

Charles Darwin's Chilean plant collections

Las colecciones de plantas chilenas de Charles Darwin

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ABSTRACT

During the voyage of HMS *Beagle* to Chile in 1832-1835, Charles Darwin made 248 collections of vascular plants: 1 clubmoss, 16 ferns, 35 monocots, and 166 dicots. His collections yielded 62 new taxa, 10 named for him; 126 of the specimens are type specimens of various kinds. Each collection is discussed in this paper, as are those reported to have been collected by Darwin in Chile that have not been found. Comments on the plants and on Chilean vegetation made by Darwin in his notebooks, journal, and publications are included.

Key words: Darwin, HMS *Beagle*, plants, types.

RESUMEN

Durante la visita de la HMS *Beagle* a Chile en 1832-1835, Charles Darwin realizó 248 colecciones de plantas vasculares: 1 licopodio, 16 helechos, 35 monocotiledones y 166 dicotiledones. Las colecciones contenían 62 taxa nueva, 10 llamados por Darwin; 126 de los especímenes son tipos de diferentes clases. Cada colección se discute en este artículo, también se discuten colecciones efectuadas por Darwin en Chile, que no han sido encontradas. Se incluyen observaciones sobre las plantas y de la vegetación de Chile hechas por Darwin en sus libretas de campo, diario, y publicaciones.

Palabras clave: Darwin, HMS *Beagle*, plantas, tipos.

INTRODUCTION

Throughout the voyage of HMS *Beagle* (December 1831 through October 1836), when Charles Darwin was in close proximity to the ship, and specimens could be conveniently dried, he seems to have collected plants. Chile was no exception. From the time that he first set foot on what is now Chilean territory on Isla Hermite on Christmas Day 1832 until he left Iquique (then in Perú) on 14 July 1835, Darwin made 248 collections (404 sheets) of vascular plants. These collections included one clubmoss, 16 ferns, 35 monocots, and 166 dicots in presently-recognized species or varieties. The 218 taxa that Darwin collected in Chile are listed in Appendix 1 of this paper; the identifications are my own. Localities and dates of collection are given; the collections as a whole are

discussed in more detail in Porter (1986). Appendix 2 lists specimens that Darwin or others cite from Chile that have not been found.

Sixty-two new taxa from Chile were based on Darwin's specimens, 29 of which remain valid today. The new taxa included 10 species or varieties named for him: *Hymenophyllum darwinii* Hook. f. ex Bosch (Hymenophyllaceae), *Carex darwinii* Boott (Cyperaceae), *Poa darwiniana* Parodi (Poaceae), *Senecio darwinii* Hook. & Arn. (Asteraceae), *Berberis darwinii* Hook. (Berberidaceae), *Colobanthus subalatus* var. *darwinii* Hook. f. (Caryophyllaceae), *Gentiana patagonica* var. *darwinii* Griseb. (= *Gentianella magellanica* (Gaudich.) Fabris ex D. M. Moore, Gentianaceae), *Eugenia darwinii* Hook. f. (= *Amomyrtus luma* (Molina) D. Legrand & Kausel, Myrtaceae), *Calceolaria darwinii* Benth.

(= *C. uniflora* Lam., Scrophulariaceae), and *Urtica darwinii* Hook. f. (= *U. magellanica* Juss. ex Poir., Urticaceae). *Berberis darwinii* is now widely planted in temperate areas as an ornamental shrub.

Darwin's collections are quite important taxonomically for Chile, as they have yielded 11 holotype, seven isotype, two syntype, 35 lectotype, 41 isolectotype, and 30 paralectotype specimens. The first set of his *Beagle* plants is at the Cambridge University Herbarium, the second set at the Royal Botanic Gardens, Kew. Specimens also are to be found at the Royal Botanic Garden, Edinburgh, the University of Glasgow, the Manchester Museum, the Webb Herbarium of the University of Florence, the Fielding Herbarium of the University of Oxford, the Gray Herbarium of Harvard University, and the Missouri Botanical Garden. I have found specimens from Chile at Cambridge [CGE], Edinburgh [E-GL], Glasgow [GL], and Kew [K]. Unfortunately, no Darwin collections are to be found in any Chilean herbarium.

During the *Beagle* voyage, Darwin collected 1,444 plant specimens. The largest numbers in Chile were collected in the southern part of Tierra del Fuego (57 collections, 98 sheets), Valparaíso (48 collections, 64 sheets), and the Archipiélago de los Chonos (44 collections, 76 sheets) (see Table 1). Specimens from Valdivia and Valparaíso were grown in the Cambridge Botanic Garden by Professor John Stevens Henslow from seeds that Darwin had sent to him. Most of the Chilean collections had been sent to Henslow in a shipment from Buenos Aires in May 1834 and in two shipments from Valparaíso in January and June 1835 (Porter 1985). All collections made after this had to be stored on the *Beagle* until its return to Greenwich, England in October 1836. This is probably the reason that Darwin collected plants in only a few localities after the *Beagle* left Chile. He had very little room in which to store his geological, zoological, and botanical collections. Incidentally, the geological and zoological specimens far exceed the plants he collected (Porter 1985).

Henslow was supposed to have identified the plants that Darwin sent him from around

the world; however, Henslow's other duties kept him from spending much time working on them (Porter 1980). Henslow appealed for help from his friend William Jackson Hooker, Regius Professor of Botany at Glasgow University. William Hooker identified some of Darwin's plants, mainly Asteraceae (Porter 1984). Later, his son, Joseph Dalton Hooker, cited a number of the Chilean collections in his *Flora Antarctica* (Hooker 1844-47), but many of the specimens from Chile were not identified until recently (Porter 1986).

While he was on the voyage of the *Beagle*, Darwin kept a series of notebooks to record his observations and list his collections (Porter 1982). The geological and zoological observations were recorded in a Zoological Diary, Geological Diary, and Geological Notes. These notebooks contained the observations that yielded the five-part *Zoology of the Beagle* (Darwin 1838-43), and *Coral Reefs* (Darwin 1842), *Volcanic Islands* (Darwin 1844), and *Geology of South America* (Darwin 1846). The Zoological Diary contained more than just entries on animals. About twenty percent of its 368 pages are devoted to notes on plants and vegetation observed by Darwin. A few of these notes are given below.

In addition to these notebooks, now in the Darwin Archive at the Cambridge University Library, Darwin had a series of 10 other notebooks devoted to the specimens he collected. There were four notebooks enumerating his geological specimens, three for dried plants and animals, and three for plants and animals preserved in "spirits of wine" (brandy). The geological specimen notebooks are in the Cambridge University Library, the others are in the Darwin Museum, Down House, Kent. Toward the end of the voyage, Darwin used these notebooks to prepare lists of his collections by group (mammals, reptiles, plants, etc.) for the taxonomic specialists he expected to identify them for him. For Henslow he prepared a list now known as the Plant Notes (Porter 1982, 1987). Most of these were vascular plants, ferns and flowering plants. However, fungi, lichens, algae, and bryophytes also were included.

TABLE 1

Charles Darwin's vascular plant collections from Chile

Las colecciones de plantas vasculares de Chile de Charles Darwin

Locality	Collection
Southern Part of Tierra del Fuego	57 collections (98 sheets), 27-29 December 1832, January-February 1863.
Valparaíso	48 collections (64 sheets and 1 sheet from seeds), July-August 1834, March- April 1835.
Archipiélago de los Chonos	44 collections (76 sheets), December 1834 - January 1835.
Cabo Negro	28 collections (47 sheets), 31 January 1834.
Cabo Tres Montes	20 collections (37 sheets), 30-31 December 1834.
Isla Isabela	12 collections (20 sheets), 30 January 1834.
San Carlos, Isla de Chiloé	9 collections (13 sheets), 29-30 June 1834.
Patch Cove, Cabo Tres Montes	8 collections (13 sheets), 31 December 1834.
Isla Wollaston	5 collections (10 sheets), 18-19 February 1833, 25-27 February 1834.
Monte Tarn	5 collections (8 sheets), 6 February 1834.
Península Hardy, Isla Hoste	3 collections (6 sheets), 13 February 1833.
Isla de Chiloé	2 collections (3 sheets), June 1834.
Bahía Gregorio	1 collection (3 sheets), 29 May 1834.
Valdivia	1 collection (3 sheets from seeds), 8 February - 7 March 1835.
Midship Bay, Archipiélago de los Chonos	1 collection (2 sheets), December 1834.
Tierra del Fuego	1 collection (1 sheet), 27-29 December 1832, January-February 1833.
Bahía Buen Suceso	1 collection (1 sheet), February 1833.
Puerto de Sacrificios	1 collection (1 sheet) 1-8 June 1834.
Concepción	1 collection (1 sheet), March 1835.

The present paper discusses only the vascular plants.

DARWIN'S NOTES ON CHILEAN PLANTS

In the following section, species on which Darwin commented are listed in the order in which they are given in Appendix 1, followed by the comment and its source. Numbers are Darwin's collecting numbers. Following this list are some general comments that Darwin made on vegetation in several parts of Chile. The latter are given in chronological order. Darwin's original spelling and punctuation are preserved in these excerpts.

Marsippospermum grandiflorum (L. f.) Hook. (Juncaceae). "1045. Plant in habits much resembling the common rush in England." Plant Notes. (Porter 1986 p. 25, 1987 p. 168).

Astelia pumila (G. Forst.) Gaudich. (Liliaceae). "976. Plant, chief origin of the peat bogs. V. 155." Plant Notes. (Porter 1986 p. 25, 1987 p. 164). "V. 155." was a note to see page 155 in the Zoological Diary, which follows:

"At the height of about 1400 feet I found dwarf Beech trees, (about a foot high,) in sheltered cor- [Note a, see below] -ners, the main line of separation between the trees and grass is perhaps 2 or 300 feet lower. Within the Beagle channel this line was so horizontal and wound round in the vallies in so straight a direction as to resemble the high water mark on a beach. The extreme dampness of the climate favours the course luxuriance of the vegetation; the woods are an entangled mass where the dead and the living strive for mastery. Cryptogamous plants here find a most congenial site. Ferns however are not abundant. The Fuegians inhabit the same spot for many years; in one place I found 10

inches of fine vegetable mould over the layer of muscle and limpet shells; in consequence of this, these mounds may be told at a distance by the bright green of the vegetation. The concomitant plants are mostly the wild celery (1076), scurvy grass, (984) (985) black currants tree; these although not used by the Fuegians, are the most useful plants in [Note B, see below] the country and seem placed to attract attention."

"Wild celery" is *Apium australe* Thouars (Apiaceae), "scurvy grass" is unidentified, and "black currants tree" is *Ribes magellanicum* Poir. (Grossulariaceae). Darwin's description of vegetation in southern Tierra del Fuego is similar to what he was to write later in the closing paragraph of *The Origin of Species* (Darwin 1859 p. 498):

"It is interesting to contemplate an entangled bank, clothed with many plants of many kinds, with birds singing on the bushes, with various insects flitting about, and with worms crawling through the damp earth, and to reflect that these elaborately constructed forms, so different from each other, and dependent upon each other in so complex a manner, have all been produced by laws acting around us."

Darwin's notes were as follows:

"(a) It was in January in these very hills, about 1400 feet high, that, a snow storm destroyed two of Mr. Banks party and caused so much suffering to the whole of them.

(B) Jemmy Button said 'when leaves yellow, snow will go.'—Captain FitzRoy states that in April the leaves of the trees which grow on the lower parts of the hills turn colour; but not those high up.—I recollect having read a paper to show that in England warm Autumns hastened the falling of the leaves; that the process is regular part of the vegetation: This fact would seem to show the same law."

Joseph Banks had visited Tierra del Fuego in 1769 while on the first HMS *Endeavour* voyage with Captain James Cook. Jemmy Button was one of the Fuegian natives on the *Beagle* voyage; Robert FitzRoy was captain of the *Beagle*.

Darwin also listed a second collection of *Astelia pumila*: "1075. Bog plant, same as (976)". Plant Notes. (Porter 1986 p. 26, 1987 p. 170).

Codonorchis lessonii (D'Urv.) Lindl. (Orchidaceae). Darwin recorded two collections of this orchid in his Specimens in Spirits of Wine Notebooks. "823 Orchis. Petals all white, 2 central & anterior ones spotted with purple". (Porter 1987 p. 227). "825 Orchis. very shady damp wood no leaves". (Porter 1987 p. 227). On the facing page of the notebook, Darwin added "823. The orchis inhabits the darkest forests:" and "825 white. 2 central & interior petals white spotted with purple."

Apium australe Thouars (Apiaceae). "1076. Celery, generally growing near the wigwams; very good flavour when boiled in soups &c." Plant Notes. (Porter 1986 p. 46, 1987 p. 170). "Wigwams" was Darwin's term for the dwellings of the Fuegian natives.

Iocenes acanthifolius (Hombr. & Jacquinot) B. Nord. (Asteraceae). "985. Generally growing near wigwams." Plant Notes. (Porter 1986 p. 65, 1987 p. 167; as *Senecio acanthifolius* Hombr. & Jacquinot).

Senecio candidans DC. (Asteraceae). "1157. Syngenesia plant, on sand dunes Wollaston Island;" Plant Notes. (Porter 1986 p. 66, 1987 p. 171). Syngenesia was a Linnaean class containing the Asteraceae; Darwin wrote "dunes" for dunes.

Senecio darwinii Hook. & Arn. (Asteraceae). "982. Plant very Alpine." Plant Notes. (Porter 1986 p. 67, 1987 p. 167). By "Alpine", Darwin meant that the plant was collected near the top of a mountain.

Donatia fascicularis J. R. & G. Forst. (Donatiaceae). "2475. Little plant, very abundant, on hills. This and the bog plant of Tierra del Fuego (& grass) here form great beds of peat. Latitude 45°.!! Chonos Archip. Midship. Bay." Plant Notes. (Porter 1986 p. 96, 1987 p. 178). The "bog plant" was *Astelia pumila* (Liliaceae).

Empetrum rubrum Vahl ex Willd. (Empetraceae). "1077. Plant, growing in the peat and closely resembling in general

habit and tint our heaths." Plant Notes. (Porter 1986 p. 96, 1987 p. 170).

Pernettya mucronata (L. f.) Gaudich. ex Spreng. (Ericaceae). "1074. A very abundant bush in Tierra del Fuego. Does not reach above 4 or 500 feet up the mountains; bears a very pleasant but bitter berry; colour and size varies, from white to dark red; I eat great numbers of them." Plant Notes. (Porter 1986 p. 97, 1987 p. 170).

Nothofagus antarctica (G. Forst.) Oerst. (Fagaceae). "1014. Bright green (Beech). as above." Plant Notes. (Porter 1986 p. 109, 1987 p. 168). Darwin's "as above" refers to the next species.

Nothofagus betuloides (Mirb.) Oerst. (Fagaceae). "1013. Beech, foliage yellowish green: (Beeche 1013 & 1014). These Beech trees are the only ones which grow on the Mountains in this district (Hardy Peninsula). The first is by far the most general, almost universal, and grows to a larger size; the other (1014) follows the course of a rivulet or more sheltered rock, the contrast of the two greens, is at all times striking." Plant Notes. (Porter 1986 pp. 109-110, 1987 p. 168). "The first" is *Nothofagus betuloides*, "the other" *N. antarctica*.

Ribes magellanicum Poir. (Grossulariaceae). "985. (bis) Currant bush, generally near to the wigms". Plant Notes. (Porter 1986 p. 115, 1987 p. 168). Darwin's "wigms" is wigwams, the dwellings of the Fuegian natives.

Misodendrum brachystachyum DC. (Misodendraceae). "977. Parasitic plant on the beach." Plant Notes. (Porter 1986 p. 123, 1987 p. 166). Darwin's "beach" should be beech. He collected this parasite attached to an Antarctic beech, *Nothofagus betuloides*.

In one of the Specimens in Spirits of Wine Notebooks, there is an entry, "532: 533: 534. The junction of the parasitical plant (977) with the Fagus." (Porter 1987 p. 224). "Fagus" was the original generic name for *Nothofagus betuloides*.

Darwin listed two further collections of *Misodendron brachystachyum*. "1056. Junctions of parasite bush with the Beech of Tierra del Fuego, same as in spirits (532-

534)". Plant Notes. (Porter 1987 p. 168).

"1155. Parasitic plant on Beech Tierra del Fuego". Plant Notes. (Porter 1987, p. 171).

Myrteola nummularia (Poir.) O. Berg (Myrtaceae). "978. The infusion made a pleasant drink, much used by the Sealers instead of tea; grows on the hills; Bears a pale pink berry; with a fine sweet Juniper flavour; the plant is said by the sealers to be diuretic." Plant Notes. (Porter 1986 p. 125, 1987 p. 166).

Epilobium ciliatum Raf. (Onagraceae). "981. Growing generally near the wigwams". Plant Notes. (Porter 1986 p. 128, 1987 p. 167).

Calceolaria uniflora Lam. (Scrophulariaceae). In one of the Specimens in Spirits of Wine Notebooks, Darwin made the following entry. "811 Plants. Elisabeth Island: [illegible word] (?) plants. 'dutch orange'; hinder surface shaded with 'brownish orange' Beneath upper white tip, space". (Porter 1987 p. 227; as *C. darwinii* Benth.). On the facing page, Darwin wrote: "811 mottled with the richest 'brownish orange.—curious appearance Orchis. 5 outside petals veined with 'duck green': head of stamens (?) on anterior petals (?). green on yellow margin: two [illegible word] in center of flower surrounded by space of fine yellow—".

Solanum tuberosum L. (Solanaceae). "2528. Wild Potatoes. Wild plants grow in abundance on all the islands of this group; the furthest point south where Mr. Stokes saw them was at Lemoos: but Mr. Lowe tells me the wild Indians in the Gulf of Trinidad know them well, call them Aquina and eat them, and say they grow in that neighbourhood. At Loews harbour (Lat. 44°) I visited a large bed; They appear a sociable plant; in all parts they grow in a sandy-shelly soil close to the beach, where the trees are not as close together; They are now (January 15th) in bud and flower; the tubers ["(1142) in spirits" written in the margin] are few and small, especially in the plants in the shade, with luxuriant foliage. yet I saw one, oval with the longest diameter two inches in length. They are very watery and shrink, when boiled; When raw have the smell of Potatoes of Europe; When cooked are rather insipid, but not bitter or

ill-tasted and may be eat with impunity, (V. Humboldt. New Spain vol. II P. [page number not entered by Darwin]). The stem of one plant from the ground to tip of upper leaf measured exactly 4 feet!!—These plants are unquestionably here amongst these uninhabited Islands in their wild state (Indians of south recognizing them and giving them Indian name; general occurrence on all, even very small inlets &c &c). They grow on a sandy soil, with much vegetable matter. The Climate is very humid and little sunshine. [The following was added later to the Zoological Diary:] The Indians of Chiloe speaking the Williche language give them a different name from Aquina, the word of west Patagonia The Potatoes has been found near Valparaiso. V. Sabine Horticultural Society?"

"Mr. Stokes" is John Lort Stokes, Mate and Assistant Surveyor on the *Beagle*. "Lemoos" is Isla Lemuy, Prov. Aisén. William Lowe was Pilot of the *Adventure*, sailing and surveying with the *Beagle*; Golfo Trinidad is in Prov. Magallanes. "Humboldt" refers to Humboldt (1822) and "Sabine" to Sabine (1824).

Darwin made the following entry into one of the Specimens in Spirits of Wine Notebooks: "1142 Potatoes. (wild). Lowes Harbour Chonos A." (Porter 1987 p. 229; as *S. tuberosum* var. *vulgare* Hook. f.).

Unknown. "984. Scurvy grass (very good) growing near the wigwams". Plant Notes. (Porter 1987 p. 167). I had earlier tentatively identified this collection as *Oxalis enneaphylla* Cav. (Oxalidaceae), which is known as scurvy-grass in the Falkland Islands (Porter 1987). However, I now think that it is more likely a member of the Brassicaceae. Unfortunately, I did not find a Darwin specimen with this collection number.

Finally, a rather curious specimen was collected by Darwin. "1073. A square piece cut out of the peat whilst forming. Tierra del Fuego. V. 156." Plant Notes. (Porter 1987 p. 169). "V. 156" is a note to see page 156 in the Zoological Diary, which reads:

"Specimen (1073) is cut out of the surface of a peat Bog: this above plant is eminently social; few others grow with it: some small creeping ligneous plants. bearing berrys (978&c); another in its form, habits &

colour. strikingly resembling the European heaths (1077); & a third equally resembling our rush (1045). These latter plants & some others doubtless add their effects: But the plant (976) & not any sort of moss. is the main agent: (on the sides of hills, where it mostly abounded the surface of the peat often was convex.—By these gradual changes of level, water rests on different parts & thus completes the disorganization of the plant & consolidates the whole."

"(978&c)" is *Myrteola nummularia*, "(1077)" *Empetrum rubrum*, "(1045)" *Marisippospermum grandiflorum*, and "(976)" *Astelia pumila*. I did not find this specimen of peat.

Following his notes in the Zoological Diary given above under *Astelia pumila*, Darwin entered the following for Tierra del Fuego under "Peat" (Porter 1987 pp. 165-6).

"In every part of the country which I have seen, the land is covered by a thick bed of peat.—It is universal on the mountains, above the limits [of] the Beech; & everywhere, excepting in the very thickest parts of the woods it abounds.—The beech often grows out of it & hence great quantities of timber must annually be imbedded.—It increases most on the sides of hills & is I think of great thickness: the only section I saw varied from 6 to 12 feet. In more level sites the surface is broken up by numberless pools. which have an artificial appearance as if dug for the sake of peat.—These are often close to each other & yet of different levels; showing how impervious the peat is when acted on by water.—At the bottom of these shallow pools there is a great quantity of brown flocculent matter in which *Conferva* flourish & very little moss.—The great agent, which forms the peat is a small plant, with thick leaves & of a bright green colour (Nº. 976).—The plant grows on itself; the lower leaves die. but yet remain attached to the tap root.—this latter penetrate in a living state to the depth of a foot or two.—& from the surface to the bottom the succession of leaves can be traced from their perfect state to one almost entirely disorganized.—Subterranean streams are common, these & the stagnant water. by

breaking up the upper peat & macerating the rotten leaves helps to form the more compact parts.—”

By “numberless”, Darwin meant numberless; spelling was never his strong suit. “Conferva” are filamentous green algae; “976” is *Astelia pumila*. Darwin added two notes, which were not keyed into the forgoing discussion of peat:

“(a) The appearance of these forests brought to my mind the artificial woods at Mount Edgecombe: the greenness of the bushes & the twisted forms of the trees, covered with Lichens, in both places are caused by strong prevalent winds & great dampness of climate.—

(b) It would be difficult to find a spade full of earth in Tierra del F. excepting in the spots, where the Fuegians have long frequented. & on the remnants of ancient alluvial formation, described in Geological notes; but even in this latter ground, is in some places, covered with peat as in Goree Sound.—”

Mount Edgecumbe is in southeast Cornwall, England; Goree Sound is off Isla Navarino, Prov. Magallanes.

After the discussion in the Zoological Diary of the specimen of peat he collected in Tierra del Fuego, Darwin entered the following under “General Observations.” (Porter 1987 p. 169).

“Upon considering these facts, which show how inhospitable the climate of Tierra del is, we are the more surprised to hear from Capt. King that Humming birds have been seen in St of Magellan sipping the flowers of the Fuchsia [“(b)” in margin] & Parrots feeding on the seeds of the Winters bark.—I have seen the latter South of the parallel 55°—”

Captain King was Philip Parker King, commander of the *Beagle*'s first voyage to Tierra del Fuego in 1826-30. “Fuchsia” is *Fuchsia magellanica* Lam. (Onagraceae), and “Winters bark” *Drimys winteri* J. R. & G. Forst. (Winteraceae). Note (b) was

“(b) The tropical resemblance given by these birds & Plants is continued in the sea; by the stony branching Corallines, the large. Volutans, Balanidae & Patelliform shells.—”

“Corallines” are coralline algae, “Volutans” a group of gastropods, “Balanidae”

acorn barnacles, and “Patelliform shells” limpets.

A further entry on Tierra del Fuego under “General Observations” (Porter 1987 p. 169) was

“In the hottest part of the year, the mean maximum (during 37 days) was 55.34 & the thermom often rose to about 60°.—yet there were no Orthoptera. few diptera, still fewer butterflies & no bees, this together with absence of flower feeding beetles (Cychgues) [?] thoroughly convinced me how poor a climate, that of Tierra del F is.—”

“Orthoptera” are grasshoppers, and “diptera” flies.

Darwin made no entries in the Plant Notes for collections from Isla de Chiloé, but he made a few observations on plants from the island in the Zoological Diary under “Ornithology” (Porter 1987 p. 177):

“...The commonest site, where these birds may be found, is on marshy open ground where a Bromelia (?). (a plant bearing - pine-apple sort of fruits with long toothed leaves) forms thickets.— There are at this time of year. scarcely any flowers. & none whatever where the above plants grow.— These forest, wear from the climate a gloomy look: yet in many respects they have a more Tropical appearance, than the latitude would lead one to expect.—the woods contain various sorts of trees: they are very thickly placed together: they are much covered with parasitical plants, many of them monocotylenous.—An Arborescent grass jointed like Bamboo which intertwines the trees to the height of 30 feet is very abundant: the Ferns are singularly large.—I no where saw the Beech tree which forms the whole forests of T. del Fuego.— the Winters bark is common to both countries.—”

The “Bromelia” is probably *Greigia sphacellata* (Ruiz & Pavón) Regel (Bromeliaceae), and the “Arborescent grass” is probably a species of *Chusquea* (Poaceae). “Winters bark” is *Drimys winteri*, which Darwin mentions several times, but which he never seems to have collected.

In the Zoological Diary, Darwin recorded observations on propagation in Isla de

Chiloé. under the heading "Apple Trees" (Porter 1987 pp. 177-8).

"In Chiloe the inhabitants have a mode of propagating trees so that in three years it is possible to have an orchard of large fruit-bearing trees.—At the lower part of every branch, there are small (2 or 3 1/10th of inch) conical, brown, wrinkled projecting points; there are roots, as may be seen when any mud has fallen on the tree.—A branch, as thick as a man's thigh is chosen, & is cut off, just beneath a group of points; this is done in *very early* spring; the extremities of all the sub-branches being lopped off, it is placed about 2 feet deep in the ground with a support.—the ensuing summer it throws out very long shoots, & sometimes bears a few apples (I saw one which had most unusually produced as many as 23): The 2d summer, the former shoot threw out others: in the third summer it bears a good deal of fruit & is (as I have seen) a well wooded tree.—Are the incipient roots present in any part of England? or is this whole process owing to the extremely damp nature of the climate? it is a most valuable method where applicable.—I have noticed that in the Apples, not above one in a hundred will have any seeds in its core.—"

A shortened version, with some additional information is given in Darwin (1839).

Darwin's final observations in the Zoological Diary on the vegetation of Chile refer to the Archipiélago de los Chonos, under the heading "Vegetation" (Porter 1987 pp. 178-9).

"At S. Pedro. (SE point of Chiloe) I first noticed the Antarctic Beech ["(a)" in margin] of T del Fuego but at a considerable elevation very stunted in its form.—In Midship Bay (Chonos) Lat: 45°—46. This tree grew to a fair size, at the Waters edge formed nearly 1/5th of the Wood.—From this point it doubtless continues to augment, till in T—del Fuego we find the woods essentially composed of it alone.—The arborescent grass which we see in Lowes Harbor (& perhaps in Lemoos) is not found in this Midship Bay; Hence together with the numbers of the Beech the forest bears a different aspect from what it does in Chiloe.— Here Cryptogamic flora, has

reached its perfection (V Specimens). In T del Fuego I have remarked, that the forest appears to be too dank & cold for even this order of plants: In this Latitude 45°S also I see that level pieces of ground instead of supporting trees, become covered with a thick bed of Peat. Trees seldom grow on a slope in T del Fuego: whereas in Chiloe the plains forms the densest forest. Here the climate seems more to resemble that of T del Fuego: under it, is remarked by old Navigators on this coast, that in the whole distance between Chiloe & C. Horn, there is no great difference of climate.—The peat is here formed by the plant called 'Bog Plant' & another Specimen (2475): These social plants support a few tufts of coarse grass, stunted *little* dwarf beeches & the 'Tea Plant'.—The aspect of the Bog is precisely that of T del Fuego. The Lat. 45°!—"

The "Antarctic Beech" is *Nothofagus* spp., "Lemoos" is Isla Lemuy, "Bog Plant" is *Astelia pumila*, "other Specimen" is *Donatia fascicularis*, and "Tea Plant" is *Myrteola nummularia*. Darwin's note (a) is "(a) These remarks about the Beech, must be taken with caution; for I see ne of the species, least common in T del Fuego is common in central forest of Chiloe]"

Darwin's "ne" appears to mean none

CONCLUSION

Considering the conditions under which he was working, either on a small ship in dangerous waters or traveling overland on horseback, Charles Darwin collected a large number of plants during the five years he spent on the voyage of the *Beagle*. Besides the many notebooks discussed above, he also kept a journal (Keynes 1988) that periodically was sent back to his family to inform them of his exploits. With the journal were sent letters to family and friends (Burkhardt and Smith 1985). The journal and letters contain information on plants and vegetation that were not recorded in the notebooks (see Porter 1987). The reader is urged to see Darwin's *Voyage of the Beagle* (Darwin 1839, 1845) for a more coherent view of Chile in Darwin's time

than the foregoing quotes from his notebooks can give. Thanks to Yudilevich Levy and Castro Le-Fort (1995), most of Darwin's published writing on Chile is now available in a splendid new edition in Spanish. Darwin's writings on the island of Chiloé in 1834-35 have been compared with the natural history of the island 150 years later (Willson & Armesto 1996) and his collections of Chilean terrestrial vertebrates and observations on the birds and mammals have been examined recently as well (Jaksic & Lazo 1994).

Floristic, phytogeographical, and phytoecological research in Chile is increasing. Recent examples of important publications in each field are the first volume of the new *Flora de Chile* (Marticorena & Rodríguez 1995), a volume that discusses the ecology and relationships of the country's mediterranean ecosystems (Arroyo et al. 1995) and one that discusses its temperate rainforests (Lawford et al. 1996), and a multifaceted study of forests in a part of southern Tierra del Fuego (Arroyo et al. 1996).

Besides flowering plants and ferns, Darwin also collected bryophytes, algae, fungi, and lichens in Chile. His notes on them are given in Porter (1987), but the bryophytes, algae, and fungi still await study by experts on these groups. Dr. David Galloway has discussed the lichens in the symposium in which this paper originally was presented. There is still much to be done regarding Darwin's other Chilean cryptogams, beginning with finding and identifying them. I hope that Chilean botanists and their students will soon accomplish this task.

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APPENDIX 1

Vascular plants collected in Chile by Charles Darwin
Plantas vasculares colectadas en Chile por Charles Darwin

Names based on Darwin's collections are asterisked and the kinds of types are indicated.

LYCOPODOPHYTA
LYCOPODIACEAE

Lycopodium magellanicum (P. Beauv.) Sw. (Southern part of Tierra del Fuego, January-February 1833 [CGE]; Prov. Aisén: Patch Cove, Cabo Tres Montes, 30-31 December 1834 [CGE]).

PTERIDOPHYTA
ASPIDIACEAE

Megalastrum spectabile (Kaulf.) A. R. Sm. & R. C. Moran (Prov. Chiloé: San Carlos, Isla de Chiloé, 29-30 June 1834 [CGE]). Listed as *Ctenitis spectabilis* (Kaulf.) Mett. in Porter (1986).
Polystichum chilense (Christ) Diels (Southern part of Tierra del Fuego, January-February 1833 [CGE]). Listed as *P. vestitum* (G. Forst) K. Presl in Porter (1986).

ASPLENIACEAE

Asplenium dareoides Desv. (Prov. Aisén: Cabo Tres Montes, 30-31 December 1834 [CGE]). Listed as *A. magellanicum* Kaulf. in Porter (1986).
A. obtusatum var. *sphenoides* (Kunze) C. Chr. ex Skottsbo. (Prov. Chiloé: San Carlos, Isla de Chiloé, 29-30 June 1834 [CGE]). Listed as *A. obtusatum* G. Forst. in Porter (1986).

BLECHNACEAE

Blechnum penna-marina (Poir.) Kuhn (Tierra del Fuego, January-February 1833 [CGE]; southern part of Tierra del Fuego, January-February 1833 [CGE, 2 sheets]).

DAVALLIACEAE

Rumohra adiantiformis (G. Forst.) Ching (Prov. Aisén: Archipiélago de los Chonos, December 1834 [CGE]).

GRAMMITIDACEAE

Grammitis poeppigiana (Mett.) Pic. Serm. (Southern part of Tierra del Fuego, January-February 1833 [CGE, GL]).

HYMENOPHYLLACEAE

Hymenoglossum cruentum (Cav.) K. Presl (Prov. Aisén: Archipiélago de los Chonos, December 1834 [CGE]).

Hymenophyllum caudiculatum var. *productum* (K. Presl) C. Chr. (Prov. Aisén: Archipiélago de los Chonos, December 1834 [CGE]; Prov. Chiloé: San Carlos, Isla de Chiloé, 29-30 June 1834 [CGE, GL, K]). Listed as *Mecodium caudiculatum* (Mart.) Copel. in Porter (1986).

**H. darwinii* Hook. f. ex Bosch (Southern part of Tierra del Fuego, January-February 1833 [holotype K, 3 isotypes CGE]).

H. dicranotrichum (K. Presl) Hook. ex Sadeb. (Prov. Aisén: Archipiélago de los Chonos, December 1834 [CGE]). Listed as *Leptocionium dicranotrichum* K. Presl in Porter (1986).

H. pectinatum Cav. (Prov. Aisén: Archipiélago de los Chonos, December 1834 [CGE, 2 sheets; K]).

H. peltatum (Poir.) Desv. (Southern part of Tierra del Fuego, January-February 1833 [CGE]).

H. tortuosum Hook. & Grev. (Southern part of Tierra del Fuego, January-February 1833 [CGE, GL, K]; Prov. Aisén: Archipiélago de los Chonos, December 1834 [CGE]). Listed as *Meringium tortuosum* (Hook. & Grev.) Copel. in Porter (1986).

LOPHOSORIACEAE

Lophosoria quadripinnata (J. F. Gmel.) C. Chr. (Prov. Chiloé: San Carlos, Isla de Chiloé, 29-30 June 1834 [CGE]).

POLYPODIACEAE

Polypodium feuillei Bertero (Prov. Chiloé: San Carlos, Isla de Chiloé, 29-30 June 1834 [CGE]). Listed as *P. synammia* (Fée) C. Chr. in Porter (1986).

MAGNOLIOPHYTA: MONOCOTYLEDONAE

CYPERACEAE

**Carex banksii* Boott (Southern part of Tierra del Fuego, January-February 1833 [CGE; 2 paralectotypes CGE, 2 paralectotypes K]; Prov. Aisén: Cabo Tres Montes, 30-31 December 1834 [synonym: **C. germana* Boott, lectotype K, isolectotype CGE]).

**C. darwinii* Boott (Prov. Aisén: Archipiélago de los Chonos, 30-31 December 1834 [lectotype CGE, isolectotype CGE]).

C. trifida Cav. (Prov. Aisén: Cabo Tres Montes, 30-31 December 1834 [CGE, 2 sheets]).

Isolepis cernua (Vahl) Roem. & Schult. (Prov. Aisén: Cabo Tres Montes, 30-31 December 1834 [synonym: **I. pygmaea* var. *elongata* Hook. f., lectotype K, isolectotype CGE]). Listed as *Scirpus cernuus* Vahl in Porter (1986).

**Schoenus antarcticus* (Hook. f.) Dusén (Prov. Aisén: Patch Cove, Cabo Tres Montes, 31 December 1834 [holotype CGE]).

S. rhynchosporoides (Steud.) Kukenth. (Prov. Aisén: Cabo Tres Montes, 30-31 December 1834 [synonym: **Chaetospora laxa* Hook. f., lectotype K, isolectotype CGE]).

Scirpus californicus (C. A. Mey.) Steud. (Prov. Valparaíso: Valparaíso, August 1834 [CGE, K]).

Uncinia phleoides (Cav.) Pers. (Prov. Aisén: Archipiélago de los Chonos, December 1834 [CGE]).

DIOSCORIACEAE

Dioscorea bryoniifolia Poepp. (Prov. Valparaíso: Valparaíso, August 1834 [CGE]).

D. parviflora Phil. (Prov. Valparaíso: Valparaíso, August 1834 [CGE]).

IRIDACEAE

- Olsynium biflorum* (Thunb.) Goldblatt (Prov. Magallanes: Isla Isabela, 30 January 1834 [CGE; K, 2 sheets]). Listed as *Phaiophleps biflora* (Thunb.) R. C. Foster in Porter (1986).
O. junceum (E. Mey. ex K. Presl) Goldblatt (Prov. Valparaíso: Valparaíso, August 1834 [CGE]). Listed as *Sisyrinchium junceum* E. Mey. ex K. Presl in Porter (1986).
Sisyrinchium chilense Hook. (Prov. Aisén: Archipiélago de los Chonos, December 1834 [synonym: **S. laxum* var. *major* Hook. f., lectotype K, 2 isoelectotypes CGE]; Prov. Magallanes: Cabo Negro, 31 January 1834 [synonym: **S. laxum* var. *minor* Hook. f., lectotype K, isoelectotype CGE]).
Tapetia pumila (G. Forst.) Baill. (Prov. Aisén: Patch Cove, Cabo Tres Montes, 31 December 1834 [CGE, K]).

JUNCACEAE

- Juncus cyperoides* Laharpe (Prov. Aisén: Archipiélago de los Chonos, December 1834 [CGE, E-GL, K]).
J. planifolius R. Br. (Prov. Aisén: Archipiélago de los Chonos, December 1834 [CGE, K]).
Marsippospermum grandiflorum (L. f.) Hook. (Southern part of Tierra de Fuego, January-February 1833 [CGE, K]).

JUNCAGINACEAE

- Triglochin striatum* Ruiz & Pavón (Prov. Aisén: Cabo Tres Montes, 30-31 December 1834 [CGE, 2 sheets; E-GL]).

LILIACEAE

- Astelia pumila* (G. Forst.) Gaudich. (Southern part of Tierra del Fuego, January 1833 [CGE, 2 sheets]).

ORCHIDACEAE

- Bipinnula fimbriata* (Poepp.) I. M. Johnst. (Prov. Valparaíso: Valparaíso, August 1834 [CGE]).
 **Chloraea magellanica* Hook. f. (Prov. Magallanes: Isla Isabela, 30 January 1834 [lectotype K, isoelectotype CGE])
Codonorchis lessonii (D'Urv.) Lindl. (Southern part of Tierra del Fuego, January-February 1833 [CGE]).

PHILESIACEAE

- **L. polyphylla* (Hook.) J. F. Macbr. (Prov. Aisén: Cabo Tres Montes, 30-31 December 1834). [basionym: **Callixene polyphylla* Hook., paralectotype CGE, paralectotype K]. Listed as a synonym of *Enargea marginata* Banks & Sol. ex Gaertn. in Porter (1986).

POACEAE

- Agrostis magellanica* Lam. (Southern part of Tierra del Fuego, January-February 1833 [synonym: **A. antarctica* Hook. f., syntype CGE]).
A. exasperata Trin. (Prov. Aisén: Archipiélago de los Chonos, December 1834 [CGE; synonym: **A. antarctica* Hook f., syntype CGE]). Listed as *A. santacruzensis* Speng. in Porter (1986).
Alopecurus magellanicus Lam. (Southern part of Tierra del Fuego, January-February 1833 [CGE]).
 **Deschampsia kingii* (Hook. f.) E. Desv. (Southern part of Tierra del Fuego, January-February 1833 [basionym: **Aira kingii* Hook. f., lectotype K, 2 isoelectotypes CGE]).
Elymus glaucescens Segerg (Southern part of Tierra del Fuego, January-February 1833 [K]). Listed as *Agropyron pubiflorum* (Steud.) Parodi in Porter (1986).
Hierochloa redolens (Vahl) Roem. & Schult. (Southern part of Tierra del Fuego, January-February 1833 [CGE, K]).
Melica argentata E. Desv. (Prov. Valparaíso: Valparaíso, August 1834 [CGE]). Listed as *M. nitida* Phil. in Porter (1986).
Melica longiflora Steud. (Prov. Valparaíso: Valparaíso, August 1834 [CGE]). Listed as *M. hirta* Phil. in Porter (1986).
 **Ortachne rariflora* (Hook. f.) Hughes (Prov. Aisén: Patch Cove, Cabo Tres Montes, 31 December 1834 [basionym: **Muhlenbergia rariflora* Hook. f., lectotype K, isoelectotype CGE]).
Poa alopecurus (Gaudich.) Kunth (Southern part of Tierra del Fuego, January-February 1833 [synonym: **Festuca fuegiana* Hook. f., paralectotype CGE, paralectotype E-GL, paralectotype K]; Prov. Aisén: Patch Cove, Cabo Tres Montes, 31 December 1834 [CGE]).
 **P. darwiniana* Parodi (Southern part of Tierra del Fuego, January-February 1833 [lectotype K; synonym: **Triodia antarctica* Hook. f., lectotype K, isoelectotype CGE]).
Polypogon australis Brongn. (Prov. Aisén: Archipiélago de los Chonos, December 1834 [synonym: **Polypogon chonoticum* Hook. f., paralectotype CGE], and Cabo Tres Montes, 30-31 December 1834 [lectotype K, isoelectotype CGE]).

MAGNOLIOPHYTA: DICOTYLEDONAE

AIZOACEAE

Tetragonia tetragonoides (Pallas) Kuntze (Prov. Valparaíso: Valparaíso, August 1834 [CGE, K]).

APIACEAE

Apium australe Thouars (Prov. Magallanes: Isla Isabela, 30 January 1834, and southern Tierra del Fuego, January-February 1833 [CGE, K]).

**Azorella selago* Hook. f. (Southern part of Tierra del Fuego, January-February 1833 [paralectotype CGE, paralectotype K]).

ASTERACEAE

Ageratina glechonophylla (Less.) R. M. King & H. Rob. (Prov. Valparaíso: Valparaíso, August 1834 [CGE]). Listed as *Eupatorium glechonophyllum* Less. in Porter (1986).

Aristeguietia salvia (Colla) R. M. King & H. Rob. (Prov. Valparaíso: Valparaíso, August 1834 [CGE]). Listed as *Eupatorium salvia* Colla in Porter (1986).

Aster vahlii (Gaudich.) Hook. & Arn. (Prov. Magallanes: Cabo Negro, 31 January 1834 [CGE, K]).

**Baccharis patagonica* Hook. & Arn. (Prov. Magallanes: Cabo Negro, 31 January, 1834 [paralectotype CGE, paralectotype K]).

B. rhomboidalis J. Remy (Prov. Valparaíso: Valparaíso, August 1834 [CGE]).

B. salicifolia (Ruiz & Pavón) Pers. (Prov. Valparaíso: Valparaíso, August 1834 [CGE, K]). Listed as *B. glutinosa* Pers. in Porter (1986).

Bahia ambrosioides Lag. (Prov. Valparaíso: Valparaíso, August 1834 [CGE, K]).

Bidens subalternans DC. (Prov. Valparaíso: Valparaíso, August 1834 [CGE, K]).

Conyza spiculosa (Hook. & Arn.) Zardini (Prov. Magallanes: Cabo Negro, 31 January 1834 [CGE, K]). Listed as *Erigeron spiculosis* Hook. & Arn. in Porter (1986).

Erigeron myosotis Pers. (Prov. Magallanes: Bahía Gregorio, 29 May 1834 [CGE, E-GL, K], Cabo Negro, 31 January 1834 [CGE, K], and Isla Isabela, 30 January 1834 [CGE]).

Flourensia thurifera (Molina) DC. (Prov. Valparaíso: Valparaíso, August 1834 [CGE]).

Gamochoeta spicata (Lam.) Cabrera (Prov. Aisén: Archipiélago de los Chonos, December 1834 [synonym: **Gnaphalium spicatum* var. *chonticum* Hook. f., lectotype K, isolectotype CGE]). Listed as *Gamochoeta purpurea* (L.) Cabrera in Porter (1986).

Gnaphalium montevidense Spreng. (Prov. Aisén: Archipiélago de los Chonos, December 1834 [CGE, K]).

Hypochaeris incana var. *integrifolia* (Sch. Bip.) Cabrera (Prov. Magallanes: Isla Isabela, 30 January 1834 [CGE]).

Iocenes acanthifolius (Hombr. & Jacquinot) B. Nord. (Southern part of Tierra del Fuego, February 1833 [CGE]). Listed as *Senecio acanthifolius* Hombr. & Jacquinot in Porter (1986).

Lagenophora hariotii Franchet (Prov. Magallanes: Isla Wollaston, February 1833 or 1834 [synonym: **Lagenophora commersonii* var. *hirsuta* Hook. & Arn., holotype K, isotype CGE]). Listed as *Lagenifera hariotii* (Franchet) T. R. Dudley in Porter (1986).

Leptinella scariosa Cass. (Prov. Aisén: Cabo Tres Montes, 30-31 December 1834 [synonym: **L. acaenoides* Hook. & Arn., lectotype K, isolectotype CGE, isolectotype E-GL]). Listed as *Cotula scariosa* (Cass.) Franchet in Porter (1986).

Madia sativa Molina (Prov. Magallanes: Cabo Negro, 31 January 1834 [CGE]).

Nassauvia pygmaea (Cass.) Hook. f. (Southern part of Tierra del Fuego, January-February 1833 [CGE, K]).

Perezia lactucoides (Vahl) Less. (Prov. Magallanes: Cabo Negro, 31 January 1834 [CGE, K], and Puerto de Sacrificios, 1-8 June 1834 [K]).

P. magellanica (L. f.) Less. (Prov. Aisén: Patch Cove, Cabo Tres Montes, 31 December 1834 [CGE, E-GL]).

P. recurvata (Vahl) Less. (Prov. Magallanes: Cabo Negro, 31 January 1834 [CGE]).

Podanthera mitiqui Lindl. (Prov. Valparaíso: Valparaíso, August 1834 [CGE]).

Senecio arnottii Hook. f. (Prov. Chiloé, Isla Chiloé, June 1834 [synonym: **S. limbarioides* var. *major* Hook. & Arn., holotype K, isotype CGE]).

S. candidans DC. (Prov. Magallanes: Isla Wollaston, 18-19 February 1833 [CGE]).

**S. darwinii* Hook. & Arn. (Southern part of Tierra del Fuego, January-February 1833 [lectotype K, isolectotype CGE, isolectotype E-GL] [synonym: **S. darwinii* var. *laxus* Hook. & Arn., holotype CGE]).

S. eightsii Hook. & Arn. (Southern part of Tierra del Fuego, January-February 1833 [CGE, K]).

**S. humifusus* (Hook. f.) Cabrera (Southern part of Tierra del Fuego, January-February 1833 [basinym: **Melalema humifusa* Hook. f., paralectotype CGE]).

**S. magellanicus* Hook. & Arn. (Prov. Magallanes: Cabo Negro, 31 January 1834 [lectotype K, isolectotype CGE]).

S. smithii DC. (Prov. Magallanes: Cabo Negro, 31 January 1834 [CGE]).

S. sylvaticus L. (Prov. Valparaíso: Valparaíso, August 1834 [CGE]).

S. trifurcatus (G. Forst.) Less. (Prov. Magallanes: Isla Wollaston, February 1833 or 1834 [CGE, E-GL]).

Sonchus asper (L.) Hill (Prov. Aisén: Archipiélago de los Chonos, December 1834 [CGE]).

BERBERIDACEAE

Berberis buxifolia Lam. (Southern part of Tierra del Fuego, January-February 1833 [CGE]).

**B. darwinii* Hook. (Prov. Chiloé: San Carlos, Isla de Chiloé, 29-30 June 1834 [paralectotype CGE, paralectotype K]).

B. ilicifolia L. f. (Southern part of Tierra del Fuego, January-February 1833 [CGE]).

BORAGINACEAE

**Myosotis albiflora* Banks & Sol. ex Hook. f. (Southern part of Tierra del Fuego, January-February 1833 [paralectotype CGE]).

BRASSICACEAE

Brassica rapa L. (Prov. Valdivia: Valdivia, 8 February - 7 March 1835 [CGE, 3 sheets grown at the Cambridge University Botanic Garden from seed collected by Darwin]). Listed as *B. rapa* var. *sylvestris* (L.) Janchen in Porter (1986).

Cardamine bonariensis Pers. (Prov. Valparaíso: Valparaíso, July-August 1834 or March-April 1835 [CGE, K]).

C. geraniifolia (Poir.) DC. (Southern part of Tierra del Fuego, January-February 1833 [CGE]).

C. glacialis (G. Forst.) DC. (Southern part of Tierra del Fuego, January-February 1833 [CGE, 3 sheets; K, 2 sheets]; Prov. Aisén.: Cabo Tres Montes, 30-31 December 1834 [CGE, K]).

**Descurainia antarctica* (E. Fourn.) O. E. Schulz (Prov. Magallanes: Cabo Negro, 31 January 1834 [basionym:

**Sisymbrium antarcticum* E. Fourn., lectotype K, isolectotype CGE, isolectotype K] [synonym: **S. sophia* var. *canescens* Hook. f., lectotype K, isolectotype CGE, isolectotype K]).

Lepidium pseudo-didymum Thell. ex Druce (Prov. Aisén: Archipiélago de los Chonos, December 1834 [synonym:

**Senebiera australis* Hook. f., lectotype K, 2 isolectotypes CGE, isolectotype E-GL]).

Sisymbrium magellanicum (Pers.) Hook. f. (Prov. Magallanes: Cabo Negro, 31 January 1834 [CGE, K]).

CALLITRICHACEAE

Callitriche antarctica Engelm. ex Hegelm. (Southern part of Tierra del Fuego, January-February 1833 [CGE]).

CARYOPHYLLACEAE

Cerastium arvense L. (Southern part of Tierra del Fuego, January-February 1833 [CGE, 2 sheets; K]). Listed as *C. arvense* L. var. *arvense* in Porter (1986). [synonym: **C. arvense* var. *fuegianum* Hook. f. (Prov. Magallanes: Monte Tarn, 6 February 1834, lectotype K, isolectotype CGE). Listed as *C. arvense* var. *fuegianum* Hook. f. in Porter (1986).

**Colobanthus subulatus* var. *darwinii* Hook. f. (Southern part of Tierra del Fuego, January-February 1833 [holotype CGE]).

Silene gallica L. (Prov. Valparaíso: Valparaíso, July-August 1834 or March-April 1835 [CGE, grown in Cambridge University Botanic Garden from seed collected by Darwin]).

S. magellanica (Desr.) Bocquet (Prov. Magallanes: Cabo Negro, 31 January 1834 [CGE, K]).

Spergularia marina (L.) Griseb. (Prov. Aisén: Cabo Tres Montes, 30-31 December 1834 [CGE, K]).

S. ramosa Cambess. (Prov. Aisén: Cabo Tres Montes, 30-31 December 1834 [CGE]). According to Prof. Marticorena, this species is otherwise unknown from Chile.

Stellaria chilensis Pederson (Prov. Valparaíso: Valparaíso, August 1834 [CGE, K]). Listed as *S. cuspidata* Willd. in Porter (1986), which does not occur in Chile (Volponi 1993).

CHENOPODIACEAE

Chenopodium ambrosioides L. (Prov. Concepción: Concepción, March 1835 [CGE]).

C. glaucum L. (Prov. Aisén: Archipiélago de los Chonos, 30-31 December 1834 [synonym: **C. glaucum* var. *divaricatum* Hook. f., holotype CGE]).

CRASSULACEAE

Crassula moschata G. Forst. (Southern part of Tierra del Fuego, January-February 1833 [CGE]; Prov. Aisén: Cabo Tres Montes, 30-31 December 1834 [CGE, K]; Prov. Magallanes: Isla Wollaston, February 1833 or 1834 [CGE, K]).

CUCURBITACEAE

Sicyos baderoa Hook. & Arn. (Prov. Valparaíso: Valparaíso, August 1834 [CGE]). Listed as *S. bryoniifolius* Moris in Porter (1986).

DONATIACEAE

Donatia fascicularis J. R. & G. Forst. (Prov. Aisén: Midship Bay, Archipiélago de los Chonos, December 1834 [CGE, K]).

DROSERACEAE

Drosera uniflora Willd. (Southern part of Tierra del Fuego, January-February 1833 [CGE]).

ELAEAGNACEAE

Elaeagnus pungens Thunb. (Prov. Chiloé: San Carlos, Isla de Chiloé, 29-30 June 1834 [CGE]).

EMPETRACEAE

Empetrum rubrum Vahl ex Willd. (Southern part of Tierra del Fuego, January-February 1833 [CGE, K]).

ERICACEAE

Pernettya mucronata (L. f.) Gaudich. ex Spreng. (Southern part of Tierra del Fuego, January-February 1833 [CGE, K]).
P. pumila (L. f.) Hook. (Southern part of Tierra del Fuego, January-February 1833 [CGE, 2 sheets]; Prov. Aisén: Patch Cove, Cabo Tres Montes, 31 December 1834 [synonym: **P. pumila* var. *minor* Hook. f., lectotype K, isolectotype CGE]).

ESCALLONIACEAE

Escallonia rubra var. *macrantha* (Hook. & Arn.) Reiche (Prov. Aisén: Archipiélago de los Chonos, December 1834 [K]).
E. serrata Sm. (Southern part of Tierra del Fuego, January-February 1833 [K]).

FABACEAE

Adesmia balsamica Bertero ex Hook. & Arn. (Prov. Valparaíso: Valparaíso, August 1834 [CGE, K]). Listed as *A. balsamica* Bertero ex Colla in Porter (1986).
 **A. lotoides* Hook. f. (Prov. Magallanes: Isla Isabela, 30 January 1834 [paralectotype CGE, paralectotype K]).
A. microphylla Hook. & Arn. (Prov. Valparaíso: Valparaíso, August 1834 [K]).
 **A. pumila* Hook. f. (Prov. Magallanes: Cabo Negro, 31 January 1834 [paralectotype CGE]).
Lathyrus cabrerianus Burkart (Prov. Aisén: Archipiélago de los Chonos, 30-31 December 1834 [CGE, 2 sheets; K]).
Sophora macrocarpa Sm. (Prov. Valparaíso: Valparaíso, August 1834 [CGE]). Listed in Caesalpiniaceae in Porter (1986).
 **Vicia magellanica* Hook. f. (Prov. Magallanes: Isla Isabela, 30 January 1834 [lectotype K, isolectotype CGE]).

FAGACEAE

Nothofagus antarctica (G. Forst.) Oerst. (Prov. Magallanes: Península Hardy, Isla Hoste, 13 February 1833 [CGE]).
N. betuloides (Mirb.) Oerst. (Prov. Magallanes: Península Hardy, Isla Hoste, 13 February 1833 [CGE; K, 2 sheets]).

FLACOURTIACEAE

**Azara lanceolata* Hook. f. (Prov. Aisén: Cabo Tres Montes, 30-31 December 1834 [lectotype K, isolectotype CGE]).

FUMARIACEAE

Fumaria agraria Lag. (Prov. Valparaíso: Valparaíso, August 1834 [CGE, 2 sheets; K]).
F. capreolata L. (Prov. Valparaíso: Valparaíso, August 1834 [K, 2 sheets]).

GENTIANACEAE

Gentiana prostrata Haenke (Prov. Magallanes: Cabo Negro, 31 January 1834 [CGE]).
Gentianella magellanica (Gaudich.) Fabris ex D. M. Moore (Southern part of Tierra del Fuego, January-February 1833 [CGE, K]; Prov. Magallanes: Cabo Negro, 31 January 1834 [synonym: **Gentiana patagonica* var. *darwinii* Griseb., holotype K, isotype CGE, isotype E-GL]).

GERANIACEAE

- Erodium moschatum* (L.) L'Her. ex Aiton (Prov. Valparaíso: Valparaíso, August 1834 [CGE, K]).
Geranium intermedium Colla? (Prov. Aisén: Archipiélago de los Chonos, 30-31 December 1834 [CGE]).
 **G. magellanicum* Hook. f. (Prov. Magallanes: Isla Isabela, 30 January 1834 [lectotype K, isolectotype CGE]).
G. sessiliflorum Cav. (Prov. Magallanes: Cabo Negro, 31 January 1834 [CGE, K]).

GESNERIACEAE

- Mitraria coccinea* Cav. (Prov. Aisén.: Archipiélago de los Chonos, 30-31 December 1834 [CGE, K]).
Sarmienta scandens (J. D. Brandis) Pers. (Prov. Chiloé: San Carlos, Isla de Chiloé, 29-30 January, 1834 [CGE, K]).
 Listed as *S. repens* Ruiz & Pavón in Porter (1986).

GROSSULARIACEAE

- Ribes magellanicum* Poir. (Southern part of Tierra del Fuego, 27-29 December 1832 [CGE, K]).
R. punctatum Ruiz & Pavón (Prov. Valparaíso: Valparaíso, August 1834 [CGE, K]).

GUNNERACEAE

- Gunnera magellanica* Lam. (Southern part of Tierra del Fuego, January-February 1833 [CGE]).

HYDRANGEACEAE

- Hydrangea serratifolia* (Hook. & Arn.) F. Phil. (Prov. Aisén: Archipiélago de los Chonos, December 1834 [CGE]).

LAMIACEAE

- Lepechinia chamaedryoides* (Balbis) Briq. (Prov. Valparaíso: Valparaíso, August 1834 [CGE]). Listed as *L. chamaedryoides* (Balbis) Epling in Porter (1986).
L. salviae (Lindl.) Briq. (Prov. Valparaíso: Valparaíso, August 1834 [CGE]). Listed as *L. salviae* (Lindl.) Epling in Porter (1986).
Ocimum americanum L. (Prov. Valparaíso: Valparaíso, August 1834 [CGE]). According to Prof. Marticorena, this species is not otherwise known from Chile.
Stachys macraei Benth. (Prov. Aisén: Archipiélago de los Chonos, December 1834 [synonym: **S. chonotica* Hook. f., lectotype K, isolectotype K]).
S. sericea Cav. (Prov. Valparaíso: Valparaíso, August 1834 [CGE]).

LENTIBULARIACEAE

- Pinguicula antarctica* Vahl (Southern part of Tierra del Fuego, January-February 1833 [CGE]).

LOASACEAE

- Loasa triloba* Dombey ex Juss. (Prov. Valparaíso: Valparaíso, August 1834 [CGE]).

LOBELIACEAE

- Lobelia excelsa* Bonpl. (Prov. Valparaíso: Valparaíso, August 1834 [CGE]).
L. polyphylla var. *latifolia* (A. DC.) E. Wimmer (Prov. Valparaíso: Valparaíso, August 1834 [CGE, K]).
Pratia repens Gaudich. (Prov. Magallanes: Cabo Negro, 31 January 1834 [synonym: **P. longiflora* Hook. f., holotype CGE]). Listed as *Hypsela reniformis* (Kunth) K. Presl in Porter (1986).

LORANTHACEAE

- Tristerix corymbosus* (L.) Kuijt (Prov. Chiloé: San Carlos, Isla de Chiloé, 29-30 June 1834 [CGE]). Listed as *T. tetrandrus* (Ruiz & Pavón) Mart. in Porter (1986).

MISODENDRACEAE

- Misodendrum brachystachyum* DC. (Prov. Magallanes: Península Hardy, Isla Hoste, 13 February 1833 [CGE, K]).

MYRTACEAE

- Amomyrtus luma* (Molina) D. Legrand & Kausel (Prov. Aisén: Cabo Tres Montes, 30-31 December 1834 [synonym: **Eugenia darwinii* Hook. f., lectotype CGE, isolectotype K]).
- Luma apiculata* (DC.) Burret (Prov. Aisén: Archipiélago de los Chonos, December 1834 [synonym: **Eugenia apiculata* var. *arnyan* Hook. f., lectotype K, isolectotype CGE]).
- M. nummularia* (Poir.) Berg (Southern part of Tierra del Fuego, February 1833 [CGE, K]; Prov. Aisén: Archipiélago de los Chonos, December 1834 [synonym: **Myrtus nummularia* var. *major* Hook. f., lectotype K, isolectotype CGE]). Latter specimens listed as *M. barneoudii* Berg in Porter (1986).
- Tepualia stipularis* (Hook. & Arn.) Griseb. (Prov. Aisén: Archipiélago de los Chonos, December 1834 [CGE, K]).
- Ungi molinae* Turcz. (Prov. Aisén: Archipiélago de los Chonos, December 1834 [CGE, K]).

NYCTAGINACEAE

- Mirabilis elegans* (Choisy) Heimerl (Prov. Valparaíso: Valparaíso, August 1834 [CGE]). Listed as *Oxybaphus elegans* Choisy in Porter (1986).

ONAGRACEAE

- Epilobium australe* Poepp. & Hausskn. ex Hausskn. (Prov. Aisén: Archipiélago de los Chonos, December 1834 [CGE; K, 2 sheets]).
- E. ciliatum* Raf. (Southern part of Tierra del Fuego, January-February 1833 [CGE, K]).

OXALIDACEAE

- Oxalis magellanica* G. Forst. (Prov. Aisén: Patch Cove, Cabo Tres Montes, 31 December 1834 [CGE, K]).

PLANTAGINACEAE

- Plantago australis* subsp. *cumingiana* (Fisch. & C. A. Mey.) Rahn (Prov. Aisén: Cabo Tres Montes, 30-31 December 1834 [CGE]).

PLUMBAGINACEAE

- Armeria maritima* subsp. *andina* (Poepp. ex Boiss.) D. M. Moore & B. Yates (Southern part of Tierra del Fuego, January-February 1833 [synonym: **A. androsacea* Boiss., paralectotype CGE, paralectotype K]). Listed as *A. androsacea* Boiss. in Porter (1986).

POLYGONACEAE

- Polygonum maritimum* L. (Prov. Aisén: Cabo Tres Montes, 30-31 December 1834 [CGE, 2 sheets; K]).
- P. hydropiperoides* Michx. (Prov. Valparaíso: Valparaíso, August 1834 [CGE]). Listed as *P. persicarioides* Kunth in Porter (1986).
- Rumex cuneifolius* Campd. (Prov. Aisén: Archipiélago de los Chonos, December 1834 [CGE, K]).
- R. pulcher* L. (Prov. Valparaíso: Valparaíso, August 1834 [CGE]).

PRIMULACEAE

- Anagallis alternifolia* var. *repens* (D'Urv.) R. Knuth (Prov. Magallanes, Isla Wollaston, February 1833 or 1834 [CGE, E-GL, K]).
- Primula magellanica* Lehm. (Southern part of Tierra del Fuego, January-February 1833 [K]; Prov. Magallanes: Monte Tarn., 6 February 1834 [K]).
- Samolus repens* (J. R. & G. Forst.) Pers. (Prov. Aisén: Archipiélago de los Chonos, December 1834 [CGE, K], and Cabo Tres Montes, 30-31 December 1834 [CGE]).
- S. spathulatus* (Cav.) Duby (Prov. Magallanes: Isla Isabela, 30 January 1834 [CGE, K]).

PROTEACEAE

- Lomatia ferruginea* (Cav.) R. Br. (Prov. Aisén: Archipiélago de los Chonos, December 1834 [CGE]).

RANUNCULACEAE

- Anemone decapetala* Ard. (Prov. Magallanes: Cabo Negro, 31 January 1834 [K]; Prov. Valparaíso: Valparaíso, August 1834 [CGE]).
- A. multifida* Poir. (Prov. Magallanes: Cabo Negro, 31 January 1834 [CGE], and Isla Isabela, 30 January 1834 [CGE]).
- Caltha dionaeifolia* Hook. f. (Southern part of Tierra del Fuego, January-February 1833 [CGE]).
- Hamadryas kingii* Hook. f. (Prov. Magallanes: Monte Tarn., 6 February 1834 [CGE]).
- H. magellanica* Lam. (Prov. Magallanes: Monte Tarn., 6 February 1834 [CGE, K]).
- Ranunculus biternatus* Sm. (Southern part of Tierra del Fuego, January-February 1833 [CGE, K]).
- R. minutiflorus* Bertero ex Phil. (Prov. Aisén: Archipiélago de los Chonos, 30-31 December 1834 [CGE], and Cabo Tres Montes, 30-31 December 1834 [CGE]).
- R. peduncularis* Sm. (Prov. Magallanes: Cabo Negro, 31 January 1834 [CGE]).

RHAMNACEAE

- Retanilla trinervia* (Gillies & Hook.) Hook. & Arn. (Prov. Valparaíso: Valparaíso, August 1834 [CGE]). Listed as *Trevoa trinervis* Miers in Porter (1986).

ROSACEAE

- Fragaria chilensis* (L.) Duchesne (Prov. Aisén: Archipiélago de los Chonos, December 1834 [CGE]).
- Geum magellanicum* Pers. (Prov. Magallanes: Cabo Negro, 31 January 1834 [CGE]).
- G. quellyon* Sweet (Prov. Magallanes: Cabo Negro, 31 January 1834 [K]).
- Potentilla anserina* L. (Prov. Aisén: Archipiélago de los Chonos, December 1834 [CGE, K]).

RUBIACEAE

- Galium antarcticum* Hook. f. (Prov. Aisén: Archipiélago de los Chonos, December 1834 [CGE]).
- G. aparine* L. (Prov. Aisén: Archipiélago de los Chonos, December 1834 [E-GL; synonym: **G. chilense* Hook. f., lectotype K, isolectotype CGE]).
- **G. fuegianum* Hook. f. (Southern part of Tierra de Fuego, January-February 1833 [2 paralectotypes CGE, paralectotype K]; Prov. Magallanes: Cabo Negro, 31 January 1834 paralectotype E-GL, paralectotype K]).
- **G. magellanicum* Hook. f. (Prov. Magallanes: Cabo Negro, 31 January 1834 [lectotype K, isolectotype CGE]; Prov. Aisén: Archipiélago de los Chonos, December 1834 [synonym: **G. chonoense* Hook. f., lectotype K, isolectotype CGE, isolectotype E-GL]).

RUTACEAE

- Ruta chalepensis* L. (Prov. Valparaíso: Valparaíso, August 1834 [CGE]).

SANTALACEAE

- **Arjona pusilla* Hook. f. (Prov. Magallanes: Cabo Negro, 31 January 1834 [paralectotype CGE]).

SAXIFRAGACEAE

- Saxifraga magellanica* Poir. (Prov. Magallanes: Monte Tarn., 6 February 1834 [synonym: **S. exarata* var. *breviscapa* Hook. f., lectotype K, isolectotype CGE]).
- **Saxifragella bicuspidata* (Hook. f.) Engl. (Southern part of Tierra del Fuego, January-February 1833 [basionym: **Saxifraga bicuspidata* Hook. f., paralectotype CGE, paralectotype K]).

SCROPHULARIACEAE

- Calceolaria biflora* Lam. (Prov. Magallanes: Isla Isabela, 30 January 1834 [CGE, K]).
- C. glandulosa* Benth. (Prov. Valparaíso: Valparaíso, August 1834 [CGE]).
- C. integrifolia* L. (Prov. Valparaíso: Valparaíso, August 1834 [CGE, K]).
- C. uniflora* Lam. (Prov. Magallanes: Isla Isabela, 30 January 1834 [synonym: **C. darwinii* Benth, holotype K]). Listed as *C. darwinii* Benth in Porter (1986).
- **Euphrasia antarctica* Benth. (Prov. Magallanes: Cabo Negro, 31 January 1834 [lectotype K, isolectotype CGE]).
- Hebe elliptica* (G. Forst.) Pennell (Southern part of Tierra del Fuego, January-February 1833 [CGE, K]).
- Mimulus glabratus* Kunth (Prov. Valparaíso: Valparaíso, August 1834 [CGE, K]). Listed as *M. glabratus* var. *parviflorus* (Lindl.) A. L. Grant in Porter (1986).

**Ourisia breviflora* Benth. (Southern part of Tierra del Fuego, January-February 1833 [lectotype K]).
O. coccinea (Cav.) Pers. (Prov. Chiloé: Isla de Chiloé, June, 1834 [CGE]).

SOLANACEAE

Cestrum parqui L'Her. (Prov. Valparaíso: Valparaíso, August 1834 [CGE, K]).
Solanum americanum Mill. (Prov. Valparaíso: Valparaíso, August 1834 [CGE]).
S. tuberosum L. (Prov. Aisén: Archipiélago de los Chonos, January 1835 [synonym: **S. tuberosum* var. *vulgare* Hook. f., lectotype K, 2 isoelectotypes CGE]). Listed as *S. tuberosum* var. *vulgare* Hook. f. in Porter (1986).

STYLIDIACEAE

Phyllachne uliginosa J. R. & G. Forst. (Prov. Magallanes: Bahía Buen Suceso, February 1833 [CGE]).

TROPAEOLACEAE

Tropaeolum brachyceras Hook. & Arn. (Prov. Valparaíso: Valparaíso, August 1834 [CGE]).

URTICACEAE

Pilea elegans Gay (Prov. Aisén: Archipiélago de los Chonos, December 1834 [E-GL]). Listed as *P. elliptica* var. *gayana* Wedd. in Porter (1986).
**P. elliptica* Hook. f. (Prov. Aisén: Archipiélago de los Chonos, December 1834 [holotype K]).
Urtica magellanica Juss. ex Poir. (Prov. Aisén: Archipiélago de los Chonos, December 1834 [synonym: **U. darwinii* Hook. f., lectotype K, isoelectotype CGE].)

VALERIANACEAE

Valeriana carnosa Sm. (Prov. Magallanes: Cabo Negro, 31 January 1834 [CGE, E-GL, K]).
V. lapathifolia Vahl (Prov. Aisén: Cabo Tres Montes, 30-31 December 1834 [CGE]).

VERBENACEAE

Verbena litoralis Kunth (Prov. Valparaíso: Valparaíso, August 1834 [CGE]).

VIOLACEAE

Viola commersonii DC. ex Ging. (Southern part of Tierra del Fuego, January-February 1833 [CGE]).
V. magellanica G. Forst. (Southern part of Tierra del Fuego, January-February 1833 [CGE]).

Specimens reported to have been collected by Charles Darwin in Chile,
but which have not been found

Especímenes reportados como colectados por Charles Darwin en Chile pero que no se han encontrado

A) Collections listed in Darwin's Specimens in Spirits of Wine Notebooks.

Codonorchis lessonii (D'Urv.) Lindl. (Orchidaceae). Prov. Magallanes: Puerto Sacrificios, 2-10 February 1834 (2 collections).

Misodendrum brachystachyum DC. (Misodendraceae). Tierra del Fuego, January-February 1833 (3 collections).

Calceolaria uniflora Lam. (Scrophulariaceae). Prov. Magallanes: Isla Isabela, 30 January 1834 (1 collection). Listed as *C. darwinii* Benth. in Porter (1987).

Solanum tuberosum L. (Solanaceae). Prov. Aisén: Lowe's Harbour, Archipiélago de los Chonos, 7-14 January 1835 (1 collection). Listed as *S. tuberosum* var. *vulgare* Hook. f. in Porter (1987).

B) Collections ascribed to Darwin by Hooker (1844-47).

Lathyrus japonicus Willd. (Fabaceae). Prov. Aisén: Cabo Tres Montes, 30-31 December 1834.

Misodendrum oblongifolium DC. (Misodendraceae). Locality unknown.

Fuchsia magellanica Lam. (Onagraceae). Prov. Aisén: Bahía San Andres, Península de Taito, 22 December 1834.

Caltha sagittata Cav. (Ranunculaceae). Prov. Magallanes, Puerto Sacrificios, 2-10 February 1834.
