibus Mamee nuncupatur [. . .] Mommina, s. Mamee arbore [. . .] Hujus autem fructus ut Mala-granata sunt putamine corticoso. Mammee Canarinae folijs, & facie, Arbor ex Insula Johanna Alm.: 39 (1696), Mant.: 125 (1700), Phyt.: t. 268, f. 1 (1694), Phyt.: t. 204, f. 2 (1694).**

Syn.: *Mamey* (Nieremberg, 1635), *Anda Brasiliensibus* (Marggraf, 1648), *Arbor vinifera Couton Juglandi similis* (Bauhin & Cherler, 1650).

Det.: *Mammea americana* L. [a herbarium specimen for this species is found in HS 96: 170. It has a label which states 'Mammee vera Arboris loium ex Insula Canarina' and does not have any reference to Plukenet's works. However it resembles the illustration depicted in Phyt.: t. 268, f. 1. There is another specimen in HS 99: 91 which refers to this plate but without any mention of a collection site. The plant given in Phyt.: t. 268, f. 1 (HS 99: 110) is not of *M. americana* and it is not a species from the Macaronesian flora. We can only assume that Plukenet incorrectly assigned the illustration from Phyt.: t. 268, f. 1 to his description of *M. americana*. Plukenet also indicated that the drawing found in Phyt.: t. 204, f. 2 was of this species. However this plate and its corresponding specimen (HS 96: 171) are of *Bosea yervamora* L. which is a Canarian endemic. A description of this species was also provided by Plukenet (for further discussion see entry 15)].

14. **An Arbor mirabilis ex Insula Ferro aquam stillans**
Mant.: 171 (1700).

Syn.: *Sagapeni est liquor fruticis ferulacei oleandro montano similis, bonum quede colore ex albo* (Manadi & Sylvij, 1598), *Arbor aquam stillans* (Bauhin & Cherler, 1650), *Ombrion nullis aedificiorum vestigiis, habere, in montibus stagnum arbores similis ferulae ex quibus aqua exprimatur, e nigris amara ex candidioribus potui iucunda* (Pliny, 1826a), *In prima earum, cui nomem est Embrion, aedificia nec sunt nec fuerunt, iuga montium stagnis madescent ferulae surgunt ad arboris magnitudinem: earum quae nigrae sunt, expressae liquorem reddunt amarissimum, quae candidae, aquas revomunt etiam potui accomodatas* (Solinus, 1958), *Ferulae sunt arborescentes, afferente Vossio, Not, in Pompom, Melam [?], Sagapenum enim Ferulaceae Plantae gummi* Dioscorides tradit. lib. 3. cap 95 [?]. Plukenet also quoted the following description from Galenus (1587) '*Sagapenum enim Ferulaceae Plantae gummi esse. Quam. Panaci similem esse ait*'. However we have been unable to trace it in this publication.

Det.: * *Ocotea foetens* (Aiton) Benth. & Hook.f. [there is no herbarium specimen for this species in Plukenet's collection, determination has been based on the sixteenth century illustration given by Torriani (1978)].

15. **Arbuscula baccifera Canariensis, Syringae caeruleae foliis, purpurantibus venis, fructu monopyreno. Yerva-mora Hispanorum [. . .] Yerva-Mora ab Hispanis quoque dicitur Solanum baccis rubris & aureis; Ipsum tamen Solani ethymon ob quandam in quibusd partibus similitudinem longe pluribus iisque diversissimis stirpium generibus ab eodem Populo imponi consuevit: Affinitas ergo formae & coloris baccarum eo sorsan Hispanos Canariense induxit, ut hujus Arbusculam Yerva Mora (i.e.) Solani titulo insigniverint Alm.: 42 (1696), Mant.: 21 (1700).**

Syn.: *Tilia sorte arbor racemosa, folio longiori subtus albicante nervis purpureis insignito, flore pentapetalo purpureo* (Sloane, 1696).

His.: *Bosea yervamora* L. [Although Linnaeus published this name originally in 1753, he cited Plukenet's polynomial as a synonym only in the twelfth edition of his *Systema naturae* (Linnaeus, 1767); W.B.].

Det.: * *Bosea yervamora* L. [a herbarium specimen found in HS 96: 171 belongs to this species. Plukenet associated this specimen with the figure in Phyt.: t. 204, f. 2 and the description of entry 13 (Alm.: 39). However his description of *B. yervamora* does not refer to this illustration. In fact in Alm.: 39 he identified it as a species of *Mammea*; this is also confirmed by one of the labels of the specimen which states: 'A Mamee Mamaya s. Momin'. Plukenet's accounts for *B. yervamora* (Alm.: 42, Mant.: 21) are extremely precise in, for example, the citation of the common name used in the Canaries. It is therefore surprising that he did not assign the illustration from Phyt.: t. 204, f. 2 (HS 96: 171) to the description].

Com.: Plukenet reported the use of the name 'Yerba-Mora' in the Canary Islands, where it is known as 'hierbamora', 'yervamora' and 'hediondo'. This name is also mentioned in his description from Alm.: 181, Mant.: 99, namely *Hedera arborea ex argenteo & viridi foliis eleganter variegatis* [. . .] *Neque prorsus abhorres a Yerva Mora Canariensibus Hispanis. Hujus [. . .] non autem scandit haec sed erigitur (= Hedera helix L.)*.

16. **Arbuscula Canariensis Salicis, aut potius Oleae Sylv. Barbadiensium foliis & facie, seminibus ad tactum (quando maturis) e capsulis cum strepitu profiliantibus, Snap Tree nostratibus vulgo. in Hort. Reg. Sancti Jacobi apud Westmonasterium praeterito anno cura D. Georg. London ex Seminibus natae sunt quamplurimae hujus adolescentes arbusculae [. . .] Quoad Vascula seminalia magnam habet convenientiam cum Curini Speciebus Malabarorum Alm.: 44 (1696), Phyt.: t. 313, f. 1 (1694).**

Det.: * *Justicia hyssopifolia* L. [HS 93: 140].

Com.: From the account of this species it seems that Plukenet based his description on material grown by George London, who was Master Gardener and Deputy Superintendent of the Royal Gardens under William III. The description found in entry 34 also seems referable to *J. hyssopifolia*.

17. *Arbutus angustiori folio non serrato ex Insulis Fortunatis. Aut potius Cerasus Canariensis Adrachne foliis magis acuminatis, fructu parvo, Fragiformi, monopyreno & Cerasis nostratibus plurimum diversi* Alm.: 49 (1696).

Syn.: *Morocoks* (Ogilvy, 1671).

Det.: *Myrica faya* Aiton [a specimen of this species is found in HS 95: 104; it does not bear any reference to Alm.: 49 except a label which states 'Arbutus non [illeg.] ex Canarinis'; a tentative determination has been made based on the resemblance of this specimen to Plukenet's original description. It seems that this species was described twice as the description is virtually identical to that found in entry 23].

18. *Arbutus serratis foliis Canarina, cortice circumrupto, sive duodecies Anni spatio, corticem abjiciens, ex Insula Tenerifa nobis est allata* Alm.: 49 (1696).

His.: *Arbutus canariensis* Veill. [W.B.].

Det.: * *Arbutus canariensis* Veill. [there is a specimen of *A. canariensis* in HS 95: 104 which, although not explicitly linked to any page number of the *Almagestum*, bears three labels which agree with the original description from Alm.: 49].

Com.: One of the main features of this species is that individuals change their bark regularly. This was noticed by Plukenet and was mentioned both in the description (Alm.: 49) and on the specimen labels.

19. *Atriplex angustifolia Canariensis, maritima, dentata, repens. Flos de Alumo Hispanis dicta* Alm.: 61, 399 (1696), Phyt.: t. 326, f. 3 (1694).

Syn.: *Atriplex angustifolia maritima dentata* (Ray, 1686), *Atriplex argentea dentata curassavica* (Hermann, 1689).

Det.: *Atriplex glauca* L. [there is now no specimen upon which Plukenet's account was based; a tentative determination has been made based on the drawing from the *Phytographia*].

Com.: The use of the common name 'Flos de Alumo' is reported by Plukenet, though plants of *A. glauca* are known in the Canary Islands by the names 'saladillo', 'salado' and 'marisma'.

20. *Buphthalmum Canariense Leucanthemum, Cotulae foetidæ crassioribus foliis, radice, acrisapore, & fervido* [. . .] *Magala ab Insulanis nuncupatur* Alm.: 73 (1696), Phyt.: t. 272, f. 6 (1694).

Syn.: *Pyrethrum flore Bellidis* (Bauhin, 1623).

His.: *Chrysanthemum frutescens* L. [Linn.: Gis.], *Pyrethrum frutescens* (L.) Gaertn. [Ten.], *Argyranthemum frutescens* (L.) Sch. Bip. [W.B.].

Det.: * *Argyranthemum frutescens* (L.) Sch. Bip. ssp. *frutescens* [there is a specimen in HS 95: 200 of *A. frutescens* which bears a label which states 'Cotula e Canarinis Ins.' but the material resembles the figure found in Phyt.: t. 272, f. 6. Plukenet incorrectly cited Phyt.: t. 272, f. 5 for this species, and it is Phyt.: t. 272, f. 6 which agrees with the description. Subsequent taxonomic works from Linn., Gis., Ten. and W.B. noted this error and established that the correct drawing for this name is that in Phyt.: t. 272, f. 6].

Oth.: HVP: 28.

Com.: The use of the common name 'Magala' is indicated in the description. This species is known locally as 'margarza'.

21. *Campanula Canariensis Regia. s. Medium radice tuberosa, foliis sinuatis, coeßis, Atriplicis aemulis, ternis circa caulem ambientibus, flore amplo pendulo, colore flammeo rutilante* [. . .] *inter Convolvulorum species per incuriam posita, in Hort. Regio Hampton. nunc viget, ubi mende Januario, flores editit* Alm.: 76–77 (1696), Phyt.: t. 276, f. 1 (1694).

Syn.: *Cachruiaqua* (Hernández, 1651), *Totoncaxoxo coyollin* (Hernández, 1651).

His.: *Campanula canariensis* L. [Linn.; Gis.; Ten.; W.B.]. Det.: * *Canarina canariensis* (L.) Vatke [HS 95: 133; 99: 161; 102: 160].

Oth.: HS 87: 79; 92: 38; 104: 59; HVP: 33.

Com.: Plukenet reported that plants of this species were cultivated in the Royal Garden at Hampton Court Palace, in south-west London.

Lectotypification of *Campanula canariensis* Linnaeus

Linnaeus' protologue for this name (Fig. 1) in *Species plantarum* (Linnaeus, 1753) comprises a new diagnostic phrase name (*C. foliis hastatis dentatis oppositis petiolatis, capsulis quinquelocularibus*), the citation of two synonyms from Linnaeus (1738, also cited via van Royen, 1740) and Plukenet (1694, 1696), and the statement 'Habitat in insulis Canariis'. The diagnosis is a modification of that used in his earlier *Hortus cliffortianus* where Linnaeus published an illustration (see Fig. 2), but unfortunately no material exists in either the Clifford or Linnaean (LINN, S, UPS, H, MW) herbaria. Apart from Linnaeus' figure, the only other visual element in the protologue is the Plukenet illustration (see Fig. 3). Although it is perhaps a little more stylized than that executed by Ehret for Clifford (for *Hortus cliffortianus*), it shows the form of the corolla much more clearly, and has the considerable advantage that there is a voucher specimen in the Plukenet Herbarium upon which the illustration was evidently based. Both illustrations undoubtedly belong to the plant known as *Canarina canariensis* (L.) Vatke, so there are no taxonomic complications associated with this choice. Although the Clifford illustration would have been more familiar to Linnaeus, the existence of the voucher material makes us favour instead Plukenet's illustration and we formally choose *Campanula Canariensis regia s. Medium radice tuberosa, foliis sinuatis*,. . . Plukenet, *Almagestum Bot.* 76 (1696); *Phytographia* t. 276, f. 1 (1694) as the lectotype

* *Caule subdiviso.*

canariensis. 25. CAMPANULA foliis hastatis dentatis oppositis petiolatis, capsulis quinquelocularibus.
Campanula foliis hastatis dentatis, caule determinate foliolo. *Hort. cliff.* 65. t. 8. *Roy. lugdb.* 247.
Campanula canariensis regia f. Medium radice tuberosa, foliis sinuatis caeßis atriplicis æmulis ternis circum caulem ambientibus, flore amplo pendulo: colore flammeo rutilante. *Pluk. alm.* 76. t. 276. f. 1.
Habitat in insulis Canariis. 2

Fig. 1 The original protologue of *Campanula canariensis* Linnaeus (1753).



Fig. 2 Ehret's illustration of *Campanula foliis hastatis dentatis*, caule determinate foliose from Linnaeus' *Hortus Cliffortianus* (1738).

(typotype in Herb. Sloane 99: 161, BM) of *Campanula canariensis* L.

22. *Carduus Acanthoides*, s. *incanus minor*, *elegans*, ex *Insula Maderensi* Alm.: 85 (1696), Phyt.: t. 274, f. 1 (1694).

Det.: *Galactites tomentosa* Moench [HS 99: 170].

23. *Cerasus Canariensis*, *mucronato Lauri angustiore folio*, *fructu parvo Fragiformi*, *Ossiculo tuberculoso*, *monopyreno* Alm.: 95 (1696), Mant.: 43 (1700).

Syn.: *Morococks* (Ogilvy, 1671).

Det.: *Myrica faya* Aiton [?].

Com.: Description virtually identical to that found in entry 17.

24. *Cicutae fatuae nostrati similis*, *Planta Maderensis* Alm.: 104 (1696).

25. *Cistus latifolia major trinervis incano folio*, *floribus purpureis ex Insula Pico* Mant.: 49 (1700).

Syn.: *Ledon* (Belon, 1553), *Ledon tertium Cyprium* (Clusius, 1601a), *Cistus Ledon cretense* (Bauhin, 1623), *Cistus Ledon latifolium Creticum* (Bauhin & Cherler, 1651), *Cistus Ledon latifolium Creticum Triumphet* (Cupani, 1696).

26. *Convolvulus Canariensis*, *longioribus foliis mollibus*, & *incanis*. *Ahilo-porro Salvages Hispanis nuncupatur* Alm.: 114 (1696), Mant.: 54 (1700), Phyt.: t. 325, f. 1 (1694).

Syn.: *Convolvulus marinus Catharticus foliis Acetosae flore niveo* (Plumier, 1693).

His.: *Convolvulus canariensis* L. [Linn.; Gis.; Ten.; W.B.].

Det.: * *Convolvulus canariensis* L. [HS 93: 110].

Com.: The common name 'Ahilo-porro Salvages' is mentioned in the description. However *Convolvulus* species bear the common names 'corregüela', 'chaparro', 'guaydil', 'leña noel' whereas the name 'ajo porro' is used for plants of *Allium* spp.

27. *Convolvulus Canariensis minimus*, *flore ochroleuco*, *semine nigro*. *Hartelauena Indigenis dictus* Alm.: 400 (1696), Phyt.: t. 324, f. 4 (1694).

His.: *Sarothra gentianoides* L. [Gis.].

Det.: * *Convolvulus fruticosus* Desr. [there is a specimen without a label of this Canarian endemic in HS 93: 110. It resembles the drawing published by Plukenet and a tentative determination has been made based on it].

Com.: Plukenet mentioned the use of the common name 'Hartelauena' (perhaps a derivation of 'corregüela'). For common names of *Convolvulus* species see entry no. 26. It is worth mentioning that according to the description the species bears yellow flowers, however *C. fruticosus* does not bear flowers with this colour.

28. *Cupressus nana*, *Canariensis fructu minore*. In *Palma quoque Insula una ex Fortunatis oritur haec arbos* Alm.: 125 (1696), Mant.: 61 (1700).

Syn.: *Arbor cujus fructus Abhel* (Clusius, 1576), *Habhel* (Clusius, 1601a), *Cupresso similis Arbor in Syria* (Bauhin, 1623), *Uyt Persien kont daar de Gom Taxa* (Rauwolf, 1707).

Det.: *Juniperus* cf. *phoenicea* L. [?]

Com.: Determination based on the description. It is noteworthy that a specimen of this species is also found in HS 189: 32 in J. Cuninghams collection from La Palma. We were unable to find an earlier edition of Rauwolf's work.

29. *Cytisus arboreus*, *Canariensis, oblongo folio, argentea & holosericea lanugine subtus villosa, flore pallidiori* [. . .] *Texo Insulanis nuncupatur* Alm.: 128 (1696), Phyt.: t. 277, f. 4 (1694).

Syn.: *Cytisus albus sylvestris* (Cordus, 1561), *Cytisus Alpinus* (Dalechamps, 1586), *Cytisus albicans, folio Trifolii vulgaris* (Bauhin, 1623).

His.: *Cytisus proliferus* L. f. [W.B.].

Det.: * *Chamaecytisus proliferus* (L. f.) Link ssp. *proliferus* var. *proliferus* [HS 96: 2].

Com.: Plants of this species are known as 'escobón', Plukenet, however, reporting the common name 'Texo'. The name 'tejo' is used for plants of *Erica scoparia* L. ssp. *platycodon* (Webb & Berth.) Hansen & G. Kunkel.

30. *Cytisus Canariensis, microphyllus, angustifolius, prorsus incanis* [. . .] *Esta Insulanis nuncupatur* Alm.: 128 (1696), Phyt.: t. 277, f. 5 (1694).

Syn.: *Cytisus minoribus foliis, ramulis tenellis villosis* (Bauhin, 1623), *Cytisus Hispanicus, primus Clusii folio virescente* (Bauhin & Cherler, 1650).

His.: *Teline canariensis* (L.) Webb & Berth. [W.B.].

Det.: * *Teline canariensis* (L.) Webb & Berth. [HS 96: 2]. Plukenet did not give a figure number for this species in his *Almagestum*, but there is a herbarium specimen of *T. canariensis* which bears Plukenet's handwriting and indicating that it relates to Phyt.: t. 277, f. 5].

Oth.: HS 87: 117, 93: 132, 100: 14.

Com.: *T. canariensis* is known in the Canary Islands as 'retamón', 'retama de cumbre' or 'gildana'. However Plukenet reported the common name of 'Esta'.

31. *Cytisus Canariensis, microphyllus, cauliculis villosis angustis viridibus foliis* [. . .] *Mysalva Insulanis, dicta* Alm.: 128 (1696), Mant.: 63 (1700), Phyt.: t. 277, f. 6 (1694).

Syn.: *Cytisus Hispanicus siliquis Ornithopodij* (Bauhin, 1620), *Cytisus Montis Calcaris* (Bauhin & Cherler, 1650).

His.: *Genista canariensis* L. [Linn.; Gis.; Ten.], *Adenocarpus foliolosus* (Aiton) DC. [W.B.].

Det.: * *Adenocarpus foliolosus* (Aiton) DC. [HS 96: 2]. Plukenet did not give a figure number for this species in his *Almagestum*, but there is a herbarium specimen of *A. foliolosus* which bears Plukenet's handwriting indicating that it corresponds to fig. 6, and therefore the identifications provided by Linnaeus, Tenzel and Giseke were incorrect. Webb & Berthelot (1842) realised this error in their account of *Genista canariensis* L. and assigned Phyt.: t. 277, f. 5 for G.



Fig. 3 Plukenet's illustration of *Campanula Canariensis regia* s. *Medium radice tuberosa, foliis sinuatis*, from his *Phytographia*, t. 276, f. 1 (1694), the lectotype of *Campanula canariensis* L., *Sp. Pl.* 1: 168 (1753), designated here.



Fig. 4 Plukenet's illustration of *Digitali affinis Canariensis Solidaginis acutis foliis leviter pilosis, . . .* (= *Isoplexis canariensis* (L.) Loud.) from his *Phytographia*, t. 325, f. 2 (1694).



Fig. 5 Voucher material of *Digitali affinis Canariensis Solidaginis acutis foliis leviter pilosis*, . . . (= *Isoplexis canariensis* (L.) Loud.) in Plukenet's herbarium (now part of Herb. Sloane, vol. 100: 18 (BM)).

canariensis (see entry 30) and Phyt.: t. 277, f. 6 for *A. foliolosus*. This has been confirmed in our research after the study of the labels found with Plukenet's specimens].

Oth.: HS 100: 14, HVP: 53.

Com.: The common name 'Mysalva' is used by Plukenet, but *Adenocarpus* species are known as 'codeso'.

32. Digitalis affinis Canariensis Solidaginis acutis foliis leviter pilosis, flore aureo cucullato, staminibus croceis cristae cavo accumbentibus ornato [. . .] Matera Insulans vulgo, Hujus folia sunt impense amara Alm.: 400 (1696), Phyt.: t. 325, f. 2 (1694); see Fig. 4.

Syn.: *Adel-odagam* (Rheede tot Draakenstein, 1689), *Bahel-tsjulli* (Rheede tot Draakenstein, 1689).

His.: *Digitalis canariensis* L. [Linn.; Gis.; Ten.], *Callianassa canariensis* (L.) Webb & Berth. [W.B.].

Det.: * *Isoplexis canariensis* (L.) Loudon [HS 100: 18]; see Fig. 5.

Oth.: HS 87: 118.

Com.: Plukenet reported the use of the common name 'Matera', however plants of this species are commonly called 'cresta de gallo' or 'dedalera'. The species described in entry 33 also seems to refer to this name.

33. Digitalis lutea, flore magno, Canariensis Alm.: 131 (1696).

Syn.: *Digitalis lutea magno flore* (Bauhin, 1623), *Digitalis lutea flore maiore folio latiore* (Bauhin & Cherler, 1651).

Det.: * *Isoplexis canariensis* (L.) Loudon [?]

Com.: It seems that Plukenet described this species twice (see entry 32).

34. Ecbolii Indici, s. Adhatodae cucullatis floribus aemula, Hyssopifolia, Planta ex Insulis Fortunatis Alm.: 132 (1696), Phyt.: t. 280, f. 1 (1694).

Syn.: *Tsjanga-puspam* (Rheede tot Draakenstein, 1689).

His.: *Justicia hyssopifolia* L. [Linn.; Gis.], *Gendarussa hyssopifolia* (L.) Webb & Berth. [W.B.].

Det.: * *Justicia hyssopifolia* L. [HS 96: 13, 100: 20].

Oth.: HS 87: 122.

Com.: It seems that Plukenet described this species twice (see entry 16).

35. Echium album Maderense, & Echium Tingitanum procerius, floribus immaculatis Alm.: 133 (1696), Phyt.: t. 278, f. 5 (1694).

Det.: * *Echium* cf. *leucophaeum* Sprague & Hutch. [HS 100: 22].

Com.: Although the description is given for a plant from Madeira, the specimen found in HS 100: 22 is a Canarian endemic.

36. Ficoides Africanum Mesembrianthemum, s. Ficus Aizoides teretifoliis, fuccesis, micis argenteis interspersis, flore carneo ex Insulis Fortunatis. Cosca Insulans vulgo Alm.: 149 (1696).

Det.: *Mesembryanthemum nodiflorum* L. [determination based on the Spanish common name reported by Plukenet. It is noteworthy that in HS 96: 123 there is a herbarium

specimen without labels of this species].

Com.: Plants of this species are known as 'cosco' in the Canary Islands, a name extremely similar to that reported by Plukenet – 'Cosca'.

37. Ficus sylvestris [. . .] Hujus ramuli ex Insulis Fortunatis allati Alm.: 144 (1696), Phyt.: t. 281, f. 1 (1694).

Syn.: *De Caprifichi* (Anguillara, 1561), *Caprificus* (Cordus, 1561), *Ficus sylvestris* (Bauhin, 1623), *Caprificus voratur e sylvestri genere ficus nunquam maturescens* (Pliny, 1826b), *Ficus sylvestris* Dioscoridis [?].

Det.: *Ficus carica* L. [HS 100: 43].

38. Filicula crispa lanugine hepataci coloris vestita, ex Insulis Fortunatis Alm.: 150 (1696), Mant.: 77 (1700), Phyt.: t. 281, f. 4 (1694).

Syn.: *Filix minor russa lanugine tota obducta in pinnas tantum divisa raras non crenatas subrotundas* (Sloane, 1696).

His.: *Acrostichum marantae* L. [Linn.; Gis.], *A. velleum* Willd. [Ten.].

Det.: *Cheilanthes catanensis* (Cos.) H.P. Fuchs [HS 100: 52].

39. Filix Hemionitis dicta, Maderensis Hederae arboreae aliquatenus aemula, s. foliorum basi auriculis binis, utrinque donato Alm.: 155 (1696), Mant.: 82 (1700), Phyt.: t. 287, f. 4 (1694).

Syn.: *Hemionitis peregrina* (Clusius, 1601b), *Hemionitis peregrina Clusii & aliorum* (Ray, 1686), *Hemionitis peregrina foliorum segmentis sinuatis longioribus & magis acuminatis seu hederæ folio anguloso* (Sloane, 1696).

His.: *Asplenium palmatum* Lam. [Ten.].

Det.: *Asplenium hemionitis* L. [HS 100: 51. In HS 96: 44 there is a label without a specimen which states: 'Hemionitis Maderensis hederæfolio base auriculis binis [illeg.] donato'; it seems that it refers to this description].

40. Filix Hemionitis dicta Maderensis pediculis splendentibus nigris, crenatis foliis Asari rotundioribus crenarum segmentis oblongo quadratis, ob semina adnascencia per ambitum circumcirca reflexis Alm.: 155, 400 (1696), Mant.: 82 (1700), Phyt.: t. 287, f. 5 (1694); see Fig. 6.

His.: *Adiantum reniforme* L. [Linn.; Gis.; Ten.; W.B.].

Det.: *Adiantum reniforme* L. [HS 100: 51; see Fig. 7. In HS 96: 44 there is a label without a specimen which states: 'Hemionitis Maderensis pediculis nigris folys Asari rotundioribus' which seems to refer to this species].

41. Filix ramosa Canariensis Rutæ murariæ pinnulis angustis, altius incisus, mediae costae alternatim alligatis [. . .] Hujus folium totale, (circumscriptione) est sere triangulatum Alm.: 156 (1696), Phyt.: t. 291, f. 2 (1694).

His.: *Trichomanes canariense* L. [Linn., Gis., Ten.].

Det.: *Davallia canariensis* (L.) J. E. Sm., [HS 93: 169, 100: 61].

Oth.: HS 87: 143, 95: 19.

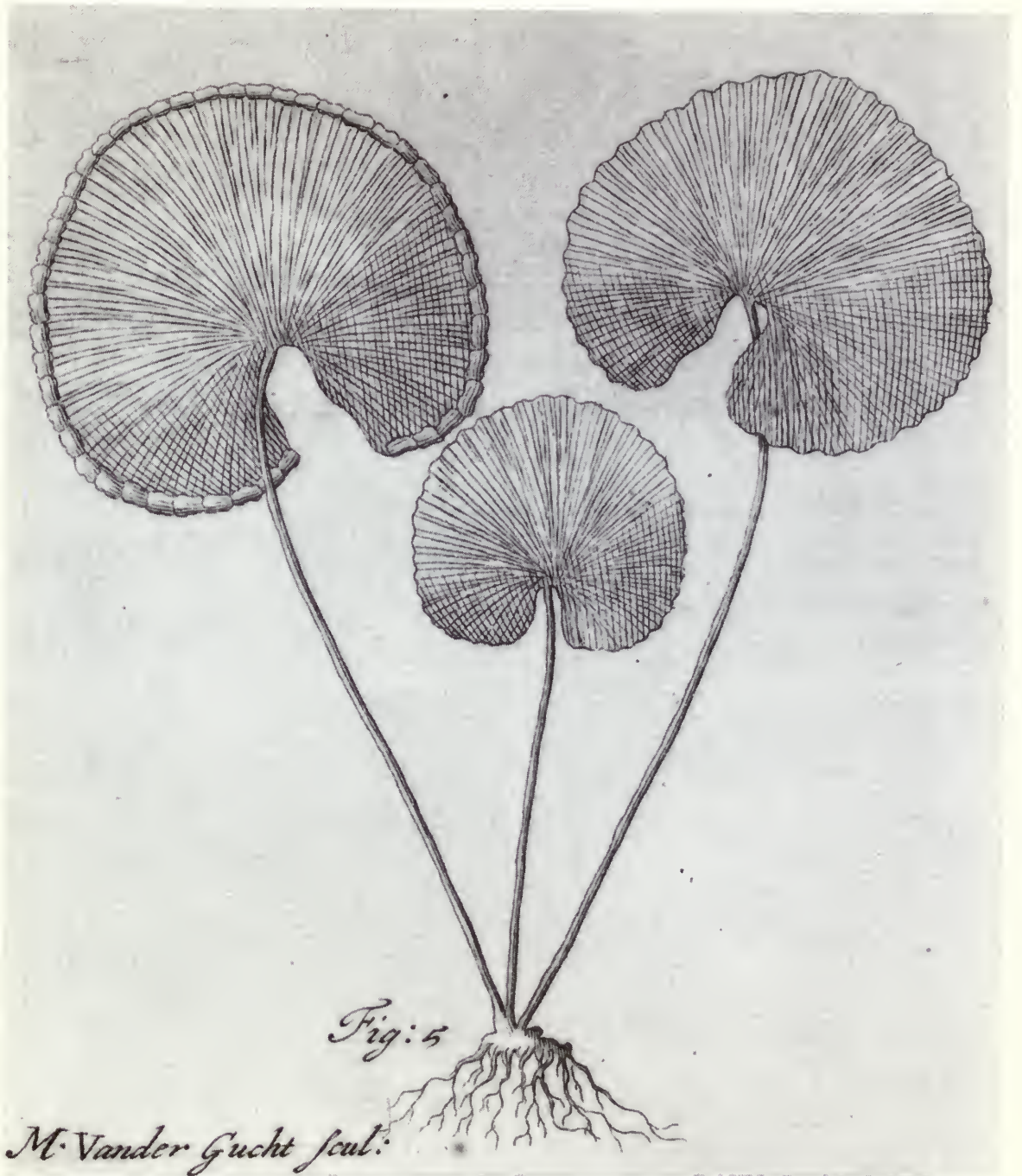


Fig. 6 Plukenet's illustration of *Felix Hemionitis dicta Maderensis pediculis splendidibus nigris, . . .* (= *Adiantum reniforme* L.) from his *Phytographia*, t. 287, f. 5 (1694).

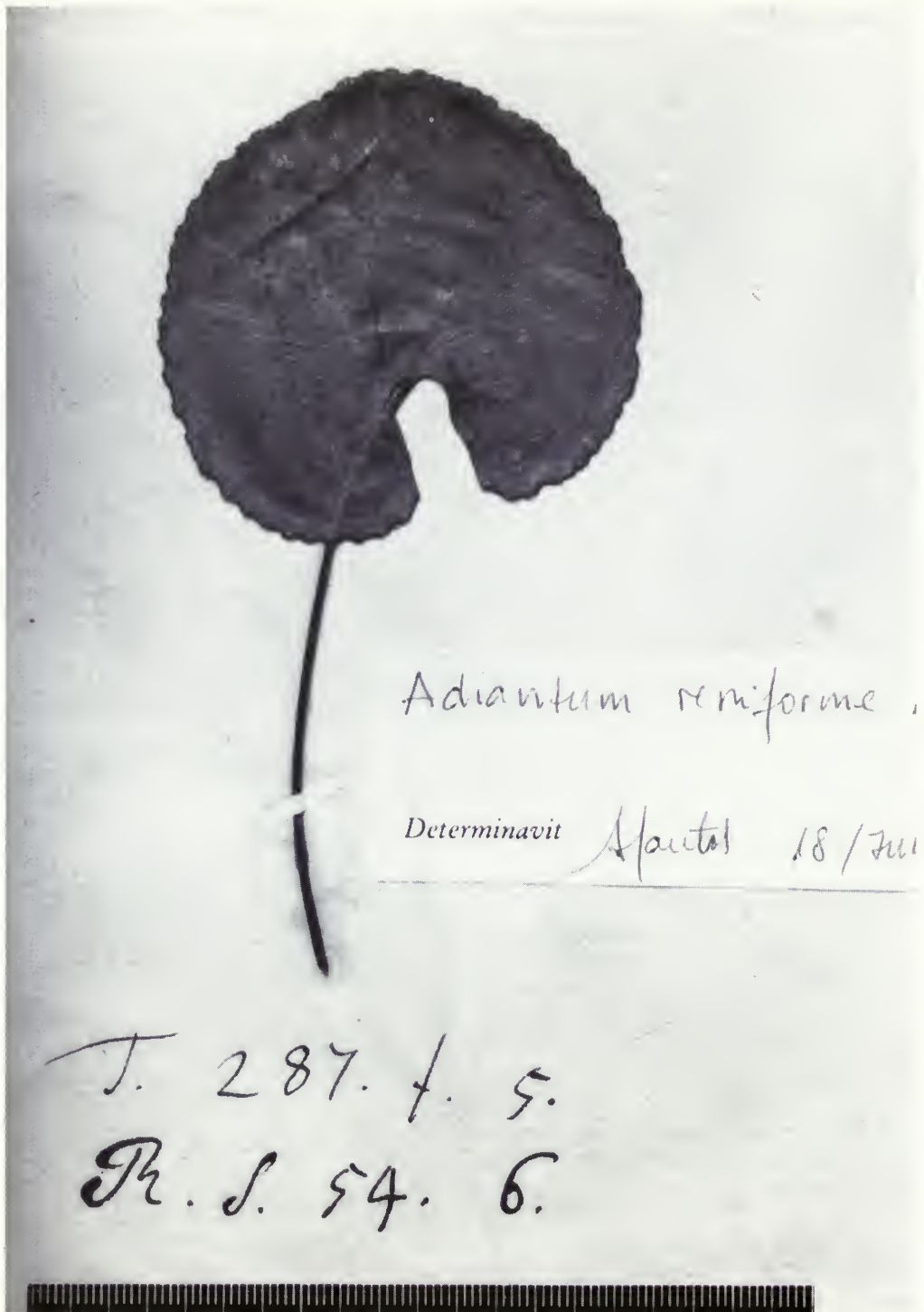


Fig. 7 Voucher material of *Filix Hemionitis dicta Maderensis pediculis splendidibus nigris*, . . . (= *Adiantum reniforme* L.) in Plukenet's herbarium (now part of Herb. Sloane, vol. 100: 51 (BM)).

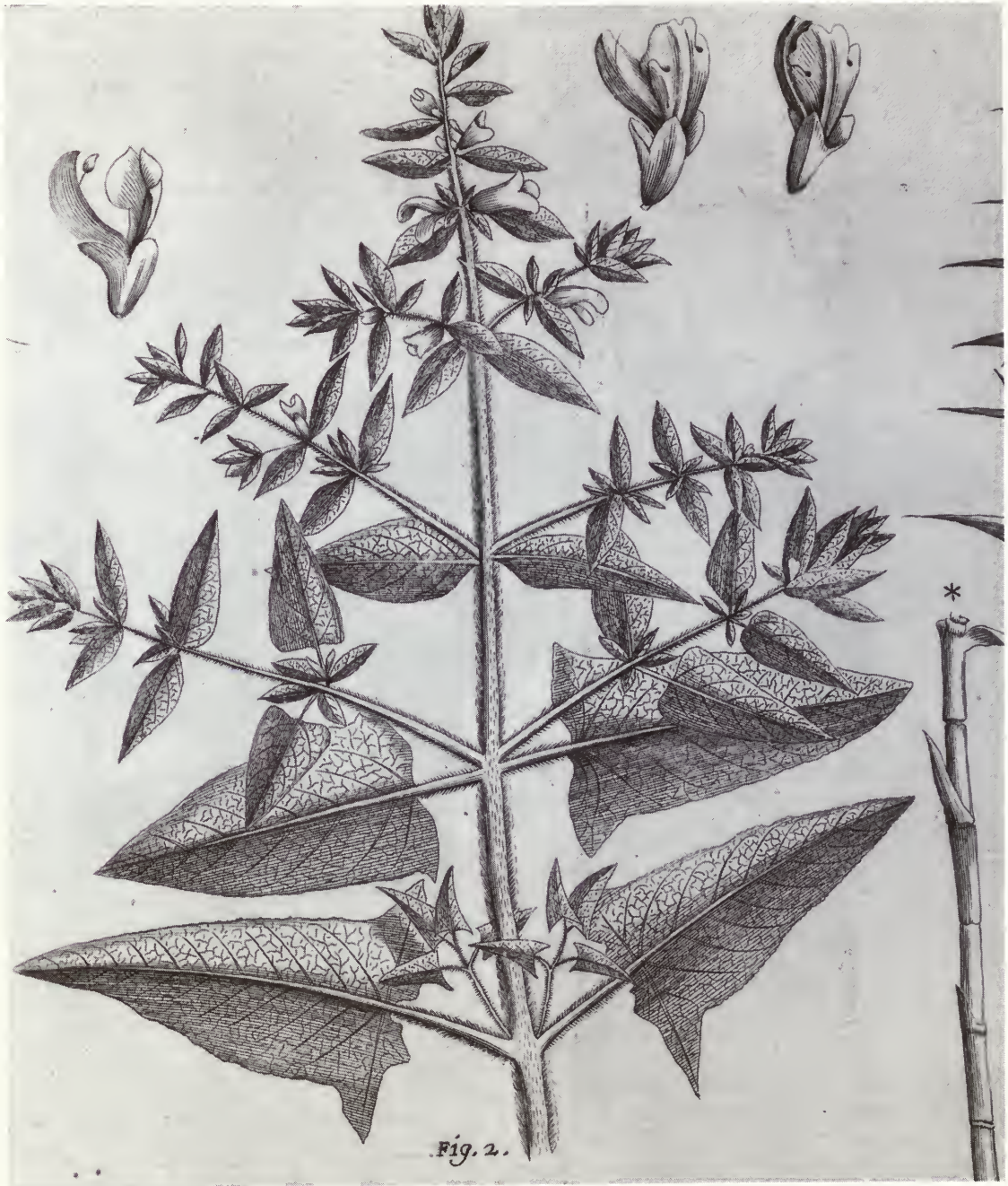


Fig. 8 Plukenet's illustration of *Horminum hastatis amplioribus foliis, s. Ari modo alatis, . . .* (= *Salvia canariensis* L.) from his *Phytographia*, t. 301, f. 2 (1694).



Fig. 9 Voucher material of *Horminum hastatis amplioribus foliis*, s. *Ari modo alatis*, . . . (= *Salvia canariensis* L.) in Plukenet's herbarium (now part of Herb. Sloane, vol. 100: 138 (BM)).

42. **Filix Saxatilis pervenusta, foliis punctatis, s. Adiantum Maderense folio Filicis, caule tenui candicante** Alm.: 150 (1696), Phyt.: t. 284, f. 4 (1694).

Syn.: *Filix pulverulenta pinnulis obtuse dentatis* (Plumier, 1693).

Det.: *Cystopteris* cf. *fragilis* (L.) Bernh. [HS 96: 40].

43. **Foeniculum dulce Azoricum; a communi dulci differt radiorum umbellae magnitudine, & longitudine, umbella concava, seminibus grandioribus** Alm.: 157 (1696).

44. **Geranium Cretico simile minus incanum acupusilla, ex Insulis Fortunatis** Alm.: 169 (1696).

45. **Geranium Hispanicum magna radice, Cicutae folio crassiori, [. . .] Insulis etiam Fortunatis reperitur, in quibus collectum suit, & nobis allatum** Alm.: 169–170 (1696).

Syn.: *Geranium Cicutae folio aculongissima* (Bauhin, 1620, 1623), *Geranium Hispanicum magna radice Cicutae folio crassiori* (Sherard, 1689).

46. **Geranium saxatile procumbens, foliis subtus canescentibus, flore majore candicante, ex Insula Pico. Cura industrij Hortulani Johannis Adams in Hort. Comptoniano, ex seminibus enutritam conspeximus** Mant.: 89–90 (1700).

Syn.: *Tlatlahu capatli Oxygeranio Mex.* (Hernández, 1651).
Com.: It seems that Plukenet based his description on plants from John Adams, Gardener to the Duke of Beaufort, presumably obtained from Henry Compton's Garden at Fulham Palace in London (Rohde, 1932).

47. **Gramen Canarium Ischaemi paniculis** Alm.: 175 (1696).

Syn.: *Gramen dactylon folio arundinaceo majus: aculeatum sorte Plinij* (Bauhin, 1623; Ray, 1688a), *Gramen Canarium Ischaemi paniculis* (Parkinson, 1640), *Gramen repens cum panicula Graminis Mannae* (Bauhin & Cherler, 1651), *Gramen legitimum* (Magnol, 1676).

48. **Helleborine similis Canariensis. Flos Spiritus Sancti, vulgo** Alm.: 183 (1696).

Syn.: *Flos Spiritus Sancti* (Hermann, 1689).

Com.: The common name 'Flos Spiritus Sancti' is given. Plukenet referred to a *Helleborine* similar to that from the Canary Islands, though as there is no mention of a *Helleborine Canariensis* in any of his works (but only to a '*Helleborine Canadensis*'), it is likely that this citation was a typographic error.

49. **Horminum hastatis amplioribus foliis, s. Ari modo alatis, caulibus & pediculis araneosa lanugine villosis, ex Insula Gomera quae una est ex Fortunatis [. . .] Mustazi Insulanis & Salvia arborea vulgo** Alm.: 185 (1696), Mant.: 103 (1700), Phyt.: t. 301, f. 2 (1694); see Fig. 8.

Syn.: *Sclarea Lusitanica glutinosa amplissimo folio* (Tournefort, 1694).

His.: *Salvia africana* L. [Linnaeus (1762); Gis.], *S. canariensis* L. [Ten.; W.B.].

Det.: * *Salvia canariensis* L. [HS 100: 138; see Fig. 9].

Oth.: HS 100: 99, 102: 47.

Com.: Linnaeus (1762) cited Plukenet's reference in the synonymy of *S. africana* L. He also identified the drawing from Phyt.: t. 301, f. 2 as *S. canariensis* in his annotated copy of Plukenet's *Phytographia*. The common names 'Mustazi' and 'Salvia arborea' are mentioned by Plukenet for the Canary Islands. However this species is known as 'garitope', 'salvia morisca' or 'salvia'.

50. **Horminum latifolium Canariense pilosum, foliis alterno situ pofita non repugnarent, eandem hane esse plantam suspicarer** Alm.: 185 (1696), Mant.: 103 (1700), Phyt.: t. 301, f. 3 (1694).

Syn.: *Marum Aegyptiorum* (Alpino, 1627).

Det.: * *Convolvulus canariensis* L. [HS 100: 138].

51. **Hypericum, s. Androsaemum magnum Canariense ramosum, copiosis floribus fruticosum** Alm.: 189 (1696), Phyt.: t. 302, f. 1 (1694).

His.: *Hypericum canariense* L. [Linn.; Gis.], *H. floribundum* Aiton [Ten.], *Webbia floribunda* (Aiton) Webb & Berth. [W.B.].

Det.: * *Hypericum canariense* L. [HS 96: 104].

52. **Jasminum album trifoliatum flore magno ex Insula Maderensi** Alm.: 195 (1696), Phyt.: t. 303, f. 1 (1694).

Syn.: *Jasminum sorte Azoricum* (Grisley, 1661).

His.: *Jasminum azoricum* L. [Linnaeus (1762); Gis.; Ten.].

Det.: * *Jasminum azoricum* L. [HS 100: 149].

Com.: A description for this species was also provided by Plukenet in entry 54.

53. **Jasminum Canariense foliis amplioribus laeto virentibus venosis, hirsutis & asperis, umbellatis Schetti floribus purpureis, ex caliculis inflatis, prorumpentibus. Ex Insulis Fortunatis nobis advecta. At ex India Orientali; ad D. Petiver allata est** Alm.: 196 (1696).

Det.: * *Viburnum tinus* L. ssp. *rigidum* (Vent.) P. Silva. [our determination is based on a specimen found in HS 100: 150 whose label states 'From Ins. Canaries, Jasminum'. The description provided by Plukenet agrees with most of the morphological features of this specimen].

54. *Jasminum Azoricum trifoliatum lucidum, acuminatis foliis, flore albo odoratissimo, flexilibus & obsequiosis Virgulis. A Jasmino flavo odoratissimo maxime diversum* Amalth.: 123, t. 423, f. 6 (1705).

Det.: * *Jasminum azoricum* L. [HS 93: 210].

Com.: The description found in entry 52 also refers to this species.

55. *Kali aizoides Canariense procumbens, Portulacae pallescentibus succulentis foliis, aspergine rorida perpetuo madidis [. . .] Poita Camilo Insulanis dictum; Haec species est ad caulium nodos prolifera cum floribus sere inconspicuis* Alm.: 202 (1696), Phyt.: t. 303, f. 4 (1694).

His.: *Aizoon canariense* L. [Linn.; Gis.; Ten.; W.B.].

Det.: *Aizoon canariense* L. [there is a herbarium specimen in HS 100: 42 which is similar to the figure given by Plukenet (Phyt.: t. 303, f. 4), it has a label which follows the description (Alm.: 202) but states that the specimen is from 'Ind. Or.'. Furthermore in HS 100: 92 there is a label without a specimen that states 'Kali aizoides procumbens lichenides folio ex Insulis Fortunatis'; it is likely that this label belongs to the specimen found in HS 100: 42].

Com.: The use of the common name 'Poita Camilo' (it may be a derivation of 'pata (de) camello') is indicated by Plukenet. Actual common names for this species are 'pata perro' or 'patilla'.

56. *Laurifolia Canarina diphyllis [. . .] Sorte Nimbo Javanensium prima* Alm.: 211 (1696), Phyt.: t. 305, f. 1 (1694).

Syn.: *Lauro Indica* (Bontius, 1658).

Com.: There is a herbarium specimen in HS 96: 143 associated with Plukenet's figure, but the specimen does not belong to any species of the Macaronesian flora.

57. *Laurotaxa epiphyllocarpos, crenatis foliis, maxima, e singulis foliorum crenis, baccifera. Ex Insula Palma; nuper allata est* Mant.: 114 (1700).

His.: *Ruscus androgynus* L. [Linnaeus published this name in 1753. However, he referred to Plukenet's polynomial only in his earlier *Hortus cliffortianus* (Linnaeus, 1738)], *Danae androgyna* (L.) Webb & Berth. [W.B.].

Det.: * *Semele androgyna* (L.) Kunth [?].

Com.: Specimens of this species have not been found in Plukenet's herbarium; this tentative determination is based on the original description and on information provided by Linnaeus (1738) and Webb & Berthelot (1847). Also, J. Cuninghame collected plants of this species during his stay in La Palma in the late seventeenth century, one of which is found in HS 189: 25.

58. *Laurus Azorica pallidioribus & latioribus foliis, inodora* Alm.: 210 (1696), Phyt.: t. 199, f. 3 (1693).

Syn.: *Laurus* [. . .] *Pompeius Lenaeus adjecit quam mustacem appellavit, quoniam mustaceis subiceretur. Hanc esse folio maximo, flaccido que et albicante* (Pliny, 1826c).

Com.: The specimen found in HS 96: 139 has a label which

refers to Phyt.: t. 199, f. 3, but it cannot be identified with any Macaronesian species.

59. *Laurus Indica* Alm.: 210 (1696), Mant.: 115 (1700), Phyt.: t. 304, f. 1 (1694).

Syn.: *Laurus Indica* (Aldino, 1625), *Laurus Indica. Indica sive Americana Laurus* (Ferrarius, 1633), *Laurus Americana cujus cortex Cassia ligneae multum assimilatur* (Parkinson, 1640), *Quauh eloxochitl* (Hernández, 1651), *Laurus Regia. Laurier Royal* (Vallot, 1665), *Laurus Americana sive Persea Clusij* (Schuyt, 1672), *Laurus* [. . .] *Accessit et regia, quae coepit Augusta appellari, amplissima et arbore et folio* (Pliny, 1826c).

His.: *Laurus indica* L. [Linn.; Gis.; Ten.], *Persea indica* (L.) Spreng. [W.B.].

Det.: * *Persea indica* (L.) Spreng. [HS 100: 167].

60. *Laurus Maderensis angustifolia pallida odoratissima, venis foliorum aversa parte magis extantibus* Alm.: 210 (1696), Phyt.: t. 199, f. 2 (1693).

Com.: The herbarium specimen which corresponds with this figure is found in HS 96: 138 but it does not belong to any Macaronesian species.

61. *Laurus Regia odoratissima Maderensis* Alm.: 210 (1696).

Syn.: *Laurus latifolia Azorica, Cinamomi odore* (Commelin, 1689), *Laurus Regia odoratissima Maderensis* (Hermann, 1689).

62. *Lavandula maritima Canariensis spica multiplici caerulea* Alm.: 209 (1696), Phyt.: t. 303, f. 5 (1694).

His.: *Lavandula multifida* L. [Gis.], *L. abrotanoides* Lam. [Ten.].

Det.: * *Lavandula buchii* Webb [HS 96: 134, 96: 135].

63. *Limonium parvum Bellidis minoris folio* Alm.: 221 (1696).

Syn.: *Limonium pumilum* (Clusius, 1601b), *Limonium parvum bellidis minoris folio* (Bauhin, 1623), *Limonium minus bellidis minoris folio. Petit Limonium a feuilles de Marguerite* (Dodart, 1676).

His.: *Statice limonium* L. [Linn.].

Det.: * *Limonium pectinatum* (Aiton) Kuntze [HS 96: 149]. The original description does not mention any of the Macaronesian Islands. However the specimen has a label (i.e. 'Limonium parvum Bellidis minoris folio CBP Limon. pumilum Clus. ex Insula Canarina') which follows the phrase-name from Alm.: 221 and also refers to the Canary Islands].

64. *Linariae similis, Arbuscula Canariensis, latiore folio viridi* Amalth.: 133 (1705).

Det.: * *Kleinia neriifolia* Haw. [?].

Com.: This description is similar to that of entry 65, and we believe that it refers to vigorous plants with broader leaves.

65. **Linariae similis Arbuscula Canariensis, folio longiore carnosio fragili, fubtus purpurascente Crithmum recipiens** Alm.: 223 (1696), Mant.: 118 (1700), Phyt.: t. 304, f. 3 (1694).

Syn.: *Plantae Lavendulae folio* (Clusius, 1605), *Frutex Indiae Orientalis Lavendulae folio* (Bauhin, 1623), *Arbor Lavendulae folio* (Bauhin & Cherler, 1650), *Texioquahoitl* (Hernández, 1651).

His.: *Cacalia kleinia* L. [Linnaeus published this name in 1753. However he quoted Plukenet's polynomial only in his earlier *Hortus cliffortianus* (Linnaeus, 1738)].

Det.: * *Kleinia neriifolia* Haw. [this determination is based on Plukenet's drawing and description. However there is also a herbarium specimen in HS 102: 86 without a label which belongs to this species].

66. **Lupinus major villosis foliis Maderensis flore albo & purpureo [. . .] nostra tamen folia, haud proprie angusta dici merentur** Alm.: 229 (1696), Mant.: 120 (1700).

Syn.: *Lupini albi in quorum genere reperiuntur maximi, flore antequam aperiatur, subcaeruleo intus vero albo* (Camerarius, 1588), *Lupinus sativus major, & quartus Clusii, flore e caeruleo purpurascente. Lupinus Aethiopicus quorundam* (Besler, 1613), *Lupinus Indicus medius caeruleus* (Parkinson, 1640), *Lupinus caeruleus minor perennis Virginianus repens, nobis* (Morison, 1680), *Lupinus medius caeruleus* (Ray, 1686), *Lupinus incarnatus* (Hermann, 1687), *Lupinus angustifolius, flore e candido purpureo* (Cupani, 1696).

Det.: *Lupinus albus* L. [?].

67. **Melissa Canarina multifido folio spicata, odorem Camphorae spirans, penetrantissimum** Mant.: 128, t. 430, f. 2. (1705); see Fig. 10.

Syn.: *Katu-kurka* (Rheede tot Draakenstein, 1690), *Moldavicae Species trifolia, ex America, nuper ad nos missa* Turnefort. de opt. Meth. instituend in re Herber epist. ad Sherard. pag. 18 [?].

His.: *Chrysanthemum indicum* L. [Ten.].

Det.: * *Cedronella canariensis* (L.) Webb & Berth. [HS 101: 13, upper specimen].

Com.: It appears that this species was described twice by Plukenet (see entry 69).

68. **Melissa (forte) an Mentha viridis. Haec autem Melissa non est, sed re vera ad Mentharum genera accenseri meretur, & nominari licet Mentha pilulifera Betonicae forma, & odore aromatico, ex Insulis Fortunatis. Polihomons Insulanic dicta** Alm.: 247 (1696), Mant.: 127 (1700), Phyt.: t. 307, f. 1 (1694).

Syn.: *Yxiayaboal Chapaltepecensis* (Ray, 1688b), *Melissa elatior foliis magnis dentatis glabris ad genicula binis, flores odoratos luteos patulos stamina bina quasi cornua protrudentes, in summitate caulium ramatim serens* (Banister, 1693). Det.: * *Bystropogon canariensis* (L.) L'Hér. [there is an unlabelled specimen corresponding with this species in HS 101: 15 which resembles the drawing depicted by Plukenet in Phyt.: t. 307, f. 1; a tentative determination is based on this specimen].

Oth.: HS 88: 73; 96: 187.

Com.: *Bystropogon* species are known in the Canaries as 'poleo de monte' o 'poleo monte', this agrees with Plukenet's description as he reported on the use of the word 'Polihomons'. Two different descriptions which seem referable to this species have been found in Plukenet's works (see also entry 70).

69. **Melissa forte Canarina triphyllis odorem Camphorae spirans penetrantissimum** Alm.: 401 (1696), Phyt.: t. 325, f. 5 (1694).

Syn.: *Aztaxochitl* (Hernández, 1651).

His.: *Dracocephalum canariense* L. [Linn.; Gis.], *Cedronella canariensis* (L.) Webb & Berth. [W.B.].

Det.: * *Cedronella canariensis* (L.) Webb & Berth. [HS 101: 13, lower specimen].

Oth.: HS 88: 71; 94: 14; HVP: 120.

Com.: The description found in entry 67 also refers to this species.

70. **Melissophyllum citratum ex Insulis Fortunatis, Lingo-veha ab Insulanic dictum** Alm.: 247 (1696), Phyt.: t. 306, f. 4 (1694).

Det.: * *Bystropogon* cf. *canariensis* (L.) L'Hér. [determination based on the drawing provided by Plukenet; however, there is also an unlabelled specimen in HS 101: 14 which resembles this figure].

Com.: The use of the common name 'Lingo-veha' is indicated for this entry. However plants of this species are known as 'poleo de monte' or 'poleo monte'. Another description which seems to refer to this species can be found in entry 68.

71. **Mentha Maderensis Insulae, minus odorata** Alm.: 248 (1696).

72. **Mentha sylvestris Azorica longioribus foliis incanis, spica longiore & crassiore** Alm.: 248 (1696).

73. **Mentha Canariensis frutescens, foliis subtus lanugine candidissima, villosis floribus glomeratis e sinu foliorum longioribus pediculis insidentibus** Alm.: 248 (1696), Phyt.: t. 307, f. 2 (1694).

His.: *Mentha canariensis* L. [Linn.; Gis.], *Bystropogon canariensis* (L.) L'Hér. [Ten.; W.B.].

Det.: * *Bystropogon plumosus* (L. f.) L'Hér. [HS 96: 186].

Oth.: HS 101: 18 [although this specimen is badly preserved, it resembles the drawing given by Plukenet in Phyt.: t. 307, f. 2].

Com.: The phrase-name found in entry 74 also seems to refer to this species.

74. **Mentha Canariensis, minore folio subtus incano, ramosissimus** Alm.: 248 (1696).

Det.: * *Bystropogon plumosus* (L. f.) L'Hér. [HS 96: 186. The specimen is not explicitly linked with Alm.: 248 but it does have a label which states 'Mentastrum incanum canariensis minore folio ramosiss' which follows this entry].

Com.: It seems that Plukenet provided another description for this species in entry 73.



Fig. 10 Plukenet's illustration of *Melissa Canarina multifido folio spicata. odorem Camphorae spirans, penetratissimum* (= *Cedronella canariensis* (L.) Webb & Berth.) from his *Phytographia*, t. 430, f. 2 (1705).

75. **Muscus arboreus aurantiacus, staminibus tenuissimis, ex Insulis Fortunatis** [. . .] **Totus citrino colore nitet peramaeno** Alm.: 254 (1696), Mant.: 132 (1700), Phyt.: t. 309, f. 1 (1694).

Syn.: *Laricus Muscus* (Bauhin & Cherler, 1650). Plukenet claimed that the name *Muscus arboreus rutilans* was given by Bauhin (1623); there are five polynomials commencing '*Muscus arboreus*' in Bauhin's work but none of them appears in exactly this form.

Det.: *Lethariella canariensis* (Ach.) Krog [HS 97: 4, 101: 31].
Oth.: HS 92: 94.

76. **Muscus cinereus, e ramis Arborum dependens, Canariensis, ex staminibus crassioribus geniculatis, in tenuissima & longissima fila ramulosus**. [. . .] **Tanta copia inveniuntur hi musci apud Virginienses iis praesertim locis, ubi in Maris accessu aquis abundant, ut Hiberno tempore Totas arbores quibus adnascuntur dejiciant, eo quod pabulum Vaccis & ovibus suis praebent gratissimum** Alm.: 254 (1696).

Syn.: *Muscus capillaceus longissimus* (Bauhin, 1623). Plukenet claimed that Clusius (1601) used the name *Muscus capillaceus cineri coloris, e ramis Ilicis dependens*. However, we have been unable to trace this polynomial in either part of this publication.

Det.: *Usnea articulata* (L.) Hoffm. [determination based on Plukenet's description and on an unlabelled specimen found in HS 101: 31 which follows this description].

77. **Origanum Maderense nostrati simile odoratus capitulis albicantibus. Gratissimo odore nares perstringit** Alm.: 272 (1696), Mant.: 141 (1700).

Det.: *Origanum vulgare* L. [?].

78. **Palma prunifera foliis Juccae, fructu racemoso Cerasi-formi, ossiculo duro cinereo, Pisi magnitudine, Lachrymam Sanguis Draconis dictam fundens** Alm.: 277 (1696).

Syn.: *Dracone arbore* (Clusius, 1576), *Draco* (Clusius, 1601a), *Draco arbor* (Bauhin, 1623; Parkinson, 1640), *Draco arbor et de eius Lacryma, seu sanguine e Draconis cinnabati Veterum* (Bauhin & Cherler, 1650), *Palma prunifera foliis Yuccae, fructu, in Racemis congestis, ceraciformi, duro cinereo pisi magnitudine: hujus lacryma, Sanguis draconis dicta, Draco Arbor, Clusi. Belg. Draken-boom* (Commelin, 1689), *Palma prunifera foliis Juccae fructu racemoso cerasiformi ossiculo duro cinereo pisi magnitudine Lachryman sanguis Draconis dictam sundem* (Kiggelaer, 1690).

Det.: * *Dracaena draco* (L.) L. [a herbarium specimen found in HS 91: 31 has a label agreeing with Plukenet's name].

79. **Papaver corniculatum rubrum minus ex Insulis Fortunatis. Mahopola Insulanis dictum** Alm.: 279 (1696).

Det.: *Papaver rhoeas* L. [?].

Com.: The common name 'Mahopola' is reported by Plukenet. Plants of *Papaver* spp. are called 'amapola' in mainland Spain and the Canaries.

80. **Peucedani folio Planta Maderensis** Alm.: 289 (1696).

Syn.: *Planta frutescens Africana perrara, foliis Peucedani, floribus conglomeratis Herbae castae Americanae nonnihil similibus* (Breyne, 1678b).

81. **Phaseolus teneri folius, fructu coccineo. ex Insulis Fortunatis a D.D. Uvedal accepimus** Alm.: 291 (1696).

Det.: *Phaseolus vulgaris* L. [?]

82. **Polygonum Juncoide Scoparium ex Insulis Fortunatis** Alm.: 303 (1696), Phyt.: t. 311, f. 3 (1694).

Syn.: *Alsine alpina junceo folio* (Bauhin, 1620, 1623).
Det.: * *Plocama pendula* Aiton [HS 97: 117].

83. **Polygonum ex Insula Palma, Serpylli foliis ad genicula confertis, argentea coma paleacea** Mant.: 154 (1700).

Det.: *Polygonum maritimum* L. [?]

Com.: Determination based on the description and on the fact that J. Cuninghame collected plants of this species during his stay in La Palma in the late seventeenth century. A specimen is in HS 189: 12 in Cuninghame's collection from this island. Plukenet also refers to this species in a phrase name found in Alm.: 122 (illustrated in Phyt.: t. 277, f. 3); his description is '*Cruciatae marinae similis, Planta Indiae orientalis* [. . .] *Huic valde similis es Insula Palma nuper est allata plantula, cui nomem dedi Polygonum Serpylli foliis, ex adverso binis, sericea coma candicante*'. There is no herbarium specimen for this name.

84. **Ranunculus Canariensis hirsutus grumosa radice Platani sere foliis, flore pallide luteo majore** Alm.: 313 (1696).

Syn.: *Ranunculus creticus latifolius* (Clusius, 1601a), *Ranunculus asphodeli radice Creticus* and also *Ranunculus lanugin. apii folio asphodeli radice* (Bauhin, 1623), *Ranunculus alter saxatilis Asphodeli radice* (Parkinson, 1640).

Det.: * *Ranunculus cortusifolius* Willd. [label for the specimen of *R. cortusifolius* is found in HS 97: 144 and quotes the description given by Plukenet in Alm.: 313].

85. **Rubia arborescens asperior Insularum Canariensium, foliis ad singula genicula ternis** [. . .] **Nettle-Tree a Mercatoribus dicta** Alm.: 323 (1696), Phyt.: t. 311, f. 4 (1694); see Fig. 11.

Det.: * *Rubia fruticosa* Aiton ssp. *fruticosa* [HS 97: 171; see Fig. 12].

86. **Saamounae Brasiliensium floribus aemula, Arbor Salvifolia sericea, dipetaloides, ex Insulis Fortunatis** Alm.: 326 (1696), Mant.: 164 (1700), Phyt.: t. 313, f. 2 (1694).

Syn.: *Teucroides filiculosum foliis laurinis, floribus, galeatis & labiatis* (Sloane, 1696).

Det.: * *Teucrium heterophyllum* L'Hér. [HS 98: 1].



Fig. 11 Plukenet's illustration of *Rubia arborescens asperior Insularum Canariensium*, . . . (= *Rubia fruticosa* Aiton ssp. *fruticosa*) from his *Phytographia*, t. 311, f. 4 (1694).



Rubia sylvestris asperior
Canariensis folijs plerumq[ue]
ad singula gemmula tenuis.
Nettle Trax Canariensis dicitur.

R. J. 261.

Tab. 311. f. 4.



Fig. 12 Voucher material of *Rubia arborescens asperior Insularum Canariensium*, . . . (= *Rubia fruticosa* Aiton ssp. *fruticosa*) in Plukenet's herbarium (now part of Herb. Sloane, vol. 97: 171 (BM)).



Fig. 13 Plukenet's illustration of *Solanum tomentosum Canariense spinosum*, fructu *Cerasorum* forma & magnitudine . . . (= *Solanum vespertilio* Aiton) from his *Phytographia*, t. 316, f. 3 (1694).

87. *Salicis folio Canariensis Arbuscula impatiens* [. . .] s. *Arbor crepitus*; The Snap-Tree nostratibus, & Satterel Insulans dicta. Ab Ecbolii Indici s. *Adhatodae*, cucullatis floribus *Aemula*, Hujus ex iisdem locis, parum diversa. Eademque est, cum *Arbuscula Canariensis Salicis* aut potius *Oleae Sylv. Barbados. folio & facie*, & c. Alm.: 328 (1696), Mant.: 165 (1700).

Syn.: *Apancholoa* (sorte) sive *Herba lymphis infiliens* Nieremberg. de Exotic fol. 351 [?].

Com.: The use of the common name 'Satterel' is indicated in this description, but we have been unable to link this common name with any Canarian species.

88. *Salvia auriculata, mucronatis foliis crassis, lanuginosa, appendicibus aucta* Alm.: 329 (1696), Phyt.: t. 57, f. 3 (1691).

Det.: *Salvia* sp. [HS 97: 184. The phrase-name does not give any reference to Macaronesia. However, labels from the herbarium specimen refer both to Phyt.: t. 57 f. 3 and to the Canary Islands (i.e. 'Sage. *salvia trifoliada Canariensis*') and Plukenet's drawing from *Phytographia* is extremely similar to this specimen. However, the material belongs to a species that does not occur in the Canary Islands and it is likely that it was wrongly assigned there by Plukenet].



Fig. 14 Voucher material of *Solanum tomentosum Canariense spinosum*, fructu *Cerasorum* forma & magnitudine . . . (= *Solanum vesperilio* Aiton) in Plukenet's herbarium (now part of Herb. Sloane, vol. 98: 57 (BM)).



Fig. 15 Plukenet's illustration of *Tithymalus aizoides lactifluus* s. *Euphorbia Canariensis*, *quadrilatera*, & *quinquelatera* Cerei effigie . . . (= *Euphorbia canariensis* L.) from his *Phytographia*, t. 320, f. 2 (1694).



Fig. 16 Voucher material of *Tithymalus aizoides lactifluus* s. *Euphorbia Canariensis*, *quadrilatera*, & *quinquelatera Cerei* effigie . . . (= *Euphorbia canariensis* L.) in Plukenet's herbarium (now part of Herb. Sloane, vol. 102: 86 (BM)).

89. **Salvia sylvestris amplissimis Verbasci foliis, graveolens, flore albo parvo Canariensis inter Delineation.** [. . .] **Arvida Salva Insulanicus vulgo. Flos ejus galea caret. Facie externa cum Stachyde convenit** Alm.: 329 (1696).

His.: *Leucophaea canariensis* (L.) Webb & Berth. [W.B.].

Det.: * *Sideritis canariensis* L. [?]

Com.: There is neither a drawing nor an obvious specimen for this entry. The description is extremely similar to that of entry 95 and our determination is based upon that. The common name 'Arvida Salva' is given by Plukenet, however *Sideritis* species are known as 'chahorra' and 'salvia blanca' in the Canary Islands.

90. **Sedum majus Canarinum** [. . .] **pilis ad oras foliorum hispidis argenteo-lucidis fimbriatum floribus ex flavo pellescentibus, per ramos numerosissimos recurvatos eleganti serie dispositis** [. . .] **Corozone Celio ab Insulanicis dictum** Alm.: 340 (1696), Mant.: 169 (1700), Phyt.: t. 314, f. 1 (1694).

His.: *Sempervivum canariense* L. [Linn.; Gis.; Ten.], *Aeonium canariense* (L.) Webb & Berth. [W.B.].

Det.: * *Aeonium tabulaeforme* (Haw.) Webb & Berth. [determination based on Plukenet's description and illustration. Nevertheless, one herbarium specimen without a label is found in HS 101: 201].

Com.: The common name 'Corozone Celio' (perhaps a derivation of 'corazoncillo') is reported in this description. The common name 'corazoncillo' is used for *Lotus* species whereas plants of *Aeonium* are known as 'pastel de risco', 'oreja del abad', 'verol' or 'bejeque'.

91. **Sedum maximum villosum ex Insulis Fortunatis La Frecho de las uvas Insulanicis dictum** Alm.: 339 (1696).

Syn.: *Sedum maximum arborescens, latifolium, flore flavo, Capitibus Bonae Spei, D. ten Rh.* (Breyne, 1678a).

Com.: Plukenet gave the common name 'La Frecho de las uvas' for plants of this species. No obvious Spanish common name has been found which could be related to that reported by Plukenet.

92. **Sideritis canariensis Mocanes dicta, folio subtus incano, margine spinulis asperato, calyculis tomentosis** Alm.: 346 (1696), Phyt.: t. 315 f. 4 (1694).

His.: *Scutellaria integrifolia* L. [Ten.].

Det.: * *Forsskaolea angustifolia* Retz. [HS 98: 39].

Oth.: HS 102: 12.

Com.: The common name 'Mocanes' is given in this description. However the name 'mocán' is used, in the Canary Islands, for plants of *Visnea mocanera* L. f. Plants of *F. angustifolia* are known as 'ratonera' or 'hierba ratonera'.

93. **Simpla-nobla Canariensium, Planta oblongis, amplioribus splendentibus foliis ternis circa caulem ambientibus, venosis** Alm.: 347 (1696).

His.: *Phyllis nobla* L. [this name was originally published by Linnaeus (1753). However, reference to Plukenet's phrase-name was given by Linnaeus only in *Hortus cliffortianus*

(Linnaeus, 1738)].

Det.: * *Phyllis nobla* L. [HS 102: 15. We have also found sheets in Miller's (from Chelsea Physic Garden) and Uvedale's herbaria from the late seventeenth and early eighteenth centuries].

94. **Solanum tomentosum Canariense spinosum, fructu Cerasorum forma & magnitudine** [. . .] **Hujus fructus sunt saturate Laccae coloris ex quibus fucum conficiunt Insulanae Mulieres, quo faciem oblinunt, & ex pallida rubicundam efficiunt, ut hoc modo Amasiis suis formosiores reddantur. Bella Donna Canarina spinis armata; Permenton Insulanicis vocatur** Alm.: 351 (1696), Phyt.: t. 316, f. 3 (1694); see Fig. 13.

Syn.: *Planta spinosa incognita* (Bontius, 1658).

His.: *Solanum vespertilio* Aiton [W.B.].

Det.: * *Solanum vespertilio* Aiton [HS 98: 57; see Fig. 14].

Oth.: HS 88: 122.

Com.: The common name 'Permenton' is given by Plukenet, this follows closely the names used in the Canary Islands: 'pimentero' and 'pimentero'. This description has an ethnobotanical interest as it presents a detailed account on the traditional use of the fruits of this species. Its juice was the basis for a dye which was used as a facial makeup by the Canarian women.

95. **Stachys amplissimis Verbasci foliis, floribus albis parvis non galeatis, spica Betonicae, ex Insula Canarina** [. . .] **Arvida salva Incolis, & nostratibus Sage-Tree (i.e.) Salvia arbor nuncupatur** Alm.: 356 (1696), Phyt.: t. 322, f. 4 (1694).

His.: *Sideritis canariensis* L. [Linn.; Gis.; Ten.].

Det.: * *Sideritis canariensis* L. [HS 98: 69; 102: 39].

Oth.: HS 102: 40.

Com.: The use of the common name 'Arvida salva' is reported by Plukenet. This description is extremely similar to that of entry 89 and we believe that both refer to the same species. For a discussion of the use of the common name by Plukenet, see entry 89.

96. **Tithymalus aizoides lactifluus s. Euphorbia Canariensis, quadrilatera, & quinquelatera Cerei effigie, ad angulos per crebra intervalla spinis rectis atronitentibus, Gazellae cornua referentibus, armata** Alm.: 370 (1696), Mant.: 182 (1700), Phyt.: t. 320, f. 2 (1694); see Fig. 15.

Syn.: *Quauh cuetz placuítlapilli* (Hernández, 1651), *Euphorbia similis Sadricalli Indorum* (Breyne, 1689), *Rangiseri cornua referens planta Zeylanica*. *Sandricay Zeylan* (Hermann, 1689), *Tithymalus quadrangularis spinosus S. spinis geminis aduncis ex eadem sede ortis armatus, succo lacteo acerrimo turgidus* (Kiggelaer, 1690).

His.: *Euphorbia canariensis* L. [Linn.; Gis.; Ten.; W.B.].

Det.: *Euphorbia canariensis* L. [HS 102: 86; see Fig. 16].

97. **Tithymalus dendroides Linariae foliis ex Insula Canarina** Alm.: 369 (1696), Mant.: 181 (1700), Phyt.: t. 319, f. 5 (1694).

Syn.: *Tithymalus perennis* & *procerior lini folio acuto* (Sloane, 1696).

His.: *Othonna tenuissima* L. [Gis.], *O. linifolia* L. f. [Ten.], *Euphorbia regis-jubae* Webb & Berth. [W.B.].

Det.: * *Euphorbia regis-jubae* Webb & Berth. [we have not found any specimen for this species in Plukenet's herbarium, this determination is based on the drawing from *Phytographia* and on Webb & Berthelot's identification (Webb & Berthelot, 1846–1847)].

TAXA FOUND IN PLUKENET'S HERBARIUM BUT NOT IN HIS WORKS

A study of the whole of Plukenet's herbarium revealed that there were 34 herbarium specimens for 22 taxa which, although reported as collected in the Macaronesian area do not appear to have been described in Plukenet's works. Material which fell under this category is listed below. An entry number is given for each taxon and within each entry the following headings can be found:

- (1) Taxonomic determination of specimens (coded as Det.:). Endemic taxa are pointed with an asterisk.
- (2) Location of specimens in Plukenet's herbarium (coded as Herb.:). Labels are given in square brackets.
- (3) Comments (coded as Com.:). Additional remarks concerning the specimens are included in this heading.

98. Det.: * *Apollonias barbujana* (Cav.) Bornm.

Herb.: HS 95: 104; 96: 137 ['*Laurus canariensis odorata*']; 96: 138 ['An tree strawberry of the Canaries']; 100: 167.

99. Det.: *Asparagus* cf. *capensis* L.

Herb.: HS 95: 108 ['*Asparagus pelroa* s. *Corruda aculeata ex Insulis Canarinis*'].

Com.: The label of this specimen refers to Phyt.: t. 78, f. 3 and follows the description found in Alm.: 54 (*Asparagus aculeatus, triplice spina surrectus*). This species does not occur in the Canary Island flora. It is worth mentioning that in HS 95: 108 there is another specimen which, though poorly preserved, resembles the Canarian endemic *A. umbellatus* Link.

100. Det.: * *Bryonia verrucosa* Dryand.

Herb.: HS 95: 200.

101. Det.: *Calendula arvensis* L.

Herb.: HS 95: 131 ['*Calendula sylv. minima Canariensis*'].

102. Det.: *Centhranthus calcitrapae* (L.) Dufr.

Herb.: HS 98: 127 ['*Valeriana annua ex Insulis Canarina*'].

103. Det.: *Chrysanthemum segetum* L.

Herb.: HS 95: 162 ['*Chrysanthemum* from I. Canaries'].

104. Det.: *Conyza bonariensis* (L.) Cronquist.

Herb.: HS 95: 193 ['From I. Canaries an major [illeg.]'].

105. Det.: * *Echium* cf. *leucophaeum* Sprague & Hutch.

Herb.: HS 96: 14 ['*Echium* from I. Canaries'].]

106. Det.: *Erica arborea* L.

Herb.: HS 100: 26 ['An *Erica* from the Canaries look in my former collections you'll find its name'], 100: 27 ['An *Erica* 2a Clus. ex Insula Canarina vid autorum'].

107. Det.: *Geranium* cf. *rotundifolium* L.

Herb.: HS 96: 53 ['An *Geranium* fatid. ex Insula Canarina'].

108. Det.: * *Gonospermum fruticosum* (Buch) Less.

Herb.: HS 96: 195 ['*Millefol. Tanaceti fol Canariense*'].

109. Det.: *Hordeum vulgare* L.

Herb.: HS 105: 41 ['*Gramen canarium hirsutum*'].

110. Det.: *Laurus azorica* (Seub.) Franco.

Herb.: HS 100: 168.

111. Det.: * *Lavandula multifida* L. ssp. *canariensis* (Mill.) Pit. & Proust.

Herb.: HS 100: 167.

112. Det.: *Mentha* spp.

Herb.: HS 101: 16 ['*Teucris facie frutice Canariensis floribus ociquis albis non galeatis Bobart. Of this saith he I observe 3. varieties suppose this yr. 1st. The 2nd hath longer leaves with ye shape & green ness of Betony and such flowers as this. The 3^d is an uprighter plant more wooly and rounder leav'd, which I thinke is at Hampton Court. But by Mr Bobarts leave these 3 are specifically distinct. *Mentha pilulifera* Betonicae forma ad odore aromatico. vid Almag. Bot. 247'].*

Com.: There are six specimens on this page, one of them identified as *Mentha* cf. *piperita* L., the other five apparently of a different species.

113. Det.: *Mentha longifolia* (L.) Huds.

Herb.: HS 96: 187 ['*Mentastri spiculi folio longiore candicauis species major ex Insula Canarina*'].

114. Det.: *Mentha* cf. *spicata* L.

Herb.: HS 96: 189 ['*Mentha affigio inodora ex Insula Mad-era*'].

115. Det.: * *Pericallis tussilaginis* (L'Hér.) D. Don.

Herb.: HS 95: 128 ['*Cacalia Africana floribus Jacobea pureis ex insula Canarina*'].

116. Det.: *Salvia* cf. *verbenaca* L.

Herb.: HS 96: 100 ['An Hormino Canariensis'].

117. Det.: *Sisymbrium* cf. *erysimoides* Desf.

Herb.: HS 96: 18 ['An Eruca Gomerensis'].

118. Det.: * *Stachys germanica* L. var. *canariensis*
Font Quer & Svent.

Herb.: HS 98: 69 ['Stachys Canariensis [crossed] Verbasci folio Canariensis'].

119. Det.: *Umbilicus* cf. *horizontalis* (Guss.) DC.

Herb.: HS 95: 200 ['Cotyledon s. Umbilicus radici tuberosa minor ex Insul. Canar.'].
Com.: This specimen does not belong to any known species from the Canary Island flora.

120. Herb.: HS 89: 68 ['Filicula Canarina elegans'].

Com.: This specimen does not belong to any known species from the Canary Island flora.

121. Herb.: HS 96: 14 ['Elegans Salvia [illeg.] Canariensibus Dicta'].

Com.: There is no specimen for this label.

122. Herb.: HS 98: 95 ['An Thymelea from I. Canaries'].

Com.: The specimen situated close to to this label does not belong to any species from the Canary Island flora. However there is another specimen on this page belonging to *Daphne gnidium* L. to which this label could refer.

DISCUSSION

With almost 125 plant entries, both Plukenet's herbarium and his publications can be regarded as the most important pre-Linnaean account of the Macaronesian flora. The majority of species recorded by this herbalist are the earliest known references to the plants of this flora. Plukenet's descriptions of Canarian plants pre-date those of Feuillée (Feuillée, 1724) which has been traditionally considered as the most complete pre-Linnaean work for the Canarian flora (Herrera-Piqué, 1987). Although it was published later than Plukenet's work, the approximately 20 species illustrated by this French naturalist are also extremely important as they were the first known field drawings of Canarian plants made by any European scientist who visited the archipelago (Herrera-Piqué, 1987).

In this study we have demonstrated that from Plukenet's works and collections, the seventeenth century herbalist clearly had available a considerable amount of information on the Macaronesian flora. However, subsequent taxonomic reviews of the region have made hardly any mention of them. Linnaeus himself referred to only 24 of these phrase-names and in his own copies of Plukenet's publications there are few annotations for the Macaronesian species.

Other important works published shortly after Linnaeus (e.g. Linnaeus filius, 1782; Aiton, 1789; L'Héritier,

1785–1805) do not quote any of Plukenet's names despite having had access to his publications, and they were based on the exhaustive plant collections made in the Azores, Canaries and Madeira between 1776 and 1779 by the collector from Kew, Francis Masson (Lemmon, 1968). Only L'Héritier (1788) mentioned Plukenet's polynomial *Mentha canariensis frutescens, foliis* [. . .] *foliorum longiribus pediculis insidentibus* (entry 73) as a synonym of *Bystropogon canariense* (L.) L'Hér.

More recent publications restricted to the Macaronesian flora have followed the same pattern. For instance, there are only two mentions of Plukenet's names in the Flora of the Canary Islands produced by Pitard & Proust (1908) whereas in Lowe's Floras of Madeira (Lowe, 1838, 1857–1872) we have found no reference to any of his polynomials. However, the Canarian naturalist Viera y Clavijo (1866–1869) mentioned, in his *Diccionario de historia natural de las Islas Canarias*, twelve of the Plukenet names previously cited as synonyms by Linnaeus. This poor utilization of Plukenet's publications by researchers of the Macaronesian flora may well be due to the fact that his works have no geographical index, and as E. L. Greene reported on the *Almagestum* ' . . . in this kind of book, you are helpless to even begin to search, unless you have some idea of the genus, or a genus, to which it [a plant] may belong . . .' (Greene, 1983).

It was only in the middle of the nineteenth century that Webb & Berthelot in their *Histoire naturelle des Iles Canaries* (Webb & Berthelot, 1836–1850) cited 27 of Plukenet's phrase-names in the synonymy of some of the taxa described in their work. Some of these names were not previously treated by Linnaeus (e.g. *Ilex perado* Aiton ssp. *platyphylla* (Webb & Berth.) Tutin for entry 12, *Chamaecytisus proliferus* (L. f.) Link for entry 29, *Arbutus canariensis* Veill. for entry 18). Furthermore, Webb & Berthelot also looked critically at Linnaeus' treatment of Plukenet's Macaronesian names. For instance they found that the polynomial *Cytisus Canariensis, microphyllus, angustifolius, prorsus incanis* [. . .] *Esta Insulanic nuncupatur* (entry 30) had been incorrectly synonymized with *Genista canariensis* L. by Linnaeus.

Further studies will be needed in order to establish the taxonomic identity of earlier phrase-names given as synonyms by Plukenet. However, many of them were associated with plant species from regions other than Macaronesia. Among them there are taxa from the New World (e.g. Marggraf, 1648; Hernández, 1651; Ogilvy, 1671; Plumier, 1693), the Far East (Rheede tot Draakenstein, 1689, 1690) and the Middle East (Rauwolf, 1707). It is very doubtful whether these names have any real taxonomic relationship with those Macaronesian taxa described by Plukenet. Indeed we could identify what appear to be 'good' synonyms for only seven of his descriptions (i.e. entries 14, 37, 61, 66, 78, 96 and 97). Although Plukenet's publications have been regarded as containing one of the most comprehensive reviews of names from the ancient herbalists (Pulteney, 1790) it seems that there were many errors in these synonyms. This was noticed by John Ray, who in one of his letters to Hans Sloane stated ' . . . I have gotten a sight of Dr. Plukenet's 'Almagestum bot' [. . .] As far as I am able to judge, he is often out in his conjectural synonymes . . .' (Henrey, 1975).

In contrast, Plukenet's illustrations of Macaronesian plants (a selection of which are shown amongst Figs. 3–15) are remarkable. Although it seems that they were not drawn by Plukenet himself but by various other artists, the most important of them being M. van der Gucht (Henrey, 1975),

they reveal the skill and observational abilities of Plukenet as a botanist. This is clearly shown in the drawing of *Solanum vespertilio* Aiton (Fig. 13 and entry 94). This endemic from Tenerife and Gran Canaria is one of the few *Solanum* species which has flowers with one of the stamens longer than the others and the style curved and elongated (Jaeger & Hepper, 1986). This means that flower buds of this species have a small peak towards their ends. The character is clearly illustrated in Plukenet's drawing, making its identification as *S. vespertilio* unmistakable.

Most of his references and collections appear to have been based on material brought to Britain by visitors who stayed in Macaronesia. It is well known that a strong trade in orchil, pitch, sugar, wine and cloth was established between the Canary Islands and Britain during the sixteenth and seventeenth centuries (Morales-Lescano, 1973; Fernández-Armesto, 1982; Lobo-Cabrera, 1988). This led to the foundation of trading companies such as the 'Canary Company' in 1655 (Morales-Lescano, 1965a). Furthermore, other European visitors visited the islands during this period in order to study their natural history (e.g. T. Sprat from the Royal Society in Tenerife in 1667 (Morales-Lescano, 1965b), John Cuninghame in La Palma and Hans Sloane in Madeira in the late seventeenth century (Dandy, 1958)). It is therefore likely that many of Plukenet's references which concern the Macaronesian region reflect the trading and scientific links which existed between Britain and the islands during this time. Being in close association with the Royal gardens and with the most important British herbalists, Plukenet could have had easy access to most of the exotic plant material which was introduced into Britain during the second half of the seventeenth century.

The collections and works of Leonard Plukenet provide a valuable source of information on early accounts of non-European floras, as already shown for the West Indies (Howard, 1979). However, it is likely that many of his references and specimens came originally from sources which were European in a broad sense. Plukenet's studies in the Macaronesian region provide a good indication of what knowledge was had by European naturalists and herbalists half a century before Linnaeus (1753) published what we now accept as the first valid binomial names for Macaronesian plants.

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J. Francisco-Ortega, A. Santos-Guerra and C.E. Jarvis
- 35 Studies on the lichen genus *Sticta* (Schreber) Ach.: II. Typification of taxa from Swartz's Prodrromus of 1788
D.J. Galloway
- 49 Seaweeds of the western coast of tropical Africa and adjacent islands: a critical assessment. IV. Rhodophyta (Florideae) 4. Genera L–O
D.M. John, G.W. Lawson, J.H. Price, W.F. Prud'homme van Reine and W.J. Woelkerling
- 91 Studies on the Cretan flora 3. Additions to the flora of Karpathos
N.J. Turland and L. Chilton