

Hymenoxys Parodii, sp. nov., herbacea annua glaberrima erecta ca. 15 cm. alta supra sparse stricteque ramosa; foliis radicalibus ignotis, caulinis alternis pinnatis vel bipinnatis 3-6 cm. longis oblongo-ovatis, segmentis distantibus linearibus ascendentibus, petiolis ad basem dilatatis et subvaginatis; capitulis subglobosis 5-8 mm. diametro radiatis terminalibus a foliis subtendentibus evidenter superatis, pedunculo 2-10 mm. longo ebracteato sulcato apice sub capitulo conspicue incrassato; involucris biseriatis rigidis conniventibus, squamis exterioribus ovatis acutis 8 ca. 5 mm. longis quam interioribus paullo brevioribus; receptaculo conico nudo; achaeniis subteretibus 2.5 mm. longis multicostatis dense adpresseque sericeo-villosis; pappi paleis 5-6 hyalinis ellipticis vel oblongis erosis acuminatis paullo inaequalibus achaeniis subaequilongis quam corollis paullo brevioribus; corollis 2.5 mm. longis flavis, tubo 1 mm. longo brunnescenti subcylindrico extus ad apicem puberulento, faucibus cylindro-campanulatis, dentibus limbi erectis triangularibus extus puberulentis.—ARGENTINA: saline soil near Bañado de Flores, near Buenos Aires, Nov. 13, 1927, *L. R. Parodi 8170a* (TYPE, Gray Herb.).—Related to *H. anthemoides* (Juss.) Cass. but differing in habit, size of heads, length of peduncles and length of pappus. The plant is erect, simple below but with a few strict branches above. The heads are large and borne on the thickened summit of the short ebracteate peduncles, which do not surpass the adjacent leaves. The pappus is shorter than the corolla and the tips of the pappus-scales do not protrude from between the florets. In *H. anthemoides* the plant is diffusely branched from the base and decumbent. The heads are smaller and borne on long (2-3 cm.) unthickened bracted peduncles that evidently surpass the adjoining foliage. The acuminate tips of the pappus-scales surpass the corolla and appear as bristles protruding from between the florets in an undissected head. Although the present plant is clearly distinct from the common one passing as *H. anthemoides* it is possible that it may be the real *H. anthemoides* since the type of the species came from "près de Buenos-Aires." The original description is quite ambiguous.

IV. THE BOTANICAL ACTIVITIES OF THOMAS BRIDGES

BY IVAN M. JOHNSTON

THOMAS BRIDGES (1807-1865) was one of the botanical collectors of the early half of the last century who provided contemporary systematists with material from Chile and Bolivia. His collections are

important through the study given them, and the species and records based upon them, by such botanists as Hooker, Lindley, Bentham and Miers in Great Britain and by DeCandolle and Turczaninow on the Continent. Many of Bridges's plants being critical ones it is an unfortunate fact that the geographical data accompanying them are very meagre and frequently misleading if not actually incorrect. Suspecting these facts I have on several occasions desired information concerning the routes traveled by Bridges with the hope of gaining therefrom some suggestion as to the precise source and probable identity of some critical collection. Lasègue, *Mus. Bot. Delessert* 259-260 (1845), has provided the most extended and reliable account of the collecting activities of Bridges. His account, however, is necessarily brief and is not especially detailed.

The present sketch of Bridges's botanical activities has been worked out from a study of the letters from Bridges, H. Cuming and A. Caldcleugh¹ in the Hooker Correspondence at Kew, from Bridges's plant-lists at Kew and the British Museum of Natural History, and from such pertinent published works as I could discover. A determined search for unpublished data on Bridges was made in London, letters and other manuscripts being sought at the Linnean Society, Royal Society, Royal Geographic Society, Horticultural Society and the British Museum at Bloomsbury. Cuming was a friend and later became London agent for Bridges. Were it possible to locate Cuming's correspondence and manuscripts much information concerning Bridges might be found. Except, however, for some letters at Kew, nothing of this sort was discovered in any of the institutions visited in or about London. Another possible source of information is the correspondence of Arnott, Lindley and DeCandolle since Bridges sent them plants and doubtless wrote to them as well.

"Lately we have received from England a collector of the name of Bridges, but as he has come out on his own speculation, he has been forced to take a trade for his existence, and is now a brewer of small beer in this place. Mr. Lambert and the Linnean Society were instrumental in his coming out." Thus wrote Caldcleugh to Hooker from Valparaiso, Chile, on May 10, 1829 concerning Bridges who, in his twenty-second year, had landed at Valparaiso nine months earlier, on Aug. 8, 1828.

¹ The letters of Alexander Caldcleugh give interesting details and sidelights on Bridges's activities and character. Caldcleugh's business in Chile I do not know. I suspect, however, that he had some diplomatic mission inasmuch as Lasègue l. c. 259, reports him as earlier having such connections in Brazil. He resided many years in Chile and interested himself in furthering botanical exploration in that country. He collected about Valparaiso and Coquimbo, but his great service to botany was in interesting Hugh Cuming in plant-collecting and in bringing that, as yet unknown, but later famous collector to the attention of Sir William Hooker.

During the first year in Chile Bridges does not appear to have been able to collect extensively, although he did make the acquaintance and become an admirer of Carlo Bertero, the Italian botanist who was then actively collecting in Central Chile. In Dec. 1829 Bridges sent Hooker his "collections of 1828," that is presumably those obtained in the spring and summer of 1828-29. These specimens were unnumbered and apparently all came from the region about Valparaiso.

In Oct. 1830 Bridges wrote that he had recently collected in the Department of Quillota and that he was preparing for an expedition to the Cordilleras, having "received some assistance from Mr. Barclay and Mr. Bevan." I have found no letters giving the details of this trip to the Cordilleras. In May 1832 Bridges shipped from Hacienda de San Isidro, Quillota, 497 specimens to Hooker, 280 to Arnott and some to Bentham and Lindley. These are obviously the plants, numbered 1-497, listed in a catalogue preserved in the library at Kew. These plants were collected in the Cordilleras, in the Aconcagua River Valley and in the region centering around Valparaiso. They obviously contain the results of his first expedition to the Cordilleras, which probably took place early in 1831.

A study of the catalogue which Bridges prepared for his numbers 1-497 shows that the localities mentioned can be roughly grouped as follows: 1. localities near Valparaiso, viz., Viña del Mar, Placillas, Playa Ancha, Queb. Lacumas and La Hacienda de la Merced; 2. localities along the Casa Blanca road to Santiago, viz., Casa Blanca, Cuesta de Zapata and Bustamante; 3. localities along the coast north of Valparaiso, viz., Reñaca, Concon and Quintero; 4. localities centering around Quillota, viz., Limache, Hacienda de la Palma, Sierra de San Isidro, Cajon de San Pedro and Cuesta de Pachacuma; 5. localities along the old Mendoza road up the Aconcagua Valley, viz., Llaillai, Tinajas, Hacienda de San José, San Felipe (and north of that town, Los Lorcs and Sierra Bella Vista), Salto del Soldado, Guardia Vieja, Ojos de Aguas and La Laguna [del Inca]; and finally, 6. localities along the road between Los Andes and Santiago, viz., Cuesta de Chacabuco and Colina. Two stations given as "plains near Zuepay" and "Cuesta de Chile Cauquen Wn. Quillota" I have been unable to locate.

Early in Sept. 1832 Bridges wrote that he had just arrived in Santiago from Quillota, where he had spent more than a year laying out a farm for a friend, Mr. Waddington. He wrote that he had had little time for botany during the period although two months earlier, in July 1832, we learn from Caldeleugh that Bridges was making small collections which Caldeleugh disposed of to naval officers "or others who have commissions of that nature."

In a letter from Valparaiso, dated Oct. 25, 1832, Bridges stated that he now planned to devote himself to botany and had booked a passage to Valdivia. Writing from Valdivia on Feb. 26, 1833² he told of having just returned from a "very long journey to the interior," having traveled with a party from the "Commissary of the Indians" whose object was to stop one of the passes in the Cordilleras and prevent the incursions into Chile of the Pehuelche Indians. He also mentioned visiting Lake Ranco and concluded his letter by stating that he was going directly to Chiloë in a "few days." On Aug. 27, 1833 Bridges wrote that he had returned to Valparaiso after an absence of nine months and announced the sending to Hooker of 283, to Arnott of 268 and to Greville of 248 plants of southern Chile. He also sent to Hooker a catalogue of his numbers 558-857 which covered all of his collections from southern Chile. This catalogue is now preserved in the library at Kew. I have seen no catalogue of his numbers 498-557. These numbers probably belong to the plants which Bridges collected about Valparaiso and Quillota in 1832.

It does not seem possible to determine Bridges's route in Valdivia from a study of the localities given in his catalogue. About Corral, whence many of his plants were obtained, he mentions such localities as Castello del Corral, Castello de Amargos, Isla Mansera and Castello Niebla. In the region about the town of Valdivia he mentions Arique, Pufude, "Las Animas," "Chumpulla," "Los Canellos" and "El Cancagual," the four latter of which I have not been able to locate. Also mentioned in his list and the sources given for many of his collections are Lago Ranco, "Los Andes between Osorno and Rio Maullin" and "Los Uanos between Valdivia and Osorno," the last two I have been unable to locate. The only localities which indicate that he actually visited Chiloë, where he apparently collected very little, are "Puguenun River" on the northern extremity of the island and "La Punta del Carelmapu" on the mainland just north of the island across the channel from Puguenun.

Bridges, however, did not continue active botanical work as he had planned. We learn from Cuming, in a letter dated Feb. 1834, that Bridges had agreed to superintend for two years an "estate near Talca." Bridges is next heard of through Caldcleugh who wrote from Santiago in July 1836 that "Mr. Bridges came up lately from the country and . . . he says [collecting] is quite out of the question at present, as his employer will not consent to his dedicating any portion of his time to other pursuits. It seems that he is in

²The contents of this letter was summarized and published by Hooker, *Jour. Bot.* i. 177-178 (1834).

receipt of a good salary, is saving money and is fearful of risking his situation."

After a lapse of six or seven years Bridges resumed correspondence with Hooker, writing from Valparaiso on June 1st, 1841, that since he had last written he had been "occupied with agricultural affairs, with little benefit to himself and too busy for Natural History." That year, however, he had resumed botanical work. He had "made an excursion over the Andes by Pass of Planchon, lat. 34-35°, to the elevated valleys on the eastern slope" and in a "few days" was sailing for Copiapó to begin exploration there. Bridges also announced that he was sending Hooker, some plants from the "Andes of Colchagua" and some from the base of the Andes in the Province of Colchagua. He stated that no catalogue of these collections had been made. These specimens are no doubt those from Bridges which Cuming, in his letters of Oct. 27 and Nov. 26, 1841, indicated as consisting of 150 from "the Andes" and 220 from "various localities." These specimens, it is certain, carry numbers falling between 858 and 1278. It is to be noted, however, that, besides the 370 plants mentioned by Cuming, 51 additional ones would be necessary completely to fill the gap of numbers. I suspect, hence, that while most of the numbers 858 to 1278 were obtained in the Andes or at their base early in 1841, some of this gamut came from elsewhere, probably from near Valparaiso.

I have very little precise information regarding the geographical details of Bridges's work in the Province of Colchagua. It is an important fact, however, that the "Province of Colchagua" is much smaller now than formerly, for in 1865 it was divided and a new Province of Curico was established. I am of an opinion that the hacienda upon which Bridges worked between 1834 and 1841 was in what is now the Province of Curico and that his collections labeled as from the Province of Colchagua in fact came from what is today the Province of Curico. To reach Paso El Planchon, lat. 35° 12' S., Bridges had to ascend the cordilleras entirely within Curico. Hence there can be little doubt that plants of middle and high altitudes, given as from the Andes of Colchagua, really came from Curico or just within Mendoza across the eastern frontier. On the Argentine slope of the cordilleras Bridges mentioned visiting "El Valle de las Cuevas, about 10 leagues to the east of Volcano of Petorca," a valley about 2000 m. in altitude on the Mendoza side.

Perhaps significant is a reference by Bridges, Proc. Zoöl. Soc. London xiv. 7 (1846), in which he mentions the Rio Teno and seems

to infer a thorough acquaintance with the parts of that stream at the foot of the mountains. I suspect that the hacienda at which he was employed was situated on or near the Rio Teno and that the plants from the "base of the Andes in the Prov. Colchagua" were obtained in the region just north of the city of Curico.

Bridges was next heard from on Nov. 20, 1841, announcing that he had arrived in Coquimbo a few days before, having been occupied since the end of June in collecting between Copiapó and Coquimbo. He next planned to ascend the Rio Elqui "to snowline" and subsequently to go to Valparaiso by way of Illapel, Petorca and Quillota and to arrive there late in January. The plants collected on this expedition to northern Chile bear the numbers 1279-1424. The original catalogue which gives rather full locality- and habitat-data, is preserved in the library of the British Museum of Natural History. The localities mentioned by Bridges, arranged in the probable order in which he visited them are as follows,—Port of Copiapó, Copiapó, Andes of the Valley of Copiapó, near Chañarcillo, El Totoral, Los Pozos, Vallenar, Freirina, Huasco, Peña Blanca, Coquimbo, Mina Arqueros, Valle Elqui, Vicuña, Paiguano, "Valle of Borasa, Prov. Coquimbo" (unlocated), Andacolla and Illapel. Although the first ten localities listed lie within the Province of Atacama and about 50% of the collections came from that province, all of Bridges's collections of late 1841 are found in herbaria and are almost universally cited as from the Province of Coquimbo or merely as from Coquimbo. In Hooker's herbarium by some blunder the collection is all labeled as from Concepcion! There also appears to have been some confusion in the numbering of the various sets, cf. Miers, *Illust. S. Am. Pl.* ii. 25 (1857). According to Bridges, in Feb. 1842, twenty sets of the Atacama-Coquimbo plants were prepared. The best one of these went to Hooker.

In 1842 Bridges returned to England apparently going via Mendoza. The next letter from Bridges, which has been preserved, is dated, Valparaiso, May 21, 1844. In it he says, "Soon after my arrival in Valparaiso I wrote you and since I have made an excursion to the southern part of Bolivia where I penetrated about 70 leagues into the interior, taking the road from Cobija towards Potosi across the Desert of Atacama." He mentions visiting the "Valley of Caspana," apparently that containing the village of Caspana which lies about 70 km. east of Calama. He prepared no list of the plants collected and apparently did not number the collections.

We next hear from Bridges in a letter from Cochabamba,³ dated

³ This was published in large part by Hooker, *Jour. Bot.* iv. 571-577 (1845).

April 3, 1845. We learn that he had landed, a second time, at Cobija on Sept. 13, 1844. He remained there a "few days" and was delighted to find a variety of plants on the fog-bathed slopes above the town. Obtaining mules and men he went to Calama, thence northeastward through Tapaquilcha to Potosi, where he spent "only a few days." Then going northward he went to Chuquisaca (ca. 60 km. west of Sucre) where he remained for a month. Eventually he arrived in Cochabamba on Dec. 24, 1844. After about three months, early in April 1844, he crossed the mountains northeast of Cochabamba and entered the Amazon Basin following down the Mamoré River northward towards the Brazilian frontier. In July 1845, when he encountered *Victoria*,⁴ he was at Santa Ana on the Yacuma River, a tributary of the Mamoré. Loreto and Trinidad are the only other localities in the Mamoré Basin mentioned as having been visited by him. Bridges also visited Santa Cruz de la Sierra, going there probably up the Rio Piray as he had planned. In March, 1846, Cuming wrote Hooker that a letter from Bridges, dated Sept. 11, 1845, had been received from Santa Cruz de la Sierra. Bridges reported that his excursion into the Amazon Basin had not been productive of a variety of plants, in the "thousand miles" of travel he had not collected 100 species. I have no definite information concerning the remainder of Bridges's journey in Bolivia. From Santa Cruz he had planned to return to Cochabamba. Since he reports a bird, Proc. Zool. Soc. London xv. 29 (1847), from "Yungas of La Paz" I suspect that he left the country by way of La Paz. He must have returned promptly to England, for from London on June 21, 1846, apparently some time after his return, he wrote Hooker that the seeds of *Victoria* were to be sold at 2 shillings each and the herbarium specimens of the plant at 30 shillings. The first and best set of Bridges's Bolivian collections were sent to Hooker; according to its collector it consisted of about "550 species." The specimens were unnumbered and were apparently unprovided with definite geographical data. According to Bridges no catalogue of this collection was prepared.

Following his return to England, in the latter months of 1846, Bridges became very ill, apparently from some disease contracted in Bolivia. He wrote Hooker on Dec. 8, 1846 from Bristol that he had been very ill and had "been expectorating blood from the lungs for two weeks." Despite this, however, again writing from Bristol, on Jan. 14, 1847, he acknowledged Hooker's congratulations on his recent marriage. According to Dall, Proc. Calif. Acad. i. 236 (1866), he

⁴ Hooker printed Bridges's letter which tells of this discovery, Bot. Mag. lxxiii. sub. t. 4275, pg. 10 (1847).

married Mary Benson, niece⁶ of Hugh Cuming. Shortly after his marriage, for the sake of his health, he returned to Chile going there via Panama.

The last word we have concerning Bridges in South America is in Caldclough's letter from Valparaiso which is dated Sept. 30, 1851. We hear that "Mr. Thomas Bridges is now in this place having formed a kind of nursery ground for the sale of every description of fruit and other trees and plants. He now collects little and is very sore upon the subject of *Victoria Regia* which he asserts was introduced (at least the subject which flowered) by him and that he has received no medal and scarcely 'mention honorable' for having done so."

According to Dall, l. c., Bridges "visited and explored the island of Juan Fernandez" in 1851. If he did so he made no botanical collections there or at least these did not reach European herbaria, for neither Hemsley nor Skottsberg, who have studied and published upon the flora of the island, mentions his collections nor notes him as having contributed to our knowledge of the flora of the island.

In 1855, Dall states that Bridges proceeded to Panama remaining there some six months; and from thence to England, subsequently to France, and finally to California where he arrived in Nov. 1856. About 1857 he went to British Columbia, and remained there nearly two years collecting and exploring. He then returned to California and made his home in San Francisco until his illfated journey in 1865. Very little is known concerning his collecting-itinerary in California. We learn from a letter dated May 5, 1858, that he had collected in Mariposa County, in "Scott and Trinity Mts. near Yreka," and in the Coast Ranges of Santa Clara County. His Californian collections, except those distributed by the Smithsonian Institution after his death, lack numbers, and invariably, it seems, have no precise indication of collection-locality.

In April 1865 Bridges went to Nicaragua for biological exploration, remaining there until September. While returning to San Francisco he was stricken with malaria, dying at sea four days later on Sept. 9, 1865. He was 59 years of age at his death and was survived by a widow and five children.

The first set of Bridges's South American collections, at least, appear to have been invariably sent to Sir William Hooker and, consequently, are now to be found in the herbarium at Kew. From his correspondence one infers that the second set was retained for himself. What became of this material I do not know. At Kew with the

⁶ According to Britten & Boulger, *Biogr. Index* 22 (1893), Bridges became the "son-in-law of Hugh Cuming." Dall, however, was a friend of Bridges in California and having first-hand sources of information is probably correct.

Bridges plants from the Hooker Herbarium are those received from Bentham. Many of the collections by Bridges in the Bentham Herbarium have "Lord Colchester, 1832" written on the labels. The significance of this annotation is not entirely clear. Mr. S. A. Skan, librarian at Kew, has, however, called my attention to the fact that, according to the Dictionary of National Biography, the mother of the parliamentarian, Charles Abbot, First Lord Colchester, by a second marriage became the wife of Jeremy Bentham, by his first marriage grandfather of George Bentham the botanist. The Second Lord Colchester was an officer in the British Navy. Bentham, hence, probably received the specimens in question from his relative the First or Second Lord Colchester and consequently the annotation "Lord Colchester, 1832" so prominent on Bridges's labels has only historical significance.

The Gray Herbarium contains an incomplete set of Bridges's collections from Chile and a few of his plants from Bolivia. During the course of some work on the Chilean flora I have become convinced that the numerous collections in the Gray Herbarium which are unaccompanied by labels and associated only with the data, "Am. Aust. F." or "Am. Aust. Fielding" in Asa Gray's handwriting, are in large part also collections of Bridges. These are probably from the herbarium of Henry B. Fielding and in some manner became divorced from their original data.

The salient facts concerning Bridges's collections in South America may be summarized as follows:—

Year	Locality	Number collected	Collection numbers
1828 & 1829	Prov. Valparaiso	unknown	—
1830 (&? 1831)	Valparaiso region, Aconcagua Valley and Cordilleras.	497!	1-497
1832	? Prov. Valparaiso	59?	498-557
1832-1833	Prov. Valdivia	299!	558-857
Jan.-June, 1841	Prov. Curico	370!}	858-1278
? 1841	? Prov. Valparaiso	51?}	
July-Dec. 1841	Atacama-Coquimbo	148!	1279-1427
Jan.-May, 1844	Prov. Antofagasta	unknown	—
Sept. 1844-1845	Bolivia	550!	—



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Contributions from the Gray Herbarium of Harvard University (81), 98–106.
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