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THE NOMENCLATURE OF AND A KEY TO SOME CULTIVATED SPECIES OF *MONTANOA* CERVANTES (COMPOSITAE)

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Abstract

The names *Montanoa bipinnatifida* (Kunth) C. Koch, *M. heracleifolia* Brongn. and *M. pyramidata* Sch. Bip. ex C. Koch are typified or discussed in relation to plants grown in gardens. The three names relate to the same taxonomic species, with *M. bipinnatifida* having nomenclatural priority. The synonymy of *M. bipinnatifida* is given together with an illustration and comments on the allied cultivated species *M. grandiflora* (DC.) Sch. Bip. ex C. Koch and *M. hibiscifolia* (Benth.) Sch. Bip. ex C. Koch. The status of *M. elegans* C. Koch and *M. wercklei* A. Berger is also discussed.

Introduction

The earliest review of the genus *Montanoa** is Koch (1864). Robinson and Greenman (1899) reviewed the genus, Standley (1926) prepared a flora treatment of the Mexican species, and Nash (1976) did likewise for those from Guatemala. However, none of this literature enabled flowering material of a *Montanoa* grown in Adelaide Botanic Garden (Fig. 3) to be satisfactorily identified, material which originated from cultivation in Teneriffe as seed of plants labelled *M. bipinnatifida*.

In gardens this species has also been called *Montanoa heracleifolia* Brongn., *Polymnia grandis* Kunth, *Polymnia heracleifolia* auct., and *Montagnaea* (sic) *heracleifolia* (Brongn.) Brongn. Using the key in Standley (1926), Adelaide flowering material keys out to be *M. pyramidata* Sch. Bip. ex C. Koch, with Standley placing the names *M. bipinnatifida* and *M. elegans* C. Koch as taxonomically doubtful. *M. heracleifolia* tends to have been a name used only in a horticultural context (see typification). Using the key in Robinson and Greenman (1899), no clear distinction is possible between *M. pyramidata* and *M. bipinnatifida* and *M. elegans* is once more queried.

Mr. C. Jeffrey (personal communication 21 July, 1976) writes, "There are three distinct *Montanoa* species in cultivation, to all of which the name *M. bipinnatifida* has at one time or another been applied. *M. grandiflora* (DC.) Sch. Bip. ex C. Koch seems to be the least frequently met with . . .", and, ". . . is easily distinguished from the others by the petiole being broadly winged to the very base. *M. pyramidata* . . . has pinnately or bipinnately lobed leaves and petioles not or irregularly and narrowly winged; it is probable that this is the species to which the name *M. bipinnatifida* . . . properly applies, though the type will have to be checked to confirm this". The third species is "*M. hibiscifolia* (Benth.) Sch. Bip. . .", with, ". . . palmately lobed leaves . . . very characteristic auricle-like lobes at the apex of the petiole, unwinged petioles and also smaller flowers than the other two".

As it seems likely that Standley did not have access to the European types of these names, herbarium material and types from GH, P, G, W, C, K, BM and US were examined to determine their relationship. Material was unavailable from KIEL, LZ, TCD, S, H, B, and L.

* *Montanoa* commemorates the physician and naturalist from Puebla, Mexico, Don Luis Montaña. The genus comprises about 50 species (Airy Shaw, 1973).

E. Cosson 18 - Herb. Mus. Paris" with the following inscriptions in the hand of Schultz Bipontinus:

"Montagnea [sic] (pinnatifida) hirtiflora Sch. Bip. - Uhdea pinnatifida Hort. -22/xii/63 Hort. Berol. C. Koch."

"Montanea [sic] bipinnatifida C. Koch! - 25/ii/64 Hort. Deinely [?] Sz. Bip. - Herb. Schultz Bip."

The interpretation placed on this specimen is that it derives from original plants known to Koch and grown in Berlin in 1863, and known to Schultz Bipontinus and grown in France in 1864. Koch may have been instrumental in sending voucher material or offsets of living plants from Berlin to Paris in 1863 as suggested by the use of the inscription "Hort. Berol. C. Koch", and on "22/xii/63", more than a year prior to Koch's December 1864 review of *Montanoa*. Koch was probably working on the genus at this time (1863) but may not have sorted out the nomenclature, thus explaining Schulz Bipontinus use of the combination "*Montagnea (pinnatifida) hirtiflora* Sch. Bip."

Schulz Bipontinus inscription "*Montanea bipinnatifida* C. Koch!" and date "25/ii/64" surely refers to manuscript information sent to Paris by Koch prior to publication of the December review of the genus; "Hort. Deinely [?]" refers to the cultivation of material in a garden (in France ?) the name of which being somewhat illegible.

That the specimen in the Schultz Bipontinus Herbarium represents the same taxon introduced to Berlin as seed 16 years earlier is possible because it seems unlikely that Berlin stocks of an easily grown rarity would have died out so quickly. Independent support for the view that the Paris material probably represents clonal material from the type plant comes from Drs McVaugh and Lourteig (personal communications May 4, 1977 and December 13, 1976, respectively). It is also possible that Paris had previously received material from the Berlin clone which provided Kunth's type of the name *Uhdea bipinnatifida*.

As the existence of the Kunth type material of *M. bipinnatifida* elsewhere is doubtful according to McVaugh (personal communication), as it has not been located after considerable enquiry amongst European herbaria and as the Paris specimen corresponds closely with the type description, the Paris specimen is here designated *neotype* of the name *M. bipinnatifida* (Fig. 1).

Montanoa heracleifolia Brongn. (1857) was published as a *nomen nudum* following cultivation of three seed samples collected by M. Ghiesbreght in Mexico in 1843 (Groenland, 1857); (the other two samples of seed relate to *M. purpurea* Brongn. (a *nomen nudum*), and *M. mollissima* Brongn. (possibly synonymous with *M. grandiflora*, q.v., according to Robinson and Greenman (1899)). After requesting loan of possible specimens pertaining to the name *M. heracleifolia* which was validated by reference to cultivated living plants without citation of a voucher by André (1863), examination of all available material demonstrates that only one specimen in Paris derived from cultivation, bears that name. I am inclined to agree with Lourteig (personal communication December 13, 1976) that, "Sûrement ils sont issus des mêmes clons de la plante décrite par Brongniart . . ."

The sterile specimen comprises two expanding leaves and two more emerging from bud on a stem fragment; the petioles are incompletely winged and the abaxial lamina scabrously puberulent. The inscriptions are in an unknown hand and are as follows:

"Montagnea bipinnatifida C. Kch - *M. heracleifolia* Brongt. H. var. H. var. cult. 1865".

"Herb. Mus. Paris - Uhdea".

Although the label on this specimen postdates the publication of the name (in 1857) by

8 years and description (in 1863) by 2 years, there is, in view of circumstantial evidence and a lack of other specimens, the distinct possibility that the leaves of this specimen came from the same cultivated stock which was known by Brongniart, (Fig. 2); on this basis the specimen is designated *neotype* of the name *M. heracleifolia*.

Unlike *M. bipinnatifida* and *M. heracleifolia*, the name *M. pyramidata* was not applied to plants in cultivation, but to collections made in Mexico by Oliva in Guadalajara, and another by Alwin Aschenborn. There is no evidence to suggest that seed was grown from these collections.

Koch's (1864) brief initial description of *Montanoa pyramidata* includes:

"22. *M. pyramidata* C.H. Schultz-Bip. n. sp. Eine vom Dr Oliva am Guadalajara und ausserdem von Aschenborn in Mexico entdeckte und den beiden letzten Arten im Habitus ähnliche Art".

Examination of all available herbarium material demonstrates the existence of but one specimen in Paris collected by Oliva and partly annotated by Schulz Bipontinus, partly by an unknown hand. The inscriptions read:-

"L.j.G.Don Oliva - pr. Guadalajara Mexico - ligulae albescentis flavesci - let. D. Schaffaer 1853".

Herb. E. Cosson 18 - Herb. Mus. Paris".

"349 - *Montagnaea pyramidata* - strigosa [deleted] Sz. Bip. - fol. prope strigosa infra glara - n. sp. 29/1863".

"*Montagnaea* spec. - karwinski affn. *speciosa* DC."

[Determinavit slip] Dr R. McVaugh 1970 "*M. pyramidata* Sch. Bip. ex Klatt".

The interpretation placed on this Schulz Bipontinus (Paris) specimen is that, if a unicate, it may have been communicated to Berlin and hence Koch, the Berlin specimen of Aschenborn having been subsequently destroyed there in the Second World War (vide Lanjouw and Stafleu 1954, p. 43). Koch did not nominate a holotype from the Oliva and Aschenborn collections. The date "29/1863" on the Paris specimen predates publication of the combination *M. pyramidata*, so that only manuscript names may have been known to Schulz Bipontinus as supported by deletion of the epithet "strigosa", presumably done after publication, or at least in the final stages of manuscript preparation by Koch. However, there is no evidence to show that Koch saw the Oliva specimen if it was communicated to him as there are no obvious annotations in his hand on the Paris specimen. There is a remote possibility that a duplicate Oliva specimen once existed in Berlin but this is speculation.

The attribution of publication of the combination to Klatt on the McVaugh determinavit slip is in error according to McVaugh (personal communication, August 29, 1977).

The Paris specimen is relatively complete comprising the terminal part of an inflorescence, some capitula, and two upper foliage leaves about 7 cm long. As the collection data and specimen morphology corresponds with that in the type description, and annotations are in the hand of Schulz Bipontinus, the specimen is here designated *lectotype* of the name *M. pyramidata*. (Fig. 4).

Both Robinson and Greenman (1899) and Standley (1926) treat *M. elegans* as an unknown entity. The former authority states "of unknown country and characterized only as to leaf contour, . . . most nearly related to if not identical with *M. pyramidata* Sch. Bip., from which so far as known it differs only in the absence of the inconstant petiolar appendages". None of the herbaria from which loans were requested supplied material which could be associated with the name *M. elegans*. Koch (1864) stated "Wie sie nach Europa gekommen, wissen wir nicht; in den Handel kam sie aber von Wien aus

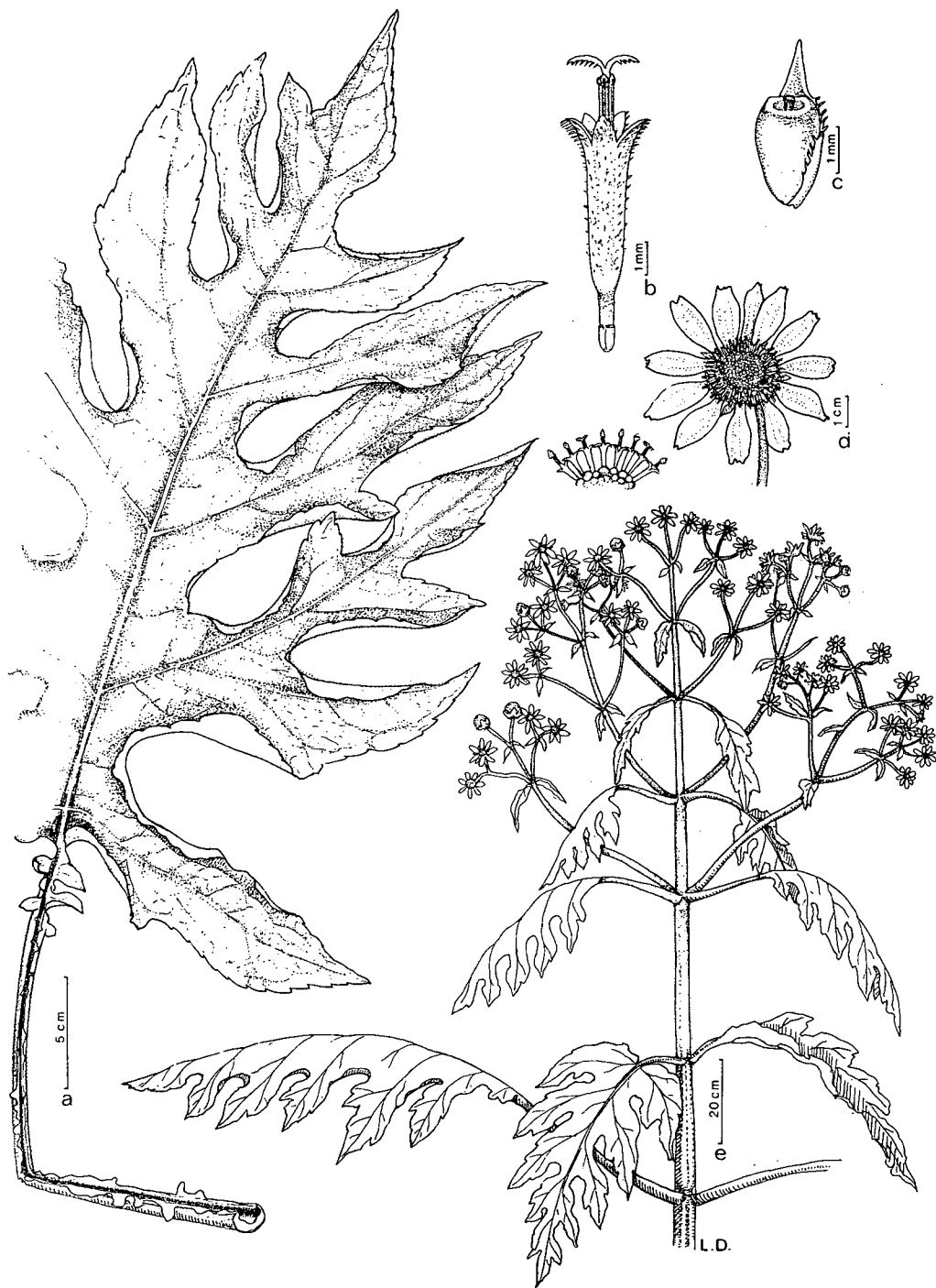


Fig. 3. *Montanoa bipinnatifida* (Kunth) C. Koch; a. leaf; b. disk floret; c. immature achene; d. capitulum; e. sketch of inflorescence and upper stem leaves. Illustration by L. Dutkiewicz.

durch den Handelsgärtner Abel unten den Namen *Uhdea bipinnatifida vera*". If a Viennese herbarium specimen once existed in Berlin collections known to Koch, it may have since been destroyed. The name is here placed in synonymy with *M. bipinnatifida* on the basis of the comments of Koch (1864) and Robinson and Greenman (1899), the description being based on material in cultivation.

Adelaide Botanic Garden material clearly belongs with the species to which the names *Montanoa bipinnatifida*, *M. heracleifolia* and *M. pyramidata* have variously been attributed by Koch (1864) and Robinson & Greenman (1899). On the basis of the morphological similarity between such types of these names as exist, the correct name for the species is the first one published, *M. bipinnatifida*, with *M. heracleifolia* and *M. pyramidata* synonyms. As well as being illustrated in Fig. 3, *M. bipinnatifida* is shown in vegetative state in Robinson (1889) p. 616 under the caption "*Polymnia grandis* syn. *Montagnea heracleifolia*".

When in flower *M. bipinnatifida* serves as a useful 'spot plant' in the herbaceous border and larger shrubbery, and its young foliage also has sculptural quality as was realised by gardeners of the Victorian era. In Adelaide, the species flowers in June or July and is propagated by seed or division of the rootstock or soft tip-cuttings under mist. As a perennial it requires a frost-free growing season and ample sunshine in order to flower, when it constitutes an arresting display of white capitula with yellow disc florets surmounting boldly lobed, dark green foliage. The species is a native of Mexico.

This species which fits into subg. *Uhdea*, as contrued by Robinson & Greenman (1899), is one of a group of large ornamental montanoas once more commonly grown in European gardens than at present, and was referred to by Robinson (1889) as "second to no other . . . for its dignified and finished effect in the flower garden". Speaking of the species in western Europe Robinson said it "is best planted out at the end of May, and should be in every collection". The even larger arborescent composite from Mexico, *Podachaenium eminens* (Lag.) Sch. Bip. flowers later, cannot fail to command attention, and these two composites are presently being used at Adelaide in conjunction with *Dahlia imperialis* Roezl ex Ortg. and *Arundo* in an experimental double herbaceous border of large proportions.

Specimens examined

MEXICO: pr. Guadalajara, *Oliva 349* (Lectotype P. *M. pyramidata*); Barranca, 3.xii.1889, *Pringle 2930* (GH); el Colesio to Las Palmas, 30.xii.1926, *Mexia 1323* (A); S. Naranjillo, 26.xi.1938, *Hinton 12684* (GH); Huajuapam, 19.xi.1894, *Nelson 1984* (GH); Temascal to Huetamo, 13.xi.1949, *Moore et al 5694* (GH).

CULTIVATED: Hort. Berol., 22.xii.1863, *Koch s.n.?* (neotype P); Hort. Harvard University, 1870, (GH); Hort. Adelaide Botanic Garden, 27.v.1966, *Potter 368* (AD); Hort. Paris, 1865, (neotype ? P as *M. heracleifolia*).

2. *Montanoa grandiflora* (DC.) Sch.Bip. ex C.Koch, *Wochenschr. Gärtn.* 7 : 408 (1864).

Montagnea grandiflora DC., *Prodr.* 5 : 565 (1836). *Basionym.*

Holotype: *Alaman s.n.*, Mexico, 1831 (G.DC.)

In relation to Jeffrey's comments quoted previously, the holotype of *M. grandiflora* has been seen in a microfiche edition of the DeCandolle Herbarium in Geneva; it is a collection by Alaman, dated 1831, gathered from Mexico and cited in DeCandolle's type description (1836). There is an illustration of *M. grandiflora* based on plants cultivated in the garden of M.R. Roland-Gosselin of Villefranche-sur-Mer in *Rev. Hort.* (1910) p. 176-177.

The descriptions of *M. mollissima* Brongn. in Chittenden (1951), Hutchinson (1907) and Groenland (1857) nowhere refer to lobing of lower leaves which is implied by

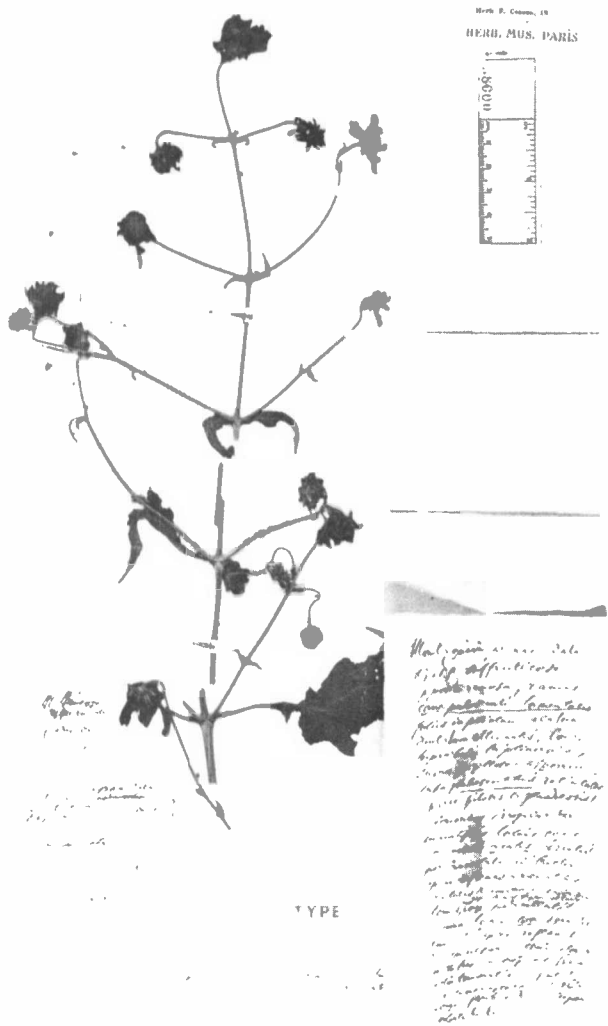
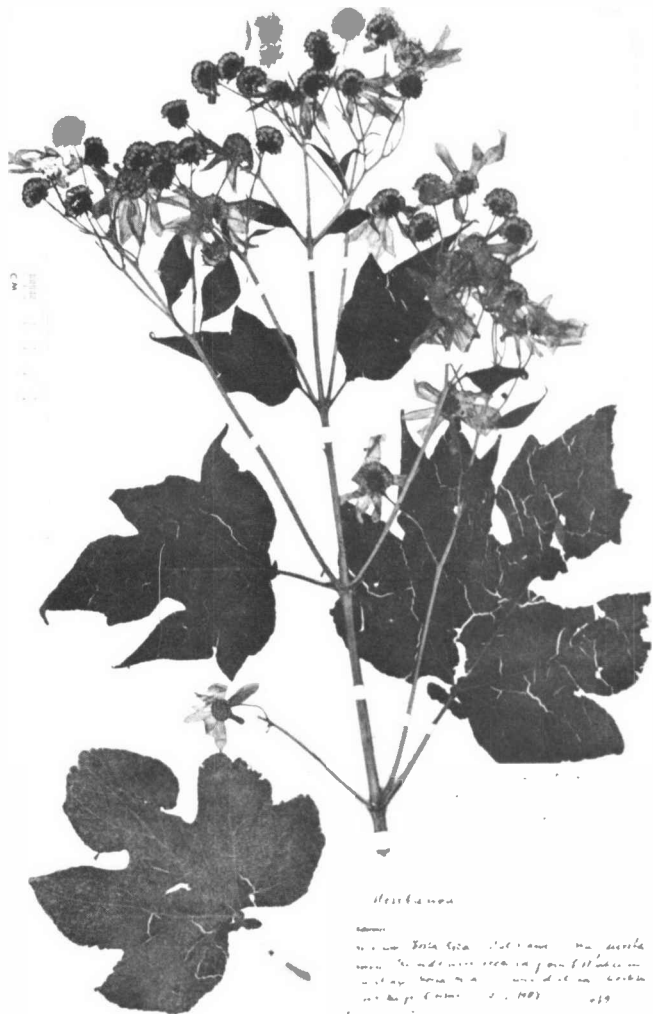


Fig. 4. Lectotype of the name *Montanoa pyramidata* Sch. Bip. ex C. Koch; Herb. P. Fig. 5. Lectotype of the name *Montanoa wercklei* A. Berger; Herb. K.

Robinson & Greenman (1899) in reduction of the binomial to synonymy with *M. grandiflora*. The type description in Groenland (1857) contains no reference to a specimen, except that plants were raised from seed collected by Ghiesbreght. A thorough search in Ghiesbreght collections might produce type material, but I have sighted no such specimen. In the interim, I follow Robinson & Greenman (1899), who place the species in subg. *Uhdea*.

3. ***Montanoa hibiscifolia* (Benth.) Sch.Bip. ex C. Koch, *Wochenschr. Gärtn.* 7 : 407 (1864).**

Montagnaea hibiscifolia Benth. in Oerst. *Vid. Medd. Kjoeb.* 1852 : 89 (1852). *Basionym.*

Lectotype: Oersted (235), "In provincum Segovia" Nicaragua, 1851 (K); Oersted (134), "Ad Barba nr. Costarica" 1851 (syntype K); Oersted 9051, "In prov. Segovia", Nicaragua (2 isosyntypes C).

Montanoa wercklei A. Berger, *Gard. Chron. Ser.* III 50 : 122 (1911).

Lectotype: Berger *s.n.*, Hort. La Mortola, ex Santiago, Costa Rica, leg. C. Werckle 1905 (teste Berger, 1911), 3.i.1908 (K).

The types of *M. hibiscifolia* have been seen, being collections housed in Copenhagen and Kew made by Oersted from Segovia in Nicaragua (No. 235), and Volcan de Barba, Costa Rica (No. 134).

This Bentham name has not previously been lectotypified, and it now seems appropriate to do so. The specimens cited in the type description are as follows:- "fandt jeg i Bjergskovene i Segovia i Naerheden af Matagalpa (4500') og paa den sydlige Skraaning af Vulkanen Barba i Costa-Rica (6000')". Clearly no holotype was nominated.

The type specimen folder for *M. hibiscifolia* at Copenhagen contains two sheets both inscribed "In. prov. Segovia", but with little other data corresponding with that given in the type description.

The equivalent folder at Kew contains two sheets, both from Herbarium Benthamianum, one inscribed "Ad Barba nr. Costarica", the other "In provincum Segovia" and numbered 134 and 235 respectively. There is also good evidence, in the way the shoot base has been torn away in the larger Copenhagen specimen, that Bentham's collection (from Segovia) provided the source of the Danish voucher. These circumstances are coupled with the fact that Bentham's annotation of all specimens demonstrate he described the new species using vouchers later kept in his personal herbarium. As the Segovia collection is a fruiting specimen but more complete than the Costa Rican, which is flowering, the Segovia collection 235 at Kew is here nominated *lectotype* of the name *M. hibiscifolia*, Fig. 6, with the Copenhagen specimens here designated isosyntypes. The Costa Rican specimen at Kew is here designated a syntype.

The status of *M. wercklei* A. Berger, the type description of which was made from cultivated flowering material grown in Sir Thomas Hanbury's garden of La Mortola, Ventimiglia, Italy, can also be appropriately dealt with at this point. The curator of La Mortola, Alwin Berger, stated that C. Werckle communicated seed which was collected in 1905 in Costa Rica, Berger (1911). Plants raised from the seed first flowered on January 3 1908, and two herbarium specimens, one fertile and one vegetative were sent to Kew, where they were received on July 31, 1908. Berger also stated that the colloquial name for the plant in Costa Rica was "Toona quirita". In 1911 Berger described the introduction as a new species, *M. wercklei*, but nominated no holotype. It is possible to typify *M. wercklei* because the taxon is represented by several good herbarium specimens from La Mortola at Kew, dated January 3 1908, January 4 1910 (received May 28 1910), and May 1910. The 1908 specimen is chosen as *lectotype* because it closely corresponds



Fig. 6. Lectotype of the name *Montanoa hibiscifolia* (Benth.) Sch. Bip. ex C. Koch: Herb. K.

with the morphology in the type description, and unlike other vouchers, bears collection and introduction data cited in the type description, Fig. 5.

Examination of the *M. wercklei* lectotype strongly suggests the taxon is closely allied to, if not conspecific with *M. hibiscifolia*, with which species it is made synonymous for the purposes of the present limited study.

The distinctive palmate 5 to 7 lobed leaves of this material contrasts with the essentially pinnatifid lobing of leaves found in other species under discussion here. There is an illustration of the vegetative state of *M. hibiscifolia* in Robinson (1889) p. 738 under the caption "*Uhdea bipinnatifida*", (see also Fig. 5). Robinson & Greenman (1899) place the species in subg. *Acanthocarpa*, and it is recorded as having been cultivated.

Specimens examined

NICARAGUA: Segovia, 1851, *Oersted* (235) (Lectotype K, isosyntypes C as *Oersted* 9051);

COSTA RICA: Barba, 1851, *Oersted* (134) (syntype K);

MEXICO: Yajalon, Chiapas, 21.xi.1895, *Nelson* 3417 (GH).

HONDURAS: Morazan, 15.i.1951, *Molina* 3898 (GH).

CULTIVATED: Hort. ex Santiago, 3.i.1908, *Berger s.n.* (Lectotype K. *M. wercklei*).

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