Type specimens collected by Juan Isern during the Pacific Scientific Commission to South America (1862–1866)

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Juan Isern collected ca. 25,000 plant specimens during the Pacific Scientific Commission to South America between 1862 and 1866, but unfortunately he died the same year the expedition returned to Spain. In Chile, Isern exchanged specimens with Philippi, who later described three new species based on those collections which are all deposited at SGO. In the early 1930s, José Cuatrecasas worked intensively with the Isern collections at MA, where most of Isern’s South American specimens are deposited. Cuatrecasas, Trelease, Sleumer, Standley and Yuncker described several new species and other taxa using Isern collections as type material. A total of 47 species, 21 varieties and 7 forms were described in 9 families, principally in the Asteraceae, Piperaeae and Gesneriaceae based on Isern collections. Here, the nomenclature of all Isern type specimens is studied for these 75 names. Lectotype specimens for the names of four species, three varieties and five forms described by Cuatrecasas and one species described by Trelease are designated in the present paper.

KEYWORDS: Comisión Científica del Pacífico, historical specimens, José Cuatrecasas, Juan Isern, nomenclature, South America, typification

INTRODUCTION

The Pacific Scientific Commission (Comisión Científica del Pacífico) was the last large expedition to America funded by the Spanish monarchy in the 19th century (Miller, 1968; Puig-Samper, 1988). During more than four years (1862–1866), a group of seven naturalists and a photographer travelled extensively by way of the Canary Islands (Tenerife) and Cape Verde Islands to Brazil, Uruguay, Argentina, Chile, Bolivia, Peru and Ecuador to study the biota of these countries (Almagro, 1866; Barreiro, 1926; Jiménez de la Espada, 1928; Martínez y Sáez, 1994; Ponsati-Obiols & Pérez-Montes, 2003; Sánchez-Garrido & Verde-Casanova, 2003). Juan Isern Batlló (1821–1866) was the botanist of the expedition, and he collected ca. 25,000 plant specimens; only occasionally other expedition members do so, as, e.g., Martínez y Sáez. The collection included 114 specimens collected by P.V. Solano, a Spanish priest resident in Ecuador, who gifted his collections to the president of the expedition to be sent to Spain. The last specimens arrived in Spain in 1866 and the Isern herbarium was established at MA, Real Jardín Botánico de Madrid (Blanco, 1988). Juan Isern fell ill during the last part of the travels and died in Spain in 1866. Detailed information on the Isern diary and a full catalogue of all the botanical collections can be found in Blanco & al. (2006).

During the expedition, Isern exchanged some of his collections with the Museo de Santiago (Chile) and they are today deposited in SGO (Blanco & Puig-Samper, 1995). Later, R.A. Philippi described three new Asteraceae species based on Isern specimens (Philippi, 1865, 1873, 1894). To our knowledge the exchanged specimens were unicates, but we cannot ascertain for certain that duplicates were not distributed from Chile and deposited in other herbaria.

José Cuatrecasas studied all Isern specimens in MA. He noted that the numbers on Isern’s original labels for the specimens were serial numbers that were repeated at different localities. So in order to facilitate its study, he re-numbered the entire collection with a sequential numbering system, from number 1 to more than 8,000 to represent single gatherings. Later, Cuatrecasas received a fellowship to study Isern collections at the Berlin Botanical Museum between 1934–1935, and published “Plantae Isernianae I” (Cuatrecasas, 1935). Cuatrecasas described new species, varieties and forms mainly in the Asteraceae, the family of his highest interest, but also some in Cunoniaceae, Gentianaceae, Gesneriaceae and Proteaceae. All the types of the names of the species he described are deposited at MA. At the same time, H. Sleumer studied the Ericaceae collection at B and published “Plantae Isernianae II”, including the description of two new species (Sleumer, 1936). The type specimens were destroyed during World War II and the names were later neotypified (Luteyn, 1996). According to the correspondence between Cuatrecasas and Trelease deposited in the MA library, we know that before the Spanish Civil War, Cuatrecasas sent all Piperaceae specimens to W. Trelease at the University of Illinois (ILL). Trelease published “Plantae Isernianae III”, with
the description of 17 new species and varieties (Trelease, 1941). Trelease together with Yuncker studied the Piperaceae of northern South America (Trelease & Yuncker, 1950) and later the Yuncker herbarium (ex DPU), which included some Piperaceae specimens collected by Isern, was purchased by the NY herbarium (Callejas & Johnson, 1989). However, some Piperaceae type material is still deposited in ILL. Duplicates of all these specimens are also found at MA.

In the last few decades, the MA herbarium has assigned accession numbers to all Isern specimens. However, all duplicates of the same Isern collection number (as assigned by Cuatrecasas) were commonly numbered with a single MA accession number, which cause problems for precise holotype identification or subsequent lectotypification, since a single sheet (ideally with a unique MA accession number) should be selected. To facilitate our work, we have added a sequential number /1, /2, /3, etc. to the MA accession number for all duplicate sheets in MA with the same Isern collection number.

Some fragments of Isern specimens are today deposited in F. At some time after the publication of “Plantae Isernianae I” (Cuatrecasas, 1935), Cuatrecasas probably took these fragments from MA to F when he had to go into exile.

The aim of the present paper is to study and clarify the nomenclature of all type specimens collected by Isern during the Pacific Scientific Commission, most of which are deposited in MA. We seek to promote this historical collection to the international botanical community as an aid to future taxonomic studies. Here we lectotypify the names of twelve of the taxa described by Cuatrecasas, since all specimens he studied were deposited in MA. In some cases, we were able to lectotypify either because the text on the original label handwritten by Isern coincided with that in the protologue of the taxon described, or because the MA specimen clearly represents the original drawing published by Cuatrecasas (1935). We also lectotypify the name of one species in the Piperaceae described by Trelease (after Trelease & Yuncker, 1950). However, lectotypification of 13 names in different families is still needed and these cases are explicitly indicated. These last cases need to be studied by specialists.

### ISERN TYPE SPECIMENS

A total of forty-seven species, twenty-one varieties and seven forms in nine families were described based on Isern plant specimens (Table 1). Prior to this publication, lectotypification of the names of fourteen species and one variety has been published. In the present paper, we lectotypify the names of a further five species, three varieties and five forms (Table 1).

The Isern type material is presented in alphabetical order of families, genera and species following this format: scientific name with full bibliographical reference for each type (if the name as originally published contained an error this is indicated in parenthesis), locality data as it appears in the protologue and type statement for each specimen. We indicate the currently accepted name in each entry in __bold italic__ typeface.

#### Asteraceae


<table>
<thead>
<tr>
<th>Table 1. Number of species, varieties and forms described on Isern plant specimens and number of lectotypifications (LT) designated subsequently, broken down by families. In parentheses, the number of lectotypes designated in this study are included. These types are all deposited in MA except for three of them in SGO.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Families</strong></td>
</tr>
<tr>
<td>Asteraceae</td>
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<tr>
<td>Campanulaceae</td>
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<td>Cunoniaceae</td>
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<td>Ericaceae</td>
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<td>Proteaceae</td>
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<td>Rubiaceae</td>
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<td><strong>Total</strong></td>
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Baccharis espadae Cuatrec. in Anales Univ. Madrid, Ci. 4: 210, fig. 1. 1935 – Type: Peru, inter Vitoc et Altos de Palca, 4 Nov 1863, Isern 463 (holotype: MA 222930; isotype: F 843174 fragm.; photo: F!).

There are two specimens of Isern 463: the MA 222930 specimen is the holotype and the specimen at F is a fragment removed from the MA holotype after 1935, and therefore is an isotype. Figure 1 coincides with the MA 222930 specimen.


The specimen chosen as lectotype includes the above description in Isern’s handwritten, exactly as reproduced in Anales Univ. Madrid, Ci. 4: 212, figs. 2, 3. 1935 – Type: Peru, inter Santa Rosa et Mendoza jam in declivi orientali Gutierrezia isernii (Phil.) Phil. – Type: Argentina, cercanías de Quito, Jan 1865, Isern 52 (syntypes: MA 223892/1–2).

This name is open to lectotypification.


No currently accepted name or synonym exists for this taxon.


This name is open to lectotypification.

Eupatorium weddellianus Hieron. var. rosuloides Cuatrec. in Anales Univ. Madrid, Ci. 4: 218. 1935, (= Eupatorium weddellianum) [= Euphorbus ecuatoriensis Hieron.] – Type: Ecuador, cercanías de Quito, Jan 1865, Isern 351 (syntype: MA 224062); Ecuador, Antisana, Jan 1865, Isern 48 (syntype: MA 214988); Ecuador, Antisana, Jan 1865, Isern 333 (syntype: MA 224061); Ecuador, Pichincha, Dec 1864, Isern 348 (syntype: MA 224060); Ecuador, Quito en La Chorrera, 17 Jan 1865 y en El Panecillo, 22 Jan 1865, Isern 603 (syntype: MA 564193).

This name is open to lectotypification.

Chapitalia isernina Cuatrec. in Anales Univ. Madrid, Ci. 4: 212, figs. 2, 3. 1935 – Type: Peru, Chanchamayo in sylvis, 12 Oct 1863, Isern 42 (lectotype [designated here]: MA 231751/1; isolectotypes: F 843139, MA 231751/2–3; photo: F!).

The right-hand plant on the lectotype coincides with figure 2.


Culcitium pichinchense Cuatrec. in Anales Univ. Madrid, Ci. 4: 215, fig. 4. 1935 = Aetheolaena pichinchensis (Cuatrec.) B. Nord. – Type: Ecuador, Monte Pichincha, 1 Dec 1864, Isern 308 (lectotype [designated by Cuatrecasas (1978: 311)]: MA 234281; isolectotype: F 843135; photo: F!).

Cuatrecasas lectotypified this name inadvertently by publishing the MA specimen as the holotype for his new combination Lasiocephalus pichinchensis (Cuatrec.) Cuatrec. Cuatrec. The left-hand shoot on the lectotype coincides with figure 4.
Gochnatia iserniana
Eupatorium esmeraldae
Jungia vitocensis
following Harling (1995: 46) is a syntype. The second sheet numbered by Cuatrecasas
J. aceroides
by Cuatrecasas. The first MA 242353/2 is
with fig. 9. In MA there are two specimens identified as
name is open to lectotypification.

Eupatorium esmeraldae Cuatrec. in Anales Univ. Madrid, Ci. 4: 221, figs. 6, 7. 1935 [= *Ageratina rhypodes* (B.L. Rob.) R.M. King & H. Rob.] – Type: Ecuador, Esmeralda, without date, *P.V. Solano* 32 (lectotype [designated here]: MA 236211; isolecotypes: MA 236210, MA 564194).
The left-hand shoot on the lectotype coincides with figure 6.

This name is open to lectotypification.


The original drawing does not exactly coincide with any of the nine specimens, so the name is open to lectotypification.

The right-hand shoot on the holotype coincides with fig. 9. In MA there are two specimens identified as *J. aceroides* by Cuatrecasas. The first MA 242353/2 is the holotype. The second sheet numbered by Cuatrecasas as *Solano* 36bis (MA 242353/1) bears an original handwritten label by PV. Solano as *Dumerilia paniculata*, that following Harling (1995: 46) is a syntype.

Jungia vitocensis Cuatrec. in Anales Univ. Madrid, Ci. 4: 230, fig. 10. 1935 – Type: Peru, in itinere e Vitoc ad Altos de Palca, 4 Nov 1863, *Isern* 462 (syntypes: F 843172 fragm., MA 242357/1–2; photo: F!).
The original drawing does not exactly coincide with either of the two specimens. Harling (1995: 38) does not choose between the two specimens at MA, therefore the name is open to lectotypification.

Luciliopsis isernii Cuatrec. in Anales Univ. Madrid, Ci. 4: 231, fig. 11. 1935 = *Cuatrecasasiella isernii* (Cuatrec.) H. Rob. – Type: Ecuador, in aquis stagnantibus in paramo Jacupamba (Antisana), Jan 1865, *Isern* 70 (holotype: MA 242845).
The left-hand plant on the holotype coincides with figure 11. Although Isern is cited in the protologue as the collector, the specimen was in fact collected by Martínez y Sáez, another expedition member.

There are two specimens of *Isern* 368: the MA 244042 specimen is the holotype and the specimen at F is a fragment removed from the MA holotype after 1935, and therefore is an isotype.

Mikania archidonensis Cuatrec. in Anales Univ. Madrid, Ci. 4: 234, fig. 12. 1935 [= *Mikania guaco* Bonpl.] – Type: Ecuador, Archidona, Apr-May 1865, *Isern* 72 (syntypes: F 843133, MA 244046/1–4; photo: F!).
The original drawing does not exactly coincide with any of the specimens, so the name is open to lectotypification.

Mikania iserniana Cuatrec. in Anales Univ. Madrid, Ci. 4: 235 – Type: Ecuador, Guayaquil, without precise date in 1864, *Isern* 94 (holotype: MA 244062; isotype: F 843137; photo: F!).

Mutisia isernii Phil. in Anales Univ. Chile 85: 823. 1894 – Type: Bolivia, habitat ad Tiahuanaco, without date, *Isern* s.n. (holotype: SGO 64919, not seen).

This specimen was chosen because text in the protologue and that on the label of the selected lectotype coincide.

This specimen was chosen because the text on the original label of the selected lectotype coincides with text in the protologue.


This specimen was chosen because text in the protologue and that on the label of the selected lectotype coincide.

**Senecio adenophyllus** Meyen & Walp. var. angustipinnatus Cuatrec. in Anales Univ. Madrid, Ci. 4: 238. 1935. – Type: Peru, Quegueña (Arequipa), 11 Aug 1863, *Isern* 398 (holotype: MA 557190).


The left-hand shoot on the holotype coincides with figure 13.

**Senecio comosus** Sch.Bip. var. cauliglabrus Cuatrec. in Anales Univ. Madrid, Ci. 4: 239. 1935, nom. nud. – Type: Peru, Bajada de Palca, 3 Nov 1863, *Isern* 427 (holotype: MA 557193).

We do not know any currently accepted name or synonym for this taxon.

**Senecio formosus** Kunth f. obtusata Cuatrec. in Anales Univ. Madrid, Ci. 4: 240. 1935 – Type: Ecuador, without locality, without date, *Isern* 57 (lectotype [designated here]: MA 223893/1; isolecotypes: MA 223893/2–3, MA 214986).

This specimen was chosen because the text on the original label of the selected lectotype coincides with text in the protologue.


There are two specimens of *Isern* 420: the MA 245378 specimen is the holotype, and that at F is a fragment removed from the MA holotype, and therefore is an isotype. The left-hand plant on the holotype coincides with fig. 14. When Cuatrecasas noticed that this species was a later homonym, he established the new name *Senecio juanisernii* Cuatrec. (Cuatrecasas 1936: 144).

**Senecio isernii** Phil. in Anales Univ. Chile 43: 499. 1873 – Type: Chile, cerca de Coquimbo, Jun without year, *Isern* s.n. (holotype: SGO 60719; photo: SGO!).

The SGO specimen is a fragment. A complete specimen of the same species, *Isern* 3853 exists as MA 553729 with the original label: “Coquimbo, 12 Jun 1863”. The original collection number handwritten by Isern on the SGO specimen appears to be 30, but Philippi did not cite any collection number in his publication. In the MA specimen, the original collection number handwritten by Isern is 28.

**Senecio melanocalyx** Cuatrec. in Anales Univ. Madrid, Ci. 4: 242, fig. 15. 1935 – Type: Peru, inter Vitoc et Los Altos de Palca, 4 Nov 1863, *Isern* 463 (lectotype [designated here]: MA 245399); Peru, Prope Palca, 4 Nov 1863, *Isern* 428 (syntype: MA 245400).

This specimen was chosen because text in the protologue and that on the label of the selected lectotype coincide.


This specimen was chosen because the text on the original label of the selected lectotype coincides with text in the protologue.


This specimen was chosen because text in the protologue and that on the label of the selected lectotype coincide.

**Tessaria ambiguia** DC. var. uniflora Cuatrec. in Anales Univ. Madrid, Ci. 4: 244. 1935 – Type: Peru, Arica, 18 Jun 1863, *Isern* 413 (holotype: MA 557236).


This name is open to lectotypification.

**Campanulaceae**


Stein (1987) sought to neotypify this name in his thesis, but under Art. 30.5 of the *Vienna Code* (McNeill & al., 2006) this is not an effectively published work and so the neotype is designated above. The isoneotype was not seen nor reported by Stein (1987).

**Cunoniaceae**

*Weinmannia baezana* Cuatrec. in Anales Univ. Madrid, Ci. 4: 262, fig. 24. 1935 [ = *Weinmannia pubescens* Kunth] – Type: Ecuador, inter Baeza et Archidona, Mar-Apr 1865, *Isern 13* (lectotype [designated here]: MA 235559/1; isolectotypes: F 843131, MA 235559/2; photo: F!).

The isolectotypes are probably fragments removed after 1935 from the designated lectotype. The selected lectotype coincides with figure 24.

**Ericaceae**


**Gentianaceae**


Cuatrecasas (1935) erroneously referred to “*Gentiana rupestris*” but there is no such species name and he apparently meant *G. rupicola* Kunth. This specimen was chosen because text in the protologue and that on the label of the selected lectotype coincide.

**Gesneriaceae**


The right-hand shoot on the lectotype coincides with figure 16.


**Crantziaceae**


**Diastema peruanum** Cuatrec. in Anales Univ. Madrid, Ci. 4: 250, fig. 19. 1935 [ = *Diastema hispidum* (DC.) Fritsch] – Type: Peru, Chanchamayo, 11 Oct 1863, *Isern 134* (syntypes: F 843138, MA 231634/1–6; photo: F!).

The original drawing does not exactly coincide with any portion of the specimens, so the name is open to lectotypification.


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Since there are two specimens numbered MA 231627, we establish here that MA 231627/1 is the lectotype as it carries a handwriting original label by Wiehler indicating it as the lectotype; MA 231627/2 is an isolecotype.


Wiehler cited erroneously *Isern 169* (MA) as the holotype, but this is correctable to lectotype under Art. 9.8 of the *Vienna Code* (McNeill & al., 2006).

Since there are three specimens for MA 231629, we establish here that MA 231629/1 is the lectotype as it carries a handwriting original label by Wiehler indicating it as the lectotype; MA 231629/2–3 are then isolecotypes.


There are two specimens of *Isern 180*: the MA 231646 specimen is the holotype and the specimen at F is a fragment removed from the MA holotype after 1935, and therefore is an isotype.


**Piperaceae**


**Piper archidonense** Trel. in Ciencia (Mexico) 2: 206. 1941 [= *Piper immutatum* Trel.] – Type: Ecuador, Archidona, [4 May 1865], *Isern 1791* (lectotype [designated by Trelease & Yuncker (1950: 288)]: MA 566670; isolecotypes: ILL fragm., NY 251109 fragm.; photo: NY!).

Trelease & Yuncker (1950) cited unprecisely *Isern 1791* (ILL, MA) as type, correctable under Art. 9.8 of the *Vienna Code* (McNeill & al., 2006) to lectotype. Furthermore, the MA specimen is the most suitable as lectotype, because both the ILL and NY specimens are fragments.

**Piper baezense** Trel. in Ciencia (Mexico) 2: 207. 1941 – Type: Ecuador, Baeza, [Mar 1865], *Isern 1753* (lectotype [designated here]: MA 566672/2; isolecotypes: MA 566672/1, NY 251136; photo: NY!).

Trelease & Yuncker (1950: 245) cited this name indicating a type specimen from MA. In MA there are two specimens of *Isern 1753* which both bear an original handwritten label by Trelease indicating *Piper baezense* Trel. We have chosen the more complete branch and inflorescence specimen as lectotype.

**Piper barbatum** Kunth var. *isernii* Trel. in Ciencia (Mexico) 2: 207. 1941 [= *Piper barbatum* Kunth] – Type: Ecuador, Quito, [Jan 1865], *Isern 1268* (syntype: ILL, MA 566673); Ecuador, Quito, [Jan 1865], *Isern 1271* (syntype: MA 566674).

This name is open to lectotypification.

**Piper brachystylum** Trel. in Ciencia (Mexico) 2: 207. 1941 – Type: Ecuador, Archidona, [May 1865], *Isern 1333* (lectotype [designated by Trelease & Yuncker (1950: 41)]: MA 566676; isolecotypes: NY 251161 fragm.; photo: NY!); Ecuador, Archidona, [May 1865], *Isern 1331* (syntype: ILL fragm., MA 566675); Ecuador, Archidona, [May 1865], *Isern 1334* (syntype: ILL, MA 566677).

**Piper externum** Trel. in Ciencia (Mexico) 2: 207. 1941 – Type: Peru, Chanchamayo, [Oct 1863], *Isern 2304* (Holotype: MA 557599).

“*Piper falculispicum var. cocanum* Trel.” in Ciencia (Mexico) 2: 207. 1941, nom. inval. (species name not validly published until Trelease & Yuncker did so in 1950) was described on the basis of the specimen: Ecuador, La Coca, [Jul 1865], *Isern 1545* [= *Piper falculispicum* Trel. & Yunek.]
Trelease & Yuncker (1950: 217) referred to *Isern 1545* (MA 566678) as type; there are duplicates at ILL (fragnm.) and at NY (No. 251299 fragnm.; photo: NY!).

**Piper inauspicatum** Trel. in Ciencia (Mexico) 2: 207. 1941 – Type: Peru, Chanchamayo, [15 Oct 1863], *Isern 2184* (syntypes: ILL, MA 557600/1–2, NY 251385; photo: NY!).

This name is open to more precise lectotypification.

**Piper isernii** Trel. in Ciencia (Mexico) 2: 207. 1941 [= *Piper immutatum* Trel.] – Type: Ecuador, La Coca, [Jul 1865], *Isern 1392* (lectotype [designated by Jones (1985: 47)]: ILL; isolectotypes: MA 556679, NY 222640 fragnm.; photo: NY!).

**Piper multitudinis** Trel. in Ciencia (Mexico) 2: 207. 1941 – Type: Peru, Chanchamayo, [23 Oct 1863], *Isern 2181-C* [uppercase for letter “c”] (syntypes: MA 557601, MA 557607/3–4, MA 557607/6).

Although Trelease cited the Isern collection number as 2181-C in the protologue, none of the MA specimens in this species bears a “C” indication or any other letter with *Isern 2181* in Trelease original handwritten labels (see below *Piper scutaespicum* Trel.). Therefore, the name is open to more precise lectotypification.

**Piper multitudinis** Trel. var. *latum* Trel. in Ciencia (Mexico) 2: 207. 1941 [= *Piper multitudinis* Trel.] – Type: Peru, Chanchamayo, [23 Oct 1863], *Isern 2181-b* (holotype: MA 557607/5; syntypes: ILL, NY 251517; photo: NY!).

On the MA specimen there is a mixture of Trelease original handwritten labels which presumably he considered to be a mixed gathering and he applied the letters to differentiate between the two branches. The MA specimen contains the holotypes of both *Isern 2181-a* identified as *Piper suspectum* Trel., and *Isern 2181-b* identified as *P. multitudinis* Trel. var. *latum* Trel.


**Piper scutaespicum** Trel. in Ciencia (Mexico) 2: 208. 1941 – Type: Peru, Chanchamayo, 23 Oct 1863, *Isern 2181-c* [lowercase for letter “c”] (lectotype [designated by Jones (1985: 84)]: MA 557607/2, NY 251761; photo: NY!).

The MA specimen bears a Trelease original handwritten label with the number 2181-c together with the name *Piper scutaespicum*.

**Piper semiplenum** Trel. in Ciencia (Mexico) 2: 208. 1941 – Type: Peru, Chanchamayo, 23 Oct 1863, *Isern 2181-d* (lectotype [designated by Jones (1985: 84)]: MA 557607/1; isoletotypes: ILL, NY 251765 fragnm.; photo: NY!).

This MA specimen has a Trelease handwritten label with the number 2181-d.

**Piper suspectum** Trel. in Ciencia (Mexico) 2: 208. 1941 [= *Piper heterophyllum* Ruiz & Pav.] – Type: Peru, Chanchamayo, [23 Oct 1863], *Isern 2181-a* (holotype: MA 557607/5; isoletotype: NY 283799; photo: NY!).

As mentioned above, on the MA specimen there is a mixture of Trelease handwritten original labels, which presumably he considered to be a mixed gathering and he applied the letters to differentiate between the two branches. The MA specimen contains the holotypes of both *Isern 2181-a* identified as *Piper suspectum* Trel., and *Isern 2181-b* identified as *P. multitudinis* Trel. var. *latum* Trel.

**Proteaceae**


There are 16 specimens at MA with the accession number 557627, so we establish here that the lectotype is MA 557627/8 which bears the handwritten label by Plana from Aug 1997 with this indication.

**Rubiaceae**

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