

A REPORT ON THE NOMENCLATURAL SECTION OF THE SECOND INTERNATIONAL SYMPOSIUM ORGANIZED BY THE BOTANICAL SURVEY OF INDIA AT KOLKATA, INDIA

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The Botanical Survey of India (BSI) organized the second International Symposium on February 13–14, 2023, at the National Library, Kolkata. Ashiho Asosii Mao, Director, BSI, was the patron of the symposium; Sudhansu Sekhar Dash and C. Murugan, both Scientists-E, BSI, served as the organizing secretary and a joint organizing secretary, respectively; and Gopal Krishna, Scientist-C, BSI, was an organizing committee member. The dates of the first symposium held in 2020 in Kolkata, and of the second symposium, coincided with the 131st and 134th foundation days of the BSI, respectively. The objective of both symposia was to provide a platform for botanical researchers to address the current issues in Plant Taxonomy, Ethnobotany, and Botanic Gardens. At the second symposium, besides the 400 delegates (including 22 international delegates),

Shri Bhupender Yadav, Honorable Union Minister of Ministry of Labour and Employment, and of Ministry of Environment, Forest, and Climate Change, and Ms. Nameeta Prasad, Joint Secretary, Ministry of Environment, Forest & Climate Change, participated. The Minister spoke on current efforts and initiatives of the Government of India to promote conservation, biodiversity, and a seed bank for species pertaining to agriculture and horticulture and an intended seed bank for native plant species. The delegates spoke on their ongoing research. In this regard, the section on nomenclature, addressed by Kanchi N. Gandhi, is highlighted here. Furthermore, as a recognition of Gandhi's efforts in promoting botanical nomenclature knowledge across India, Prasad, Mao, and Dash honored Gandhi with a *Lifetime Achievement Award*.

NOMENCLATURE AND ETYMOLOGIES

As per the Shenzhen Code Art. 20.1 (Turland & al., 2018), a genus name “may be taken from any source whatever and may even be composed in an absolutely arbitrary manner.” In other words, it is not essential for each and every generic name to have an acceptable etymology. In this regard, a few examples are addressed here.

According to Linnaeus (1751: 174–175), etymologies of some currently/then used generic names that are of Greek and Latin origin are obscure. Under the headings “LATINA obscura, quorum fontes ignoramus, vel quæ origine dubia evadunt, assumenda sunt, sed non imitanda: e. gr.” and “GRÆCA obscura, quamplurima eruuntur difficillime, et eruta dubia tamen persistunt,” he listed several generic names, e.g., Latin: *Acer*, *Berberis*, *Ficus*, *Ilex*, *Lilium*, *Malva*, *Pinus*, *Rosa*, *Solanum*, *Tilia*, *Verbena*, *Viola*, *Vitex*, etc.; Greek: *Aloe*, *Cactus*, *Citrus*, *Cycas*, *Exacum*, *Fucus*, *Gossipium*, *Hibiscus*, *Lemna*, *Morus*, *Myrtus*, *Nerium*, *Oryza*, *Piper*, *Rhamnus*, *Saccharum*, *Thalictrum*, *Xyris*, *Zea*, etc. From the preceding list, it is evident that Linnaeus was unaware of the derivations of some generic names from Indian languages, e.g., *Oryza* (from *Arici*, rice) and *Saccharum* (from *Sacchar*, sugar).

Andira Lam. (Fabaceae)

Lamarck mentioned that the genus name *Andira* was derived from the common name *Angelyn*. Although the term

angel may be traced to Greek, Lamarck mentioned *Angelyn* as a Brazilian Portuguese term. The initial speculation on the etymology of the name *Angelyn* was that it probably alludes to a tree's form and height. However, Michael J. Hopkins (INPA, pers. comm. to KNG) asserted that *Angelyn* was derived from Malayalam/Tamil/Sanskrit.

Sanskrit/Tamil/Malayalam: Offering to divinity with two hands joined creating a basin/bowl (or cavity) simulating the shape of a boat. In Kerala, the common name *Anjali* or *Anjili* refers to *Artocarpus hirsutus* Lam. (Moraceae). The wood of *Andira hirsutus* has been extensively used in making boats. Portuguese, who were in Kerala, assigned the same common name to *Andira* in Brazil.

Ephedra L. (Ephedraceae).

The species occur in deserts and arid regions and are occasionally found in wet areas. The plant's unique characters include small, decussate or whorled, ephemeral leaves on photosynthetic stems and branches, vessels for water and mineral transport (an anatomical character of most Angiosperms), and the presence of ephedrine and other alkaloids. *Casuarina* L. (Angiosperm), *Ephedra* (Gymnosperm), *Equisetum* L. (Pteridophyte), and *Polygonum* L. (Angiosperm) have, in common, jointed branches and/or stems.

Perhaps, for the above reason, for what is currently

We thank Carl Lenhart (Retired, Latin and Greek Teacher, Boston) for providing the translated text from Giovanni Battista Ferrari's work, Robert Rice for his analysis and critical remarks on the etymology of *Anthriscus*, Anthony R. Brach (A, GH) for helpful suggestions on the text, and Avishek Bhattacharjee (CAL) and Sanjay Kumar (CAL) for providing the photographs used in this report.

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known as *Ephedra*, Bauhin (1623: 15) used the name *Polygonum* (as *Polygonum bacciferum maritimum minus*), whereas Woods (1944: 95, 96, 118) assigned the common name “horse tail” to *Ephedra*, *Equisetum* and *Hippuris* L. In Greek, the common name for *Ephedra* is “horse tail.” The green shoots of *Hippuris* look similar to those of *Ephedra*. An analysis on the etymology of *Ephedra* is given below.

One of the literal meanings of *Ephedra* is “sitting upon;” *epi*, upon, and *hedros*, seat (c.f., Sanskrit *Api*, also, besides; and *sad*, sit; *sidati*, sits; and *niddah*, resting place, nest) [see Online Etymology Dictionary]. It is a puzzle about the plant “sitting/resting on something”. In ancient times, the name *Ephedra* seems to have been applied to an unknown epiphyte or parasite; if so, the literal meaning is justified (Smith in Rees, 1809: 290).

Linnaeus (1751: 185), however, gave the etymology as: *Ephedra Aqua* ὕδωρ, and *prasu* ἐπὶ. This can be slightly elaborated as follows: *Aqua* = ὕδωρ = hydor: water; *prasu* ἐπὶ: *epi*- = upon; *prasu* = leek green, tender grass, shoot, mare, etc.

Ephedra is a desert plant, whereas Linnaeus mentioned *aqua* for habitat! This was a puzzle. Linnaeus also mentioned “*prasu* ἐπὶ,” and this is another puzzle about linking “green shoot” with the word ‘upon.’ Linnaeus treated two species, and neither were in a wet place (one is marine & the other is in Siberia). It is likely that Linnaeus mistook the aquatic habitat of similar looking *Equisetum* and/or *Hippuris* and misapplied the same habitat to *Ephedra*. Peter Raven (MBG, pers. comm.) agreed about the error of Linnaeus, and asserted that Linnaeus most likely did not see *Ephedra* in its habitat and misapplied the habitat of similar looking *Equisetum* to *Ephedra*.

The acceptable etymology is: Greek *epi*, upon, and *hydor*, water, probably alluding to habitat of similar looking green shoots of *Equisetum* and/or *Hippuris*, misapplied to *Ephedra*.

Citrus L. (Rutaceae)

About 600 years ago, “oranges” were commonly known as “Chinese apples” (cf. the phrase “comparing oranges and apples”!). As mentioned before, Linnaeus (1751: 174) listed *Citrus* as of obscure Greek origin. Scora (1975: 369-375), however, provided detailed information on the history and origin of *Citrus*, and a portion of his text is quoted below in three paragraphs.

“The oldest known reference to *Citrus* appears in the Sanskrit literature. In the Vajasaneyi Samhita, a collection of devotional texts dated prior to 800 B.C., and which is part of the Brahmin sacred book called the White Yahir-veda, the name applied to *citron* and *lemon* is *Jambhila*.”

“The *citron* (*Citrus medica* L.) was sanctified in India, and consecrated to...Ganesh, God of knowledge and wisdom. The Buddhist art of Java features the treasure god Kuvera (aka Kubera) holding a *citron* in his hands.”

“Once this fruit was dispersed over the hellenistic Near East, it became an important part of the Jewish feast of Tabernacles, which was originally based upon Canaanite manhood rites. Through the Jewish communities, the fruit was traded over the entire Mediterranean region. Its sanctity, pleasant odor, good appearance, and relative imperishability

suited for prolonged travel made the citron the forerunner of all *Citrus* to reach the West and the first citrus fruit to come to the attention of Europeans. From the records of Alexander’s scientific staff accompanying his Macedonian army into Persia, Theophrastus, in about 310 B.C., described the citron as the apple from the lands of the Medes. The fruit was also described in Latin by Virgil, Dioscorides and Plinius.”

Linnaeus (1751: 189) referred *Citrus* to *Kitros* Dioscorides. Therefore, the derivation of the name is evident, but the allusion is uncertain. Linnaeus (1754: 341) attributed “*Citreum*” to Tournefort (1700: 620). Tournefort, in turn, attributed “*Citreum*” to the work *Hesperides*, authored by Giovanni Battista Ferrari (1646: 41–2). A translation of the relevant portions of the text from pages 41–42, kindly provided by Carl Lenhart, is quoted below in five paragraphs.

“Lusitania (Portugal) echoes Greece, which proclaims in a common vocabulary trees and fruit-trees having thorns. But the Athenians (as their ancestor is Horus) from a place, which they do not name, think the name refers to a fruit-tree. I am of the opinion that this is a city, which was called *Kixus* or *Citrus*, a secondary city, by the formerly well-celebrated Thessalonican Episcopate. And perhaps as the town Cerasus got its name from *ceracis* (cherry trees), so the land of *Citrus* got its name from *malis citreis*, the *citrus-apple* trees. In other respects, *Isidorus* affirms that the tree itself, the *kedromelon* (= *kitrion*, the *citron-tree*) is called the *citriam* (*citron-tree* or *citrus-tree*) by the Latins: because the *cedrum* (cedar tree) imitates it with its fragrance.”

“If you follow Jannis Goropius Becanus, that man will steer you first to the Arabs and Africans, and to the other *cedrum* (cedar tree), as celebrated for its resin as well as its wood, either people more accurately calling the cedar resin itself in their own local languages as *chitran* or (as he says similarly) *chatran*: from which he affirms that the fruit-bearing *citrum* has been designated with a similar appellation.”

“Then he will lead you to his own people, the Cimbri, among whom he ingeniously devised falsely the Aboriginal gushing/babbling of all their tongues. He would announce that the ancestor of our universal mortality, the very head of the human family, Adam, was not said to be a Hebrew name, but a Cimbri name; and clearly, he would place the land of the Cimbri in Mesopotamia. Therefore, he thinks *citrum* is called that because it will defraud with distinguished honor large drinking vessels. While with one’s thirst quenched by his own very cold juice/liquor, he does not finish the same among those who are parched or given to drink, if mortals should be lacking the *citrus-apple tree* (*malo citreo*)” (Ferrari, 1646: 41).



FIGURE 1. **A**, Kanchi N. Gandhi interacting with Shri Bhupender Yadav (on the podium, not shown in the photograph) and Sadhana Babbar, S. B. Babbar, G. K. Dhingra, R. K. Gupta, S. S. Hameed, P. J. Matthews, C. A. Pendry, B. Prasad, P. K. Pusalkar, V. Ranjan, D. K. Singh, Harish Singh, Paramjith Singh, V. Sampath Kumar, M. Sanjappa, M. F. Watson, J. Yesilyurt, et al. seen in the back rows; **B**, Gandhi honored (L–R): S. S. Dash, A. A. Mao, Gandhi, and Nameeta Prasad.

"For in Cimbrian speech *Chit* signifies a large drinking vessel or jug. The form *eer* is trustworthy, but the form *hoon* sounds like a deception. So that, from these three members of this word, the name *Chiteerhoon* is connected together. And with the benefit of syncope (omission of letters) *citron* or *citrum* (is created), by means of his own position (office, authority) without a doubt deceiving with the term "large drinking vessel." But (and I shall speak rather more equally than that of the man praising his country during a time of peace) the suggestion of the force and strength of the name *citreus*, (praelo = spoken before?) as coming from a Cimbrian etymology, flows much too awkwardly and too forcefully."

"For who does not know, from even that the coldness of citrus trees is total (?), that the ardor of the intoxicated drinker is imperishable, who with drinking vessels as large as you can imagine does not cheat or defraud, his honor (office, position, authority) drying up in the process? Why do we not rejoice over the felicitous interpretation of this same name found among our several regions, an interpretation not long searched for but obvious? Let us deduce *citrum* from *citra*, an adverb of place: and let us proclaim that its own name comes from *citro* precisely because Palladij (Palladio?) caused this tree, (its origin) for a long time across the sea, to be brought here to us, having been tried to do so rather often, by the intense efforts of earlier people. And (the tree) accepted hospitably into a very skillful culture, widely propagated in a woodland setting throughout the orchards of Italy. Palladij (Palladio?) brought this tree to us." (Ferrari, 1646: 42)

For the etymology, from the above text, "...the *kedromelon* (= *kitrion*, the citron-tree) is called the *citriam* (citron-tree or citrus-tree) by the Latins: because the *cedrum* (cedar tree) imitates it with its fragrance" may be acceptable.

Greek *kitros* is an ancient name possibly alluding to fragrance, as in *cedrum*.

Anthriscus Pers. (Apiaceae)

Persoon (1805: 320) derived *Anthriscus* from the species name *Scandix anthriscus* L. (Linnaeus 1753: 257), the type species of the genus name, but he did not provide an etymology. For his *S.* "*Anthriscus*," Linnaeus indicated that the epithet is a noun but did not provide a reference for the epithet.

Pliny ([ca. AD 77] 1856: 349, 423) seems to be the only classical Latin source. He mentioned *anthriscum* twice (book 21, chapter 52, and book 22, chapter 38) as shown below in quoted translated text.

"The other plants that are commonly eaten in Egypt are the *chondrylla* ... the *anthriscum* ..." (book 21, chapter 52, p. 349); and "The

anthriscum would be exactly the same plant as the *scandix*, if its leaves were somewhat thinner and more odoriferous. Its principal virtue is that it reinvigorates the body when exhausted by sexual excesses, and acts as a stimulant upon the enfeebled powers of old age. It arrests leucorrhœa in females" (book 22, chapter 38, p. 423)

For *Scandix australis* L., the southern chervil, Lewis and Short (1879) mentioned "*anthriscus*, i, f., or -um, i, n., = *ἀνθρίσκον*." However, Robert Rice (pers. comm. to KNG), Vice-President of the Passiflora Society International, disagreed with Lewis and Short and remarked that, "There certainly does not seem to be a Greek form *ἀνθρίσκον*." According to Rice, Pliny did not mention *anthriscum*, and whatever he wrote was unfamiliar to the later scribes, so *anthriscum* was likely a mistake of the scribes. Rice added that "although the reading *enthryscum* (as given in the Oxford Latin Dictionary) is now generally accepted, we have variant readings such as *Enthyrisum*, *Inthyrisum*, *Entriscum* and *Anthriscum*; in addition, as its appearance in the accusative opens up to an uninformed reader the possibility that the nominative may be *Anthriscus* or the like." Rice provided the following additional remarks:

"1. *Enthyrisum* (Pliny) (N) = *Scandix australis*, chervil, following Theophrastus *ἐνθρίσκον*, spelt by other classical authors (Sappho and Cratinus the comic playwright) *ἀνθρίσκον*; in Pherecrates, another playwright, it is ambiguous due to crasis with a preceding καί, giving *καὶ ἀνθρίσκον*, which could conceal either a leading *ἀ* or an *ἐ*. But in all cases, it is spelt with an *ύ* and not an *ί*, except in the late secondary sources Hesychius the lexicographer (C5AD), who instances *ἀνθρίσκιον*, and the grammarian Pollux (C2AD), *ἀνθρίσκος*. Only in the last case is it masculine, elsewhere always neuter. Not found in Dioscorides."

"2. *ἀνθέρικος* (Theophrastus) (M) = *Anthriscum* (Pliny) = the epigeal part of an asphodel; i.e., its flowering stem or scape (as opposed to *ἀσφόδελος* = the hypogeal portion, also used for the entire plant). Pliny gave the name in Greek correctly, but Bauhin (1651: 70, 83) gave its Latin name as *Antriscus* or *Anthriscus*, whereas Linnaeus (1753: 240, 257) used *Anthriscus* as an epithet (i.e., *Scandix "Anthriscus"* and *Tordylium "Anthriscus"*), which has not been found anywhere in classical Latin."

"As before, this could derive from a failure to understand that both contexts in Pliny required it to be in the accusative, viz. *anthricum*. In this case Lewis and Short correctly give it as *Anthericus*."

"3. *ἀνθέριξ* gen. -ικος (Homer, Hesiod etc.) (M) = awn/barb/beard of an ear of corn; the ear itself; also = *ἀνθέρικος*."

“4. ἀθήρ, -έρος (Hesiod onwards) (M) = awn, barb, spike.”

“So, what can we say about etymology? It looks as if there are 2 strands, which are hard to disentangle, and in any case may themselves be related:

a) ἀθήρ with the core concept of spike

b) ἄνθος = flower”

“What we do *not* have is the idea of a bare stalk, still less a hollow one. The stem of most asphodels is terete, not hollow.

The “hollow stem” or at least “stem” theory can be traced in the first instance back to Klaas Dijkstra’s website:

<https://wilde-planten.nl/fluitenkruid.htm>

Google Translation: “Fluitenkruid [Dutch for Cow parsley] owes its name to the fact that whistles can be made from the stem. To make a flute, a hollow cow parsley pipe with a closed knot at the bottom must be cut lengthwise about halfway. *Anthriscus* comes from Greek. In ancient Greek, *Anthriskon* was the name for

an umbrella flower unknown to us. The name has been passed on to this genus and is said to be related to *antherix* (culm). *Sylvestris* means growing in the forest.”

Rice remarked that that the first two sentences in the above translation are explaining the etymology of the Dutch common name, not the botanical name. It is emphasized here that, in summary, we do not know the allusion of the genus name. In this regard, Rice’s remark is quoted below.

“One may find this [unknown allusion] disappointing, but at a certain point, one has to stop etymologizing: one cannot always chop words into pieces and say one piece means x and another y, hence the combined meaning; all one can say is that there is such-and-such a Greek or Latin word, which appears to have a Greek, Latin, Indo-European, etc., root meaning Z, cf., e.g., Sanskrit.”

Finally, an acceptable etymology is given below as:

Greek *Anthriskon*, and Latin *Anthriscum* or *Anthriscus*, ancient names for southern chervil, *A. cerefolium*.

LITERATURE CITED

- BAUHIN, C. 1623. *Pinax theatri botanici*. Ludovici Regis, Basileæ.
<https://bibdigital.rjb.csic.es/viewer/10754/?offset=#page=1&viewer=picture&o=bookmark&n=0&q=>
- BAUHIN, J. 1651. *Historia plantarum universalis* III. L. A Graffenried, Ebroduni.
<https://www.biodiversitylibrary.org/item/247285#page/296/mode/1up>
<https://www.biodiversitylibrary.org/item/247285#page/309/mode/1up>
- FERRARI, G. B. 1646. *Hesperides Sive de Malorum Avreorum Cultura et Vsu* [libri] 4. Hermann Scheus, Romae.
<https://bibdigital.rjb.csic.es/viewer/13874/?offset=#page=2&viewer=picture&o=bookmark&n=0&q=>
- LEWIS, C. T. AND C. SHORT. 1879. *A Latin Dictionary*. Clarendon Press, Oxford.
<https://www.perseus.tufts.edu/hopper/text?doc=Perseus:text:1999.04.0059:entry=anthriscus&highlight=anthriscus>
- LINNAEUS, C. 1751. *Philosophia botanica*. Apud Godofr. Kiescwetter, Stockholmiae.
<https://www.biodiversitylibrary.org/item/84231#page/7/mode/1up>
- . 1753. *Species Plantarum* 1. Impensis Laurentii Salvii, Holmiae [Stockholm].
- . 1754. *Genera Plantarum*. Impensis Laurentii Salvii, Holmiae [Stockholm].
- ONLINE ETYMOLOGY DICTIONARY.
<https://www.etymonline.com/word/ephedra>
- PERSOON, C. H. 1805. *Synopsis plantarum, seu enchiridium botanicum* {Pars} 1. Carol. Frid. Cramerum, Parisiis lutetiorum et J.G. Cottam, Tubingae.
<https://www.biodiversitylibrary.org/item/11125#page/4/mode/1up>
- PLINY THE ELDER. [completed by AD 77] 1856. *The Natural History of Pliny IV* [Translated by John Bostock and H. T. Riley]. Henry G. Bohn, London.
<https://www.biodiversitylibrary.org/item/74021#page/7/mode/1up>
- REES, A. 1809. *The Cyclopædia; or, Universal Dictionary of Arts, Sciences, and Literature* 13. Printed for Longman, Hurst, Rees, Orme, & Brown, London.
<https://www.biodiversitylibrary.org/item/119391#page/298/mode/1up>
- SCORA, R. W. 1975. Symposium on the Biochemical Systematics, Genetics and Origin of Cultivated Plants: IX. On the history and origin of citrus. *Bull. Torr. Bot. Club* 102: 369–375.
- TOURNEFORT, J. P. 1700. *Institutiones Rei herbariae* I. Typographia regia. Parisiis.
<https://www.biodiversitylibrary.org/item/14433#page/1/mode/1up>
- TURLAND, N. J., J. H. WIERSEMA, F. R. BARRIE, W. GREUTER, D. L. HAWKSWORTH, P. S. HERENDEEN, S. KNAPP, W.-H. KUSBER, D.-Z. LI, K. MARHOLD, T. W. MAY, J. MCNEILL, A. M. MONRO, J. PRADO, M. J. PRICE, AND G. F. SMITH. 2018. *International Code of Nomenclature for Algae, Fungi and Plants* (Shenzhen Code). Vol. 159. *Regnum Vegetabile*. Koeltz Scientific Books, Königstein.
- WOODS, R. S. 1944. *The naturalist’s lexicon: a list of classical Greek and Latin words used, or suitable for use, in biological nomenclature, with abridged English-classical supplement*. Abbey Garden Press, Pasadena.