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Name Changes for Some American Gesneriaceae in Cultivation

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The publication of chromosome numbers for several species of cultivated Gesneriaceae (subfamily Gesnerioideae) furnished the immediate occasion for the proposed transfers of names of some of these species (see Baileya 18(3): 118-120. Autumn 1971).** A few of the species treated here are currently also used by several amateurs and growers in hybridization experiments; a reclassification of these species reflecting our present knowledge of these taxa and their relationship one to another appears advisable.

A number of genera of the Gesnerioideae are currently the subject of a revision which started with a reevaluation of the taxonomic characters useful in this subfamily and a new classification of its tribes (Wiehler 1972). Revisions of the genera represented here, Alloplectus Martius, Drymonia Martius, Gloxinia L'Héritier, and Nematanthus Schrader, are in progress. Realignment of these and other genera, which involves the transfer of some species from one genus to another, is based (1) on new information gathered in the field, (2) on observation of and experimentation with living material in the greenhouse, (3) on laboratory work, and (4) on study of a wide range of accumulated herbarium material not available to previous workers in this plant group. The approaches include studies of pollination biology, plant morphology and anatomy, cytogenetics and hybridization, and plant geography. The result will be, hopefully, a better overview than previously possible, of the taxa occurring in this tropical and thus poorly understood subfamily.

One factor stands out among the rest in these taxonomic considerations. It may be seen that in all of the seven species proposed for transfer below, the shape of the flower is de-emphasized as a

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**[The present article was originally intended for publication simultaneously with the author's article on chromosome numbers referred to here, so that the new nomenclatural combinations in the latter article would be validly published when used. Through inadvertence on the part of the editor, the article on chromosome numbers was published separately and ahead of schedule.–Ed.]

generic character in favor of a biologically oriented interpretation of the flower's adaptation to modes of pollination. Hybridization experiments in this plant family have shown that species with different flower shapes and colors may be closely related (Clayberg 1968, 1970; Wiehler 1970, 1972). Field observations on pollination have begun to substantiate the hypothesis that closely related plant species may have quite different types of flowers because they have different types of pollinators – but not all species with the same flower shape within a given family are necessarily closely related. They are merely adapted to the same type of pollinator.

While the reasons for the proposed name changes will be found in detail in the revision of the genera concerned, a brief outline of the rationale justifying each transfer is given here. It is suggested that two species (nos. 1 and 2, below) be transferred from Hypocyrta Martius to Alloplectus. These two species were placed in Hypocyrta because of the distinctive shape of the corolla, which has a pouch below the entrance. This "Hypocyrta pouch" has until now been considered the trademark or main character of this genus. It must be realized, however, that this corolla pouch also occurs in other tribes of the Gesnerioideae. It is found, for instance, in more than 12 species of the section Gasteranthus (Bentham) Fritsch of the genus Besleria Linnaeus (tribe Beslerieae Bartling & Wendland); Besleria leucostoma (Hooker) Hanstein was first described under Hypocyrta on account of its corolla pouch. In Pearcea hypocyrtiflora (Hooker) Regel of the tribe Gloxinieae Fritsch, the specific epithet stresses the shape of the corolla. The distinctive "Hypocyrta pouch" is found again in genera of the same tribe as Hypocyrta, in taxa not closely related to this genus: in the tribe Episcieae Endlicher a pouched corolla occurs in seven species of Drymonia, in at least three species of Columnea Linnaeus, and in five or more species of Alloplectus, including the common A. ichthyoderma Hanstein, which has a range of distribution from Costa Rica to Venezuela and Peru. Thus the corolla pouch in the Gesneriaceae is not restricted to the genus Hypocyrta. Some field evidence exists suggesting that these pouch flowers are hummingbird-pollinated (Wiehler, unpublished data). The revised Nematanthus-Hypocyrta complex (it is purposed to unite these two genera under Nematanthus) has a chromosome number of n = 8, distinct in the Gesnerioideae. This complex of about 15 species is furthermore geographically restricted to southeastern Brazil, to an area within a radius of about 800 km from São Paulo. No species of the revised genus Alloplectus (n = 9) has been reported from this region. Alloplectus, with about 60 species, has its center of distribution in the Andes of Colombia and Ecuador. Alloplectus Nummularia (species no. 1, see list following) is found from southern Mexico to Costa Rica, and Alloplectus Teuscheri (species no. 2) is native to Ecuador. Both have a chromosome number of n = 9 (see Baileya 18 (3): 119).

Hybrids within the Nematanthus-Hypocyrta complex are comparatively easily obtained; they are either completely or at least partially fertile. All attempts to produce hybrids between species of this complex and A. Teuscheri have failed. The lamina in leaves of the revised genus Nematanthus does not exceed the dimensions of 10 × 6 cm, and exhibits various degrees of succulency, possessing an adaxial hypodermis of several layers of cells serving as water-storage tissue. The leaves of the revised genus Alloplectus do not have a hypodermis; they are typically thin and papyraceous, and often quite large. A hypodermis is absent in A. Nummularia and in A. Teuscheri.

Concerning the transfer of species nos. 3, 4, and 5 from Alloplectus to Drymonia: the revised genus Drymonia should not be characterized by the shape of the corolla and the size of the calyx lobes, but by its very distinct anthers, which are unique in the Gesneriaceae. A good illustration and description of these anthers can be found in a paper by Moore (1955), who recognized the importance of these organs in characterizing Drymonia. They differ from the shorter and oval anther cells with longitudinal dehiscence exhibited by Alloplectus. With over 95 species, Drymonia thus becomes a very natural genus of woody lianas (with a few species of terrestrial shrubs with either succulent or suffrutescent stems). Alloplectus in its new delimitation becomes a genus of suffrutescent shrubs, with a few scandent epiphytic species having comparatively thin stems. About 15 species which have been considered members of Alloplectus, including all species of the section Macrochlamys (Decaisne) Dalla Torre & Harms, will need to be transferred to Drymonia.

Species no. 6 is closely related to Gloxinia gymnostoma Grisebach (see Baileya 18 (3): 119), with which it forms completely fertile hybrids (Wiehler, unpublished data; also for all hybridization data mentioned below). Both species come from the same Andean area of northwestern Argentina, south of Bolivia. Gloxinia gymnostoma forms partially fertile hybrids (with 79% pollen stainability with Gloxinia perennis (Linnaeus) Fritsch, the type species of the genus. Hybrids of G. gymnostoma or G. nematanthodes with species of the related genera Kohleria Regel and Heppiella Regel are sterile. The revised genus Gloxinia, which will also include Seemannia Regel, may be characterized by scaly rhizomes which often produce long threadlike runners, a ring-shaped nectary (reduced and nonfunctional in Gloxinia perennis and other species), a stomatomorphic stigma, an elongate seed capsule, and a chromosome number of n = 13. The cell contours of the undersurface of the leaf blade of the species of the revised genus Gloxinia differ markedly from those found in the genera Kohleria, Heppiella, and Monopyle Bentham (cf. Wiehler 1970). The evolution of this genus of varying corolla shapes is intimately connected with its different types of pollinators, among

them Euglossine bees and hummingbirds (Wiehler, unpublished data).

Species no. 7, Nematanthus hirtellus, is native to southeastern Brazil, has a chromosome number of n = 8, hybridizes readily with species and hybrids of the Nematanthus-Hypocyrta complex (five combinations have been produced to date*), but not with species of Alloplectus, including A. Teuscheri. The corolla of N. hirtellus does not show the pouch typical of Hypocyrta nor the wide entrance characteristic of Nematanthus (in the strict sense). Several species of this complex, however, have an intermediate corolla shape, and the corolla of N. hirtellus is, in shape, not unlike that of Hypocyrta Selloana Klotzsch & Hanstein. The leaves of N. hirtellus possess the layer of hypodermis typical for the Nematanthus-Hypocyrta complex. Nematanthus hirtellus was the lectotype of the conserved genus Alloplectus, a choice already questioned by Stearn (1969). In a later paper, the designation of Alloplectus hispidus (H.B.K.) Martius as the new lectotype will be proposed.

1. Alloplectus Nummularia (Hanstein) Wiehler, comb. nov.
   Basionym: Hypocyrta Nummularia Hanstein, Linnaea 34: 381. 1865.
   Heterotypic synonym: Episcia truncicola T. S. Brandegee, University of California Publications in Botany 6(4): 64. 1914.

2. Alloplectus Teuscheri (Raymond) Wiehler, comb. nov.
   Basionym: Hypocyrta Teuscheri Raymond, Botaniska Notiser 113(3): 260. 1960.

3. Drymonia macrantha (Donnell Smith) Wiehler, comb. nov.
   Basionym: Alloplectus macranthus Donnell Smith, Botanical Gazette 31: 117. 1901.
   Heterotypic synonyms: Alloplectus tucurriquensis Donnell Smith, Botanical Gazette 54: 238. 1912; Episcia Purpusii (Brandegee) Brandegee, University of California Publications in Botany 6(8): 194. 1915, not Solenophora Purpusii Brandegee, University of California Publications in Botany 6(4): 65. 1914.

4. Drymonia oinochrophylla (Donnell Smith) Wiehler, comb. nov.
   Basionym: Alloplectus oinochrophyllus Donnell Smith, Botanical Gazette 54: 239. 1912.
   Heterotypic synonym: Alloplectus guatemalensis Morton, Contributions from the United States National Herbarium 29 (1):37. 1944.

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*Two of these hybrids flowered for the first time in April, 1972. The cross between Hypocyrta perianthomega (Vellozo) Tenore and N. hirtellus showed 98% pollen stainability, and a cross between N. hirtellus and the completely fertile hybrid of H. Selloana × N. Fritschii Hoehne [Editor's note:—The latter is now, correctly, N. Mattosianus (O. Handro) H. E. Moore; see pages 138-144] produced 94% stainable pollen.

5. Drymonia strigosa (Oersted) Wiehler, comb. nov.
   Basionym: Saccoplectus strigosus Oersted, Centralamericas Gesneriaceer p. 44. 1858.
   Homotypic synonym: Alloplectus strigosus (Oersted) Hanstein, Linnaea 34:374. 1865.

6. Gloxinia nematanthodes (O. Kuntze) Wiehler, nom. nov.
   Basionym: Fritschiantha nematanthodes O. Kuntze, Revisio Generum Plantarum 3 (3): 241. 1898.
   Homotypic synonym: Seemannia nematanthodes (O. Kuntze) K. Schumann, Just's Jahresbericht 26 (1): 386. 1898.
   Heterotypic synonym: Achimenes gracilis Britton, Bulletin, Torrey Botanical Club 27: 27. 1900.

7. Nematanthus hirtellus (Schott) Wiehler, comb. nov.
   Basionym: Besleria hirtella Schott, Medicinische Jahrbücher 6 (2): 94. (= p. 66). 1820.
   Homotypic synonyms: Crantzia hirtella (Schott) Fritsch, Beiblatt zu den Botanischen Jahrbüchern 65: 8. 1900; Alloplectus hirtellus (Schott) Preston ex Hoehne, Sellowia 9: 45. 1958; cf. Preston in Chittendon, RHS Dictionary of Gardening 1: 79. 1951.
   Heterotypic synonyms: Alloplectus sparsiflorus Martius, Nova Genera et Species Plantarum 3: 55, t. 223, fig. 1. 1829; Alloplectus parviflorus [in error for sparsiflorus] Hanstein, Linnaea 34: 377. 1865; Crantzia parviflora Fritsch in Engler & Prantl, Natürliche Pflanzenfamilien 4 (3b): 168. 1894; Hypocyrta discolor Lindley, Botanical Register 31, Misc. 19. 1845; Alloplectus dichrous Hooker, Botanical Magazine 72: t. 4216. 1846, not A. dichrous De Candolle, Prodromus 7: 546. 1839.

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