NEW ZEALAND JOURNAL OF BOTANY, 2017
VOL. 55, NO. 2, 151–162
http://dx.doi.org/10.1080/0028825X.2016.1264978

Taylor & Francis
Taylor & Francis Group

RESEARCH ARTICLE

Clarifications regarding Noël Necker's names associated to *Chaptalia* (Asteraceae: Mutisieae)

L. Katinas

División Plantas Vasculares, Museo de La Plata, Paseo del Bosque s/n 1900, La Plata, Argentina

ABSTRACT

The generic name *Chaptalia* was founded by Ventenant in 1802. In 1891 Kuntze transferred 19 species from *Chaptalia* to *Thyrsanthema*, a name established by Necker in 1790, on the basis that *Thyrsanthema* had priority over the name *Chaptalia*. The monomial system of nomenclature used by Necker in his *Elementa Botanica* published in 1790, together with a confusing typification on the basis of Linnean species, led to different interpretations of Necker's changes by botanists. In 1905 the Vienna Code considered *Chaptalia* as a *nomen conservandum* and *Thyrsanthema* as a *nomen rejiciendum*. In 1959, the Montreal Code established that the 'species naturales' of Necker are not to be treated as generic names. As a consequence, the name *Chaptalia* was considered a case of superfluous conservation, because Kuntze did not validate *Thyrsanthema* until 1891. Edward Greene in 1906 added another point of controversy establishing that the names *Chaptalia* and *Thyrsanthema* referred to totally different taxa. The nomenclatural history of *Chaptalia* and allied names described by Necker (*Atasites*, *Petasites*, *Thyrsanthema* and *Tussilago*) is reviewed, and the current status of these names is presented.

ARTICLE HISTORY
Received 17 October 2016
Accepted 22 November 2016

KEYWORDS
Atasites; Compositae; Greene; Kuntze; Necker; *Petasites*; taxonomy; *Thyrsanthema*; *Tussilago*

Introduction

Chaptalia Vent. (Asteraceae: Mutisieae) is a genus of c. 40 species of perennial, scapose herbs with solitary capitula (Figure 1) distributed in America from the southern United States to central Argentina (Katinas et al. 2008). While carrying out different treatments that include *Chaptalia* (Katinas 1996, 1998, 2004, 2008), my attention was drawn to the nomenclatural status of its generic name. The name *Chaptalia* appears as a *nomen conservandum* in some studies (e.g. McVaugh 1984; Harling 1991; Jones et al. 1997), whereas in others this status is not mentioned (e.g. Burkart 1944; Díaz-Piedrahita & Vélez-Nauer 1993; Nesom 1995). Although the citation of a name as conserved or not is a recommendation in the International Code of Nomenclature (Rec. 50E.1; McNeill et al. 2012) and not a mandatory rule, I wondered if the discrepancy in the citation had historical causes by virtue of the acceptance by some botanists of *Thyrsanthema*, a name established by Nöel Martin Joseph de Necker 12 years earlier than *Chaptalia*.

CONTACT L. Katinas katinas@fcnym.unlp.edu.ar División Plantas Vasculares, Museo de La Plata, Paseo del Bosque s/n 1900, La Plata, Argentina

Figure 1. *Chaptalia arechavaletae* Hieron., showing the monocephalous inflorescence and imbricate involucre typical of the genus. Photograph by L. Katinas.

The name *Chaptalia* was established in March 1802 by Ventenant (in his *Description des Plantes Nouvelles et peu connues cultivées dans le jardin de J. M. Cels*) to honour Jean Antoine Claude Chaptal (1756–1832), comte de Chanteloup, a distinguished French chemist, physician, agronomist, industrialist, educator, philanthropist and Minister of Interior of Napoleon. Indeed, the process of adding sugar to increase the final alcohol content of wines is called 'chaptalisation' in his honour. The type of Ventenant's new genus is the North American species *Chaptalia tomentosa* Vent., characterised by its scapose monocephalous habit and heterogamous capitula with multiseriate and imbricate involucre.

Twelve years before, Necker (1790) in his *Elementa Botanica* included four related monomial names: *Atasites*, *Petasites*, *Thyrsanthema* and *Tussilago*. One of these, *Thyrsanthema*, was soon equated with *Chaptalia* by some botanists (e.g. Kuntze 1891), and *Atasites* was matched with other generic names, including *Chaptalia* (e.g. Greene 1906).

Necker's *Elementa Botanica* (1790) has given rise to much controversy in the past as to the validity of his taxonomical monomial units. Another point of dispute has been the different interpretations of these taxonomic units by authors, due to Necker's ambiguous indication of types. The objective here is to perform a taxonomic clarification of the names *Atasites*, *Petasites*, *Thyrsanthema* and *Tussilago*, which have been associated with *Chaptalia*. To do this, I will present an account, focusing on the genus *Chaptalia*, of the historical events that took place from 1790, the year of publication of *Elementa Botanica*, to more recent versions of the international codes of botanical nomenclature when the nomenclatural committees adopted the final provisions concerning this work.

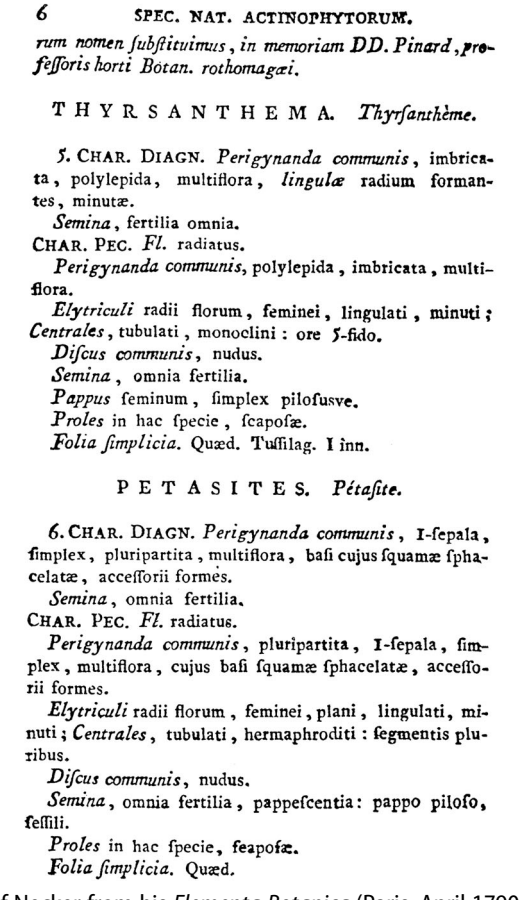
Necker's names

The *Elementa Botanica* (1790) of Necker has been the subject of much debate in the nomenclature committees, as its categories, or units of study, were not the conventional and generally accepted ones. Necker used the term 'species naturales' for the traditional

genera, and 'proles' for the traditional species (Stafleu 1956). Furthermore, Necker's 'generic' and 'specific' names were not combined into binomials, resulting in an idiosyncratic system that did not gain many followers.

Early works of Necker, for example his *Methodus muscorum* (1771), were orthodox, adhering closely to the Linnaean binomial system. The eventual displacement of the Linnaean system by his own categories was probably due to studies that Necker performed on bryophytes, where he emphasised vegetative over sexual reproduction (Proskauer 1958).

In *Elementa Botanica*, Necker (1790) included four related names (' … *singular, inter se maxime affines*'): *Atasites*, *Petasites*, *Thyrsanthema* and *Tussilago*, mostly on the basis of species of the genus *Tussilago* L. (Linnaeus et al. 1737; Linnaeus 1753, 1763). Necker distinguished these genera by two main diagnostic characters (*character diagnosticus*), namely the type of inflorescence and the type of involucre (Figures 2 and 3). As Cassini (1823) had already noted, Necker used the terminology '*multiflora*' for polycephalous scapes, and '*I–flora*' for monocephalous scapes. The types for these names, according to Greene (1900; see below), were indicated by *quad.* (*quaedam*) or *quid.* (*quidam*) two



6 SPEC. NAT. ACTINOPHYTORUM.

rum nomen ſubſtituimus, in memoriam DD. Pinard, profeſſoris horti Botan. rothomagæi.

THYRSANTHEMA. *Thyrſanthème.*

5. CHAR. DIAGN. *Perigynanda communis*, imbricata, polylepida, multiflora, *lingulæ* radium formantes, minutæ.
Semina, fertilia omnia.
CHAR. PEC. *Fl.* radiatus.
Perigynanda communis, polylepida, imbricata, multiflora.
Elytriculi radii florum, feminei, lingulati, minuti; *Centrales*, tubulati, monoclini: ore 5-fido.
Diſcus communis, nudus.
Semina, omnia fertilia.
Pappus feminum, ſimplex piloſusve.
Proles in hac ſpecie, ſcapoſæ.
Folia ſimplicia. Quæd. Tuſſilag. Linn.

PETASITES. *Pétaſite.*

6. CHAR. DIAGN. *Perigynanda communis*, 1-ſepala, ſimplex, pluripartita, multiflora, baſi cujus ſquamæ ſphacelatæ, acceſſorii formes.
Semina, omnia fertilia.
CHAR. PEC. *Fl.* radiatus.
Perigynanda communis, pluripartita, 1-ſepala, ſimplex, multiflora, cujus baſi ſquamæ ſphacelatæ, acceſſorii formes.
Elytriculi radii florum, feminei, plani, lingulati, minuti; *Centrales*, tubulati, hermaphroditi: ſegmentis pluribus.
Diſcus communis, nudus.
Semina, omnia fertilia, pappeſcentia: pappo piloſo, ſeſſili.
Proles in hac ſpecie, ſcapoſæ.
Folia ſimplicia. Quæd.

Figure 2. Descriptions of Necker from his *Elementa Botanica* (Paris, April 1790) for *Thyrsanthema* Neck. and *Petasites* Mill.

SPEC. NAT. ACTINOPHYTORUM. 7

ATASITES. *Faux-Pétaſite.*

7. CHAR. DIAGN. *Perigynanda communis*, polylepida, 1-flora.
Squamæ, imbricatæ.
Pappus, piloſus.
Semina fertilia.
CHAR. PEC. *Fl.* radiatus.
Perigynanda communis, 1-flora, polylepida.
Squamæ, imbricatæ.
Elytriculi, radium floris conſtituentes, feminei; *Centrales*, monoclini, tubulati: ore 5-fido.
Diſcus communis, nudus.
Semina, omnia fertilia.
Pappus, ſimplex.
Proles in hac ſpecie, ſcapoſæ.
Folia ſimplicia. Quid. Tuſſilag. & Arnic. Linn.

TUSSILAGO. *Tuſſilage, Pas-d'âne.*

8. CHAR. DIAGN. *Perigynanda communis*, 1-flora, ſimplex, 1-ſepala, pluripartita.
Squamulæ, baſi, auctæ, ſphacelatæ, coarctatæ.
Semina, fertilia omnia.
CHAR. PEC. *Fl.* radiatus.
Perigynanda communis, 1-flora, 1-ſepala, pluripartita, ſimplex.
Squamulæ, coarctatæ, ſphacelatæ, baſi auctæ.
Elytriculi florum radiantes, feminei, lingulati; *Centrales*, monoclini, tubulati: apice pluridentato.
Diſcus communis, nudus.
Semina, omnia fertilia, pappo ſimplici coronata.
Proles in hac ſpecie, ſcapoſæ.
Folia ſimplicia.
Obſ. *Thyrſanthema*, *Petaſites*, *Aſitea*, & *Tuſſilago*, *ſpecies naturales* 4, *diſtinctæ*, *Lioydiæ proximæ*: *ſingulæ*, *inter ſe maxime affines.*

Figure 3. Descriptions of Necker from his *Elementa Botanica* (Paris, April 1790) for *Atasites* Neck. and *Tussilago* L.

indefinite pronouns that mean 'a certain' or 'some' (Stearn 1996), and then generally followed by one or more Linnaean generic names.

Two of the names, *Petasites* and *Tussilago*, had been established by Miller (1754) , Linnaeus et al. (1737) and Linnaeus (1753), respectively. *Petasites* is currently a genus of the tribe Senecioneae, with c. 20 species of perennial herbs with paniculate or racemose secondary inflorescences, and uni-seriate involucre (Toman 1972). *Tussilago* is a Eurasiatic and African monotypic genus of the tribe Senecioneae of perennial herbs with solitary capitula and uni-seriate involucre (Bremer 1994). On the other hand, *Atasites* and *Thyrsanthema* were created by Necker, and so will be briefly discussed here.

Atasites, characterised by Necker by its monocephalous scapes and imbricate involucre, has the indication: *Quid. Tussilag. & Arnic. Linn.*, suggesting that it was based on some of the *Tussilago* and *Arnica* species of Linnaeus. Later interpretations of this statement in subsequent years by botanists were incredibly heterogeneous. Cassini (1823, p. 105) considered *Atasites* equivalent to *Gerbera* L. (a genus morphologically close to *Chaptalia*), probably due to the inclusion of *Gerbera* in the genus *Arnica* by Linnaeus (Greene

1906; Hansen 1985). Bentham and Hooker (1873) related *Atasites* to *Anandria* (currently a *nom. illeg.* under *Leibnitzia* Cass., another morphologically close genus to *Chaptalia*). Finally, Greene (1906) did not consider the name *Gerbera* because Necker mentions it consecutive to *Tussilago* as, according to Greene, an 'appended species'. Greene suggested that *Atasites* probably corresponds to either *Chaptalia* (tribe Mutisieae) or *Homogyne* Cass. (tribe Senecioneae).

The last of Necker's four names, *Thyrsanthema*, was described as having polycephalous scapes ('multiflora' in his terminology), and multiseriate, imbricate involucre. The words '*Quad. Tussilag. Linn.*' indicate that *Thyrsanthema* probably corresponds to some Linnaean species of *Tussilago*. In the first edition of *Species Plantarum* (1753), Linnaeus described seven species of *Tussilago*: *Tussilago alba* (currently *Petasites albus* (L.) Gaertn., Senecioneae), *Tussilago alpina* (currently *Homogyne alpina* (L.) Cass., Senecioneae), *Tussilago anandria* (currently *Leibnitzia anandria* (L.) Turcz., Mutisieae), *Tussilago farfara* (Senecioneae), *Tussilago frigida* (currently *Petasites frigidus* (L.) Fr., Senecioneae), *Tussilago hybrida* (currently *Petasites hybridus* (L.) G. Gaertn., B. Mey. & Scherb., Senecioneae), and *Tussilago petasites* (currently *Petasites hybridus* (L.) G. Gaertn., B. Mey. & Scherb., Senecioneae). Two more species were added in the second edition (Linnaeus 1763): *Tussilago dentata* (currently *Chaptalia dentata* (L.) Cass., Mutisieae) and *Tussilago nutans* (currently *Chaptalia nutans* (L.) Pol., Mutisieae). Cassini (1823, p. 105) and Bentham and Hooker (1873, p. 498), for example, treated *Thyrsanthema* as synonym of *Leria* DC. (Candolle 1812; currently a synonym of *Chaptalia*), and Baillon (1886, p. 95) considered *Thyrsanthema* a synonym of *Chaptalia*.

Kuntze's *Revisio Genera Plantarum* (1891), with 1074 replacement genera and 30,000 new combinations, appeared as a nomenclatural schism of the first order in the botanical nomenclature (Nicolson 1991). Kuntze had a very broad view of what constitutes homonymy; he took the 1735 *Syst. Nat.* ed. 1 of Linnaeus as the starting point for the priority of generic names, and claimed that he was only applying the Candollean Code (Stafleu 1956; Nicolson 1991). The changes made by Kuntze were treated in many different ways: accepted, rejected, or as names directly and pointedly ignored by many botanists. Kuntze (1891) recognised the three genera, *Chaptalia*, *Leria* and *Thyrsanthema*, as synonyms and, applying the principle of priority, transferred 19 species of *Chaptalia* and *Leria* (and synonyms of these genera) to *Thyrsanthema* (Table 1). He performed his description of *Thyrsanthema* on the basis of *Tussilago nutans* L. (currently *Chaptalia nutans* (L.) Pol.). This was interpreted as a typification of the genus *Thyrsanthema* (e.g. Simpson 1978; Nesom 1995). However, according to Art. 52.1 of ICN (McNeill et al. 2012) *Thyrsanthema* Neck. ex Kuntze, being an illegitimate name (see below), is typified by the original and conserved type of *Chaptalia* Vent. (*C. tomentosa* Vent.).

The treatment of Necker's names by the code

Harms (1904, p. 37) proposed a list of generic conservations to overcome Kuntze's changes. The list contained *Chaptalia* as a *nomen conservandum* and *Thyrsanthema* Neck. as a *nomen rejiciendum*. In Harm's list there was no citation of types, the typification of *Chaptalia* (*C. tomentosa* Vent.) was subsequently made by Rickett and Stafleu (1960) in their *Nomina generica conservanda et rejicienda spermatophytorum*. Hence, in the Vienna Botanical Congress of 1905 (Briquet et al. 1906) it was decided to accept the

Table 1. Combinations and the new species *Thyrsanthema ebracteata* established by Kuntze (1891, 1898). The current name of the species is in bold.

Kuntze treatment	Basionym	Current name
Thyrsanthema araneosa (Casar.) Kuntze	*Chaptalia araneosa* Casar.	***Chaptalia araneosa*** Casar.[a]
Thyrsanthema chilensis (DC.) Kuntze	*Loxodon chilensis* DC.	***Chaptalia exscapa*** (Pers.) Baker var. ***chilensis*** (DC.) Burkart[b]
Thyrsanthema dentata (L.) Kuntze	*Tussilago dentata* L.	***Chaptalia dentata*** (L.) Cass.[c]
Thyrsanthema ebracteata Kuntze		***Chaptalia ebracteata*** (Kuntze) K. Schum.[d]
Thyrsanthema ehrenbergii (Sch. Bip.) Kuntze	*Gerbera ehrenbergii* Sch. Bip.	***Leibnitzia seemanii*** (Sch. Bip.) Nesom[e]
Thyrsanthema exscapa (Pers.) Kuntze	*Tussilago exscapa* Pers.	***Chaptalia exscapa*** (Pers.) Kuntze[f]
Thyrsanthema integrifolia (Cass.) Kuntze	*Leria integrifolia* Cass.	***Chaptalia integerrima*** (Vell.) Burkart[f]
Thyrsanthema lyrata (D. Don) Kuntze	*Chaptalia lyrata* D. Don	***Leibnitzia lyrata*** (D. Don) Nesom[g]
Thyrsanthema nutans (L.) Kuntze	*Tussilago nutans* L.	***Chaptalia nutans*** (L.) Pol.[c]
Thyrsanthema oblonga (D. Don) Kuntze	*Chaptalia oblonga* D. Don	***Chaptalia oblonga*** D. Don[a]
Thyrsanthema ovalis (D. Don) Kuntze	*Chaptalia ovalis* D. Don	***Chaptalia ovalis*** D. Don[a]
Thyrsanthema piloselloides (Vahl) Kuntze	*Perdicium piloselloides* Vahl	***Chaptalia piloselloides*** (Vahl) Baker[h]
Thyrsanthema pumila (Sw.) Kuntze	*Tussilago pumila* Sw.	***Chaptalia dentata*** (L.) Cass.[c]
Thyrsanthema rotundifolia (D. Don) Kuntze	*Chaptalia rotundifolia* D. Don	***Chaptalia rotundifolia*** D. Don[b]
Thyrsanthema runcinata (Kunth) Kuntze	*Chaptalia runcinata* Kunth	***Chaptalia piloselloides*** (Vahl) Baker[h]
Thyrsanthema seemanii (Sch. Bip.) Kuntze	*Gerbera seemanii* Sch. Bip.	***Leibnitzia seemanii*** (Sch. Bip.) Nesom[e]
Thyrsanthema semifloscularis (Walter) Kuntze	*Perdicium semiflosculare* Walter	***Chaptalia tomentosa*** Vent.[g]
Thyrsanthema sinuata (Less.) Kuntze	*Leria nutans* (L.) DC. var. *sinuata* Less.	***Chaptalia integerrima*** (Vell.) Burkart[f]
Thyrsanthema spathulata (D. Don) Kuntze	*Leria spathulata* D. Don	***Chaptalia spathulata*** (D. Don) Hemsl.[g]
Thyrsanthema tomentosa (L.f.) Kuntze	*Leontodon tomentosum* L.f.	***Chaptalia albicans*** (Sw.) Vent. ex B.D. Jacks.[c]

[a]Zardini (1975); [b]Burkart (1944); [c]Katinas and Zavaro (2014); [d]Schumann (1898); [e]Nesom (1983); [f]Passini et al. (2014); [g]Nesom (1995); [h]Katinas et al. (2014).

principle of conserving generic names to avoid disadvantageous changes in the nomenclatures, and *Chaptalia* became a conserved name (Briquet 1905, p. 150). The proposal of Harms was adopted after the scrutiny of 118 votes in favour and 37 against (Briquet 1906). The status of *Thyrsanthema* as a *nomen rejiciendum*, appeared in the first partial systematic treatment for *Chaptalia* by Burkart (1944).

Until 1959 there was a conflict of opinions among botanists interested in the nomenclatural stability concerning conservation or rejection of Necker's names. Some authors (e.g. Mansfeld 1958; Proskauer 1958; Bullock 1959) believed that Necker's generic names must be considered validly published generic names under the code. Others (e.g. Wilmott 1935; Dandy & Ross 1958) came to the opposite conclusion. In fact, Dandy and Ross (1958) clearly stated that Necker and Linnaeus did not only differ in their terminology but in their taxonomic judgment. By 1956, six names of Necker were conserved, 44 rejected, and the others were generally used (Stafleu 1956). Finally, in the International Montreal Botanical Congress of August 1959 (Lanjow et al. 1961), the conservation of *Chaptalia* was considered superfluous because Kuntze in his *Revisio Genera Plantarum* did not validate *Thyrsanthema* until 1891 (Rickett & Stafleu 1960). Hence, *Chaptalia* is included in the codes in the *nomina generica conservanda* among the genera for which

no *nomina rejicienda* need to be listed. Because of this, *Chaptalia* and *Thyrsanthema* were distinguished with a dagger until the Seattle Code of 1969 (Stafleu et al. 1972), but this symbol was eliminated in the further editions of the codes.

The nomenclatural status of Necker's categories (or ranks) was dealt with by the ICBN of 1961, Art. 20 (Lanjouw et al. 1961):

> N. J. de Necker in his Elementa Botanica 1790, proposed unitary designations for this 'species naturales'. These names, which resemble generic names, are not to be treated as such, unless they have been published as generic names by a subsequent author.

For the report of the debate itself see Bureau of Nomenclature (1960).

A relevant provision of the Tokyo Code (Greuter et al. 1994) is Art. 32.8 and the associated Appendix V (*opera utique oppressa*) where all names of genera included in the *Elementa Botanica* of 1790 were considered not validly published.

The view of Edward Greene

At the beginning of the twentieth century, another point of controversy was added to the nomenclatural issue of *Chaptalia* versus *Thyrsanthema*. In an early paper, Greene (1900) found in a review of fern genera the statement that none of Necker's fern genera were based on types. According to him, Necker's generic types were indicated quite plainly and there was no need to indicate them: the word '*quaedam*' was a type indication referring to the first enumerated by Linnaeus in a group of species.

In a further paper on *Atasites* and *Thyrsanthema*, Greene (1906) suggested that *Tussilago nutans* was the possible type of *Atasites* and related *Atasites* to *Chaptalia*. In addition, he critically analysed Kuntze's work considering that *Chaptalia* and *Thyrsanthema* were names referred to completely different taxa. According to Greene, not only is the meaning of the name 'Thyrsanthema' highly significant in relation to its inflorescence appearance (many thyrsoidly arranged capitula), but Necker's description is in fact very clear about what morphological characteristics he wanted to emphasise. Greene noted that the diagnosis of *Thyrsanthema* describes a plant with polycephalous, probably thyrsiform, scapes and that the possession of secondary inflorescences, as described by Necker, is completely different from the inflorescence of *Chaptalia*, in which all the species have monocephalous scapes (Figure 1).

Greene wrote: 'Now, whoever shall find among the thyrsiflorous species of Linnaean *Tussilago*, one that fulfil these conditions, according to the diagnosis of Linnaeus, are *T. frigida*, *T. hybrida*, and *T. petasites*' (currently all belong to the genus *Petasites* of the tribe Senecioneae). Greene finished his statement as follows:

> As for *Thyrsanthema*, whoever wishes to see that which Necker so evidently had in mind for its type, may look at its fine representation in the Hortus Elthamensi's (sic) of Dillenius, plate 230. It is entitled to the name: THYRSANTHEMA HYBRIDUM. Tussilago hybrid, Linn. (Figure 4).

Greene assigned *Tussilago hybrida* L. (=*Petasites hybridus* (L.) Gaertn., Mey. et Scherb.) to *Thyrsanthema*, even though he referred to the Dillenius' plate entitled as *Petasites major* (Figure 4). The point of view of Greene was ignored or not considered by later botanists, probably because his actions with regard to *Thyrsanthema* were irrelevant to the

Figure 4. *Petasites major* from the *Hortus Elthamensis* of Dillenius (London, 1732), a work mentioned by Greene in 1906 when referring to *Thyrsanthema*.

nomenclature. It was Nesom (1995) in his revision of the North and Central American species of *Chaptalia* who brought up the observations of Greene in relation to *Chaptalia* and *Thyrsanthema*.

Where Necker's names indeed related to Chaptalia?

As already mentioned, the interpretation of Necker's names, descriptions and potential type assignations were heterogeneous and sometimes contradictory. Therefore, it is worth citing the complete paragraph (Necker 1790, p. 7) at the end of the descriptions of the four genera (Figure 3): '*Obs. Thyrsanthema, Petasites, Asitea* (sic)*, & Tussilago. Species naturales 4, Lioydiae proximae: singular, inter se maxime affines*'. In this observation Necker related these names to the previously established name *Lioydia* Neck. in the *Elementa Botanica* (Necker 1790, p. 4), which in turn he related to the genus *Inula* L. (tribe Inuleae). Some further authors such as Cassini (1825, p. 489), Candolle (1838, p. 13) and Endlicher (1840, p. 1386), considered *Lioydia* related or a synonym to *Printzia* Cass. (tribe Gnaphalieae). Also, Necker related the names to some *Tussilago* (tribe

Senecioneae) and some *Arnica* (tribe Madieae) species of Linnaeus. I agree with Greene (1906) that the description of *Thyrsanthema* was not related to *Chaptalia* on the basis of the polycephalous inflorescence of the former. Regarding *Atasites*, with monocephalous inflorescence and called '*Faux–Pétasite*' by Necker himself (Figure 3), I disagree with Greene regarding a possible assignation to the genus *Chaptalia*. I would follow Necker's final observation about a relationship of the four genera with *Lioydia* and discard any relationship with a member of the tribe Mutisieae where *Chaptalia* belongs.

At this point, it is worth summarising and separating the nomenclatural from the taxonomic issues. Necker (1790) established the names *Atasites* and *Thyrsanthema* to include two groups of plants, the first with monocephalous inflorescences and the second with polycephalous inflorescences. These names do not follow the rules of the code and are considered invalid. Later, Ventenant (1802) established the name *Chaptalia* to circumscribe a group of plants with monocephalous inflorescences. Kuntze (1891) rehabilitated the name *Thyrsanthema*, with a different interpretation from Necker and having in mind monocephalous plants; he assigned this name to the species of *Chaptalia*, the generic name created by Ventenant. The name *Thyrsanthema* of Kuntze is superfluous and illegitimate under the Code because *Chaptalia* is the earliest validly and legitimate published name and because the name of Kuntze included the type of *Chaptalia*.

Finally, and as a separate note from *Chaptalia*, the name *Thyrsanthema* (as *Thyrsanthemum*) was further assigned by Pichon (1946) to a new genus of the family Commelinaceae. Pichon's name is apparently not valid following Art. 53.1, note 1, and art. 53.3 of the ICN (McNeill et al. 2012), being a later homonym of *Thyrsanthema* Necker ex Kuntze. It should be also mentioned that the generic names ending in *-anthema*, such as *Thyrsanthema*, are neuter plural in Latin and are to be corrected to neuter singular *-anthemum*, hence *Thyrsanthemum* (Tjaden 1995).

Current status of the names Atasites, Chaptalia and Thyrsanthema

The following digest of the species and names related to *Chaptalia*, ordered chronologically, will clarify and formalise the conclusions:

Thyrsanthemum (*Thyrsanthema*) Neck., Elem. Bot. 1: 6 (1790), nom. not val. publ. (ICN 2012: Art. 34, App. VI, p. 449).

The names in the paper by Necker (1790) are not validly published because it is listed in the App. VI of the Melbourne Code (Wiersema et al. 2015) as a suppressed work.

A genus described as having polycephalous inflorescence. The name was erroneously assigned to *Leria* (currently a synonym of *Chaptalia* of the tribe Mutisieae) by early botanists (e.g. Cassini 1823; Bentham & Hooker 1873).

Atasites Neck., Elem. Bot. 1: 7 (1790), nom. not val. publ. (ICN 2012: Art. 34, App. VI, p. 449).

The names in the paper by Necker (1790) are not validly published because it is listed in the App. VI of the Melbourne Code (Wiersema et al. 2015) as a suppressed work.

A genus described as having monocephalous inflorescence. The name was assigned to *Chaptalia*, *Gerbera*, *Leibnitzia* (tribe Mutisieae) or *Homogyne* (tribe Senecioneae) by early botanists (e.g. Cassini 1823; Bentham & Hooker 1873; Greene 1906).

Chaptalia Vent., Descr. Pl. Jard. Cels. tab. 61 (1802), nom. cons. (ICN 2012: App. IV, p. 187) Type: *Chaptalia tomentosa* Vent.

A genus of c. 40 species of the tribe Mutisieae, represented by perennial herbs with monocephalous scapes and pluriseriate involucres.

Thyrsanthemum (*Thyrsanthema*) Neck. ex Kuntze, Revis. Gen. Pl. 1: 369 (1891), nom. superfl. et illeg. ≡ Chaptalia Vent. 1802. Type: *Chaptalia tomentosa* Vent.

A superfluous and illegitimate name proposed by Kuntze (1891), the name *Chaptalia* has priority.

Acknowledgements

I acknowledge Diego Gutiérrez and Jefferson Prado for the critical reading of the manuscript, and the editor and anonymous reviewers for their suggestions. Associate editor: Dr Peter de Lange.

Disclosure statement

No potential conflict of interest was reported by the author.

Funding

This work was supported by Agencia Nacional de Promoción Científica y Tecnológica (ANPCyT, PICT 2012–1683), Consejo Nacional de Investigaciones Científicas y Técnicas (CONICET), and Universidad Nacional de La Plata (UNLP), Argentina.

References

Baillon H. 1886. Histoire des Plantes, vol. 18. Paris: Librairie Hachette & C.

Bentham G, Hooker JD. 1873. Genera plantarum ad exemplaria imprimis in herbariis kewensibus servata definita, vol. 2. London: Lovell Reeve & Co., Williams & Norgate.

Bremer K. 1994. Asteraceae: cladistics and classification. Portland: Timber Press.

Briquet J. 1905. Texte synoptique des documents destinés à servir de base aux débats du Congrès International de Nomenclature Botanique de Vienne 1905. Berlin: R. Friedländer & Son.

Briquet J. 1906. Compte rendu des débats du Congrès International de Nomenclature Botanique. In: von Wettstein R, Wiesner J, Zahlbruckner A, editors. Verhandlungen des Internationalen Botanischen Kongresses in Wien 1905. Jena: Verlag von Gustav Fischer; p. 136–137.

Briquet J, Flahault C, Harms H, Rendle AB. 1906. International rules of botanical nomenclature, adopted by the international botanical congress of Vienna 1905. Jena: G. Fischer.

Bullock AA. 1959. The names in Necker's Elementa Botanica with special reference to *Dactylorchis* Vermeulen versus *Dactylorhiza* Necker. Taxon. 8:46–48.

Bureau of Nomenclature. 1960. IX International botanical congress nomenclature section. Report prepared by the Bureau of Nomenclature. Proceedings of the IX International Botanical Congress, Montreal, 1959, University of Toronto Press. 3:25–116. Reprinted as Regnum Veg. 20. Utrecht: International Association for Plant Taxonomy.

Burkart A. 1944. Estudio del género de Compuestas *Chaptalia* con especial referencia a las especies argentinas. Darwiniana. 6:505–594.

Candolle AP de. 1812. *Leria*. Ann. Mus. Natl. Hist. Nat. 19:68.

Candolle AP de. 1838. Prodromus systematis naturalis regni vegetabilis 7. Paris: Treuttel and Würtz.

Cassini AHG. 1823. *Tussilago*. Dict. Sci. Nat. 26:103–112.

Cassini AHG. 1825. *Lioydia*. Dict. Sci. Nat. 37:489.

Dandy J, Ross R. 1958. The names in Necker's Elementa Botanica. Taxon. 7:261–262.
Díaz–Piedrahita S, Vélez–Nauer C. 1993. Revisión de las tribus Barnadesieae y Mutisieae (Asteraceae) para la Flora de Colombia. Monografías del Jardín Botánico "José Celestino Mutis". 1:70–92.
Endlicher SL. 1840. Genera plantarum secundum ordines naturales disposita. Wien: Fr. Beck.
Greene EL. 1900. Necker's genera of Ferns– I. Pittonia. 4:103–107.
Greene EL. 1906. *Atasites* and *Thyrsanthema*. Leafl. Bot. Observ. Crit. 1:154–158.
Greuter W, Burdet H, Chaloner M, Demoulin V, Grolle R, Hawksworth DL, Jørgensen P, Nicolson DH, Silva PC, Trehane P, McNeill J. 1994. International code of botanical nomenclature (Tokyo Code). Adopted by the fifthteenth international botanical congress, Yokohama, Japan, July 2011 (Regnum Veg. 131). Königstein, Germany: Koeltz Scientific Books.
Hansen HV. 1985. A taxonomic revision of the genus *Gerbera* (Compositae, Mutisieae) sections *Gerbera*, *Parva*, *Piloselloides* (in Africa), and *Lasiopus*. Opera Bot. 78:5–36.
Harling G. 1991. Compositae–Mutisieae. Flora of Ecuador. 42:47–54.
Harms H. 1904. Vorschlag zur Ergänzung "Lois de la nomenclature botanique de 1867", dem in Wien 1905 tagenden Nomenclatur–Kongreß zur Annahme empfohlen. Notizblatt des Königl. botanischen Gartens und Museums zu Berlin. 4:1–37.
Jones SD, Wipff JK, Montgomery PM. 1997. Vascular Plants of Texas, a comprehensive checklist including synonymy, bibliography, and index. Austin (TX): University of Texas Press.
Katinas L. 1996. Mutisiinae. Fl. Fanerog. Argentina. 29:3–40.
Katinas L. 1998. The Mexican *Chaptalia hintonii* is a *Gerbera* (Asteraceae, Mutisieae). Novon. 8:380–385.
Katinas L. 2004. The *Gerbera*–complex (Asteraceae, Mutisieae): To split or not to split. Sida. 21:935–940.
Katinas L. 2008. Asteraceae, Tribu Mutisieae. Fl. Chaqueña. 23(2):87–134.
Katinas L, Pruski J, Sancho G, Tellería MC. 2008. The subfamily Mutisioideae (Asteraceae). Bot. Rev. 74:469–716.
Katinas L, Vitali MS, Apodaca MJ. 2014. Sinonimias en el género *Chaptalia* (Asteraceae), con una clave actualizada de las especies argentinas. Bol. Soc. Argent. Bot. 49:605–612.
Katinas L, Zavaro C. 2014. Endemism and taxonomy of *Chaptalia* (Asteraceae) in the Caribbean. II. Taxonomic treatment. Ann. Bot. Fenn. 51:253–266.
Kuntze CEO. 1891. *Thyrsantema*. Revis. Gen. Pl. 1:369.
Kuntze CEO. 1898. *Thyrsanthema*. Revis. Gen. Pl. 3:182.
Lanjouw J, Baehni C, Robyns W, Rousseau J, Schopf JM, Schulze GM, Smith AC, de Vilmorin R, Stafleu FA. editors 1961. International code of botanical nomenclature. Adopted by the ninth international botanical congress, Montreal, August 1959. (Regnum Veg. 23). Utrecht, Netherlands: International Bureau for Plant Taxonomy and Nomenclature.
Linnaeus C. 1753. Caroli Linnaei … Species plantarum, exhibentes plantas rite cognitas. Ad genera relatas. Cum differentiis specificis, nominibus trivialibus, synonymis selectis, locis natalibus, secundum systema sexuale digestas … 2 vols. Holmiae: impensis L. Salvii.
Linnaeus C. 1763. Caroli Linnaei … Species plantarum, exhibentes plantas rite cognitas, ad genera relatas, cum differentiis specificis, nominibus trivialibus, synonymis selectis, locis natalibus, secundum sexuale digestas. Editio secunda, aucta. 2 vols. Holmiae: impensis direct L. Salvii.
Linnaeus C, Wandelaar J, Ehret GD. 1737. Hortus Cliffortianus: plantas exhibens quas in hortis tam vivis quam siccis, Hartecampi in Hollandia, coluit … Georgius Clifford … reductis varietatibus ad species, speciebus ad genera, generibus ad classes, adjectis locis plantarum natalibus differentiisque specierum. Cum tabulis æneis. Amstelaedami: (s.n.).
Mansfeld R. 1958. Necker's Elementa Botanica. Taxon. 7:155–156.
McNeill J, Barrie FR, Buck WR, Demoulin V, Greuter W, Hawksworth DL, Herendeen PS, Knapp S, Marhold K, Prado J, et al . 2012. International Code of Nomenclature for algae, fungi, and plants (Melbourne Code). Adopted by the eighteenth international botanical congress Melbourne, Australia, July 2011 (Regnum Veg. 154). Königstein, Germany: Koeltz Scientific Books.
McVaugh R. 1984. Compositae. Fl. Novo–Galiciana. 12:214–220.
Miller P. 1754. *Tussilago*. Gard. Dict. Abr. 3:ed. 4, without page numbers.

Necker NJ. 1771. Methodus muscorum per classes, ordines, genera ac species cum synonymis, nominibus trivialibus, locis natalibus, observationibus digestorum, aeneisque figuris illustratorum … Mannhemii.
Necker NJ. 1790. Elementa botanica genera genuina, species naturales omnium vegetabilium detectorum eorumque characteres diagnosticos ad peculiares exhibentia, secundum systema omologium seu naturale, evulgata 1. Parisiis: Typis Societatis Typographicae Neowedensis.
Nesom GL. 1983. Biology and taxonomy of American *Leibnitzia* (Asteraceae: Mutisieae). Brittonia. 35:126–139.
Nesom GL. 1995. Revision of *Chaptalia* (Asteraceae: Mutisieae) from North America and continental Central America. Phytologia. 78:153–188.
Nicolson DH. 1991. A history of botanical nomenclature. Ann. Missouri Bot. Gard. 78:33–56.
Passini E, Katinas L, Ritter MR. 2014. O gênero *Chaptalia* (Asteraceae, Mutisieae) no Rio Grande do Sul, Brasil. Rodriguésia. 65:141–158.
Pichon M. 1946. Sur les Commélinacées. Notul. Syst. (Paris). 12:217–242.
Proskauer J. 1958. On Hill, Wiggers, and Necker, and also the genus *Conocephalum*. Taxon. 7:123–130.
Rickett HW, Stafleu FA. 1960. Nomina generica conservanda et rejicienda spermatophytorum VI. Taxon. 9:153–161.
Schumann K. 1898. Systematisch geordnetes Repertorium der Botanischen Literatur aller Länder. Just's Bot. Jahresber. 26:376.
Simpson BB. 1978. *Chaptalia*. North Am. Fl. 2(10):3–7.
Stafleu FA. 1956. Nomenclatural conservation in the Phanerogams. Taxon. 5:85–95.
Stafleu FA, Bonner CEB, McVaugh R, Meikle RD, Rollins RC, Ross R, Schopf JM, Schulze GM, de Vilmorin R, Voss EG. 1972. International code of botanical nomenclature, adopted by the eleventh international botanical congress, Seattle, August 1969. (Regnum Veg. 82). Königstein, Germany: Koeltz Scientific Books.
Stearn WT. 1996. Botanical Latin. 4th ed. Portland (OR): Timber Press.
Tjaden WL. 1995. Regarding gender and number of generic names supposedly ending in *–anthema*. Taxon. 44:213–215. (with a note of the editor D. H. Nicolson).
Toman J. 1972. A taxonomic survey of the genera *Petasites* and *Endocellion*. Folia Geobot. Phytotax. 7:381–406.
Ventenant EP. 1802. Description des plantes nouvelles et peu connues: Cultivées dans le jardin de J. M. Cels: avec figures. A Paris: De l'imprimerie de Crapelet.
Wiersema JH, McNeill J, Turland NJ, Orli SS, Wagner WL. 2015. The foundation of the Melbourne Code Appendices: Announcing a new paradigm for tracking nomenclatural decisions. Taxon. 64:1021–1027.
Wilmott AJ. 1935. Additions and amendments to the international rules of botanical nomenclature, ed. 3. Bull. Misc. Inform. Kew. 2:65–66.
Zardini EJ. 1975. Revisión del género *Trichocline* (Compositae). Darwiniana. 19:618–733.