ON THE SYSTEMATIC POSITION OF THE AUSTRALIAN NELSONIAS AND THUNBERGIAS AND OF THE RUELLIA SPECIES WHICH BY DOMIN WERE REFERRED TO APORUELLIA CLARKE

BY

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I. On Robert Brown's Nelsonia species

Robert Brown, who in his "Prodromus Florae Novae Hollandiae" (I: 480. 1810) founded the genus *Nelsonia*, described in the latter two species, viz. *N. campestris* and *N. rotundifolia*. Sprengel (Syst. Veg. I: 42. 1815) transferred Lamarck's *Justicia canescens* to this genus, and Necs raised in De Candolle's "Prodromus Systematis Naturalis Regni Vegetabilis" the number of species to five, of which two were based on specimens collected in South America. Bentham, however, recognized in his "Flora Australiensis" but one species which he described as "a common tropical weed in Asia and Africa, and already abundant in several parts of tropical America." In my "Revision of the Malaysian Nelsonieae (Scrophulariaceae)" in Reinwardtia 3: 247. 1955 I criticised Bentham's conclusion, remarking "Whether this species may be called a "common" tropical weed seems doubtful, as it is completely absent in the Malay Archipelago. Its absence in this part of the tropics raises the question whether the Australian specimens really are conspecific with those found in the western part of the area." Two years later I could examine some specimens preserved in the Rijksherbarium at Leiden which had been collected by Dr. Van Royen near Merauke in New Guinea. With regard to these specimens I made the following remark (Nova Guinea, new ser. 8: 131. 1957): "It can, however, hardly be doubted that Van Royen's specimens are specifically distinct from those collected in the Malay Peninsula, the only ones which I could study in detail. They differ from the latter inter alia in the much smaller size of the leaves and the absence of capitate hairs on the calyx." I refrained nevertheless from describing these specimens as a new species because "so long the exact position of such plants as *Justicia canescens* Lam., *Nelsonia campestris* R.Br. and *N. rotundifolia* R.Br. has not been determined, it seems better to refrain from describing new species (cf. Bremekamp in Reinwardtia 3: 246–249. 1955)."

Among the material which I received last year from the State Herbarium of South Australia were six specimens of *Nelsonia*, of which four (Australia s.l., coll. ign. s.n.; Queensland, near Doomadgee Mission, R. A. Perry 1381, 6.6.1948; Northern Territory, Arnhem Land Aboriginal Reserve, South Bay, Bickerton Island in Gulf of Carpentaria, 13° 45′ S, 136° 6′ E, R. L. Specht 615, 19.6.1948; Northern Territory, Arnhem Land Aboriginal Reserve, Port Bradshaw, 12° 27′ S, 136° 42′ E, id. 777, 26.7.1948) could be identified with *N. campestris* R.Br., one (Northern Territory, Arnhem Land Aboriginal Reserve, Gove, 12° 15′ S, 136° 45′ E, id. 953, 22.8.1948) looked very much like the latter and was provisionally referred to it, whereas another one (Australia s.l., coll. ign. s.n.) represented doubtless an undescribed species, but as the locality where it was collected, was unknown, and as the material, moreover, was not very good, I left it unnamed.

The Australian plants which could be identified with *N. campestris* R.Br., doubtless come very near to the specimens collected by Van Royen in New Guinea. From the specimens collected in Thailand and in the Malay Peninsula which were described in my "Revision of the Malaysian Nelsonieae", they differ in the much smaller size of the leaves, the nearly complete absence of a petiole, the inconspicuousness of the capitate hairs on the bracts (they are very short and entirely hidden under the long ecapitate hairs), the sessile flowers, the total absence of capitate hairs on the calyx, the rather long lateral calyx lobes, the greater length of the corolla tube and the subactinomorphous limb of the corolla. It can therefore no longer be doubted that they are specifically distinct from the latter. However, whether the specimens collected in Asia, Africa and America may all be referred to *N. canescens* (Lam.) Sprengl. remains doubtful; as I have studied so far only specimens of Thailand and the Malay Peninsula in some detail, I am unable to decide this question. However, in view of the fact that the genus *Nelsonia* is entirely unknown in the area between the Malay Peninsula and New Guinea, it looks to me very unlikely that Bentham's contention according to which it is "already abundant in several parts of tropical America", with which he evidently meant to say that it is introduced in that part of the world, would be correct. So far as I know, there are no indications that it has become more widely spread in tropical America in the hundred years which have elapsed since Bentham made this remark. The genus doubtless deserves a more thorough study.

II. On the Australian Thunbergia species

In my paper on "The Thunbergia Species of the Malesian Area" (in Verh. Kon. Nederl. Akad. v. Wetensch., Afd. Natuurk. 2nd Series Vol. **50**, no 4, 1–90, 1955) I noted at the end of my description of *Th. hastata* Decne (l.c., p. 81): "*Th. arnhemica* F. Muell., Fragm. Phytogr. Austr. **9**: 73, was reduced by Clarke to *Th. hastata* or, as he called it, *Th. fragrans*

var. *hastata*, but it differs from the true *Th. hastata* in the longer petioles and pedicels, the narrower calyx lobes, the slightly shorter tube and throat of the corolla and the length of the style, the stigma being but 1 mm exserted. It is doubtless a good species." Other differences are found in the somewhat larger size of the bracteoles, in the mucronate instead of bidenticulate anthers and in the presence of short, nearly equal spurs at the base of the thecae. Although Clarke made a serious mistake in reducing *Th. hastata* to the state of a variety of the totally different *Th. fragrans*, a species which is confined to the Indian Peninsula and Ceylon, he at any rate recognized that *Th. arnhemica* can not be reduced to the true *Th. fragrans*. The failure of the Australian botanists who succeeded Ferd. von Müller, to see the difference between the *Thunbergia* specimens collected in Australia and the true *Th. fragrans* of India and Ceylon, has led to a curious mistake. In BAILEY's "Queensland Flora" (IV: 1141. 1901) we find the remark that *Th. fragrans* "has become naturalized in many parts of the colony, especially in the tropics". This contention is entirely unfounded. In the paper quoted above I said (p. 14): "The subgenus *Adelphia* is represented in cultivation by two species, viz. *Th. laevis* Nees and *Th. fragrans* Roxb. *Th. laevis* is in botanical gardens more often met with than *Th. fragrans*, and has more often escaped from cultivation, but neither of them seems to have moved far from the place where it was originally grown." In the area dealt with in that paper *Th. fragrans* was recorded only from one place, viz. from Zambales on the island of Luzon in the Philippines, whereas the nearly related *Th. laevis*, which has often been confused with *Th. fragrans*, was recorded only from a few localities in the near vicinity of Singapore. That a plant species like *Th. fragrans*, which so rarely escapes from cultivation, should have "become naturalized in many parts of Australia", looks therefore most improbable, and so far I have seen no Australian specimens which could possibly be referred to that species. Among the specimens from North Australia which I received for reidentification from the State Herbarium of South Australia, Adelaide, one was named "*Th. fragrans* Roxb.?", a second "*Th.* aff. *Th. fragrans*" and a third "*Th. tomentosa* Wall. ex Nees".) The first was apparently *Th. arnhemica* Ferd. v. Muell., whereas the two other ones belonged either to the same species or else to an undescribed species which comes very near to the latter. In the size and shape of the leaves there are in all three slight deviations from the original description. The latter says of the leaves that they are "breviter petiolatis, ovatis", and the petioles are said to be "semipollicem raro excedentes", whereas in two of the three specimens the leaves are ovate-lanceolate and rather long petiolate, the petioles being 1.2–4.0 cm long, whereas in the third they measure 1.2–2.7 cm. However, as the leaves of the *Thunbergia* species vary, as a rule, very considerably in their shape and in the length of their petioles, not too much weight should be attached to these differences. A far more important character, which was

mentioned already by von Müller, is the presence of short, nearly equal spurs at the base of the thecae. This is a character which so far was found by me only in one other species of the subgenus *Adelphia*, viz. in *Th. thespesiifolia* Brem., a species occurring in Soemba (Sandelwood Island), one of the islands to the north of the Timor Sea. This species is a near ally of the above mentioned *Th. hastata* Decne, which occurs in the islands Timor and Wetar; in *Th. hastata*, however, the thecae are not spurred. In the three specimens mentioned above no seeds were present, but in the paper quoted above I noted (p. 25) that in the subgenus *Adelphia* the flat ventral side of the seed is "in the species found in the western part of the area (Ceylon, India, Indo-China and South China, the Malay Peninsula, Sumatra, Banca, Borneo and Palawan) smooth or nearly so, in the species occurring in the rest of the area (Java, Celebes, the Philippines, the Moluccas, the Lesser Sunda Islands, New Guinea and Tropical Australia) more or less distinctly ribbed or carunculate."

Whether the three specimens which I received from the State Herbarium of South Australia, may all be referred to *Th. arnhemica* F. v. Müll. is, as stated above, not fully certain. As the material is not entirely satisfactory, this question is difficult to decide, but they are doubtless very nearly allied to each other and to that species. F. von Müller described a second species from North Australia, viz. *Th. powelli*, but as I have as yet seen no specimens which could be referred to that species, I am unable to express an opinion on it.

III. On the Australian Ruelliinae which by Domin were referred to Aporuellia Clarke

In my "Remarks on the position of some Australian Acanthaceae" (Acta Bot. Neerl. **11**: 195–200, 1962) I stated (p. 195): "Of the *Ruelliinae* occurring in Australia the nearly allied *Ruellia acaulis* R.Br., *R. australis* Cavan. and *R. pumilio* R.Br. will have to be removed, as indicated in the work quoted above (Bremekamp and Nannenga-Bremekamp, A preliminary survey of the Ruelliinae of the Malay Archipelago and New Guinea, in Verh. Kon. Ned. Akad. v. Wetensch., Afd. Natuurk., 2nd Sect. **45**, no 2, 1948) to a genus of their own, which seems to be confined to Australia, whereas the position of *R. spiciflora* F. v. Müll. has not yet been settled. The classification of the remaining species offers no difficulties; it appears that they can all be included in *Dipteracanthus* Nees emend. Brem."

The four species mentioned by name in the preceding paragraph were included by Domin (Bibliotheca Botanica **39**: 1156–1157, 1939) in the genus *Aporuellia* Clarke, but as Bremekamp and Nannenga-Bremekamp have pointed out in the work quoted above (p. 7), "the genus *Aporuellia* can not be maintained, as the type species has been shown to belong to *Dipteracanthus*." They could show, however, that some of the other species which Clarke had included in his new genus, were but distantly related

to the type species, and formed a natural group for which they created a new genus *Pararuellia*. The Australian species which Domin l.c. had referred to *Aporuellia*, proved to differ in important points from those which since then were removed to *Pararuellia* and can therefore not be included in the latter. Their flowers are not arranged in terminal spikes, but either axillary or combined in axillary cymes, and their pollen grains are not provided with three equatorial pores like those of *Pararuellia*, but sparsiporous like those found in *Dipteracanthus*. From the latter the Australian species differ in the small size of the bracteoles, the cylindrical form of the capsule and by the fact that the whole surface of the seed is covered by mucous hairs. In these characters they resemble the genera *Ruellia* and *Pararuellia*. Because of these differences it seems indicated to refer them to a genus of their own, for which I propose the name *Brunoniella*. This genus may be defined as follows:

Brunoniella Brem. nov. gen. *Ruelliinarum* capsula estipitata, seminibus ubique pilis mucosis vestitis cum *Ruellia* L. emend. Brem. et *Pararuellia* Brem. congruens, corollae tubo faucibus multo breviore et granulis pollinis et sparsiporis et tuberculatis ab eis recedens, a *Pararuellia* etiam floribus aut axillaribus aut in cymas axillares dispositis diversum, granulis pollinis sparsiporis ad *Dipteracanthum* Nees emend. Brem. accedens, ab eo capsula estipitata, bracteolis angustis et calyce brevioribus, seminibus ubique pilis mucosis vestitis faciliter distinguendum.

Plantae herbaceae, plerumque ramosiores, radicibus fusiformibus instructae. Folia petiolata, opposita inaequalia, margine integra vel repando-denticulata. Flores axillares vel in cymas axillares tri- vel plurifloras dispositi. Bracteolae angustae, calyce breviores. Calyx aequaliter 5-partitus. Corollae tubus faucibus multo brevior; fauces infundibuliformes; lobi rotundati subpatentes. Stamina basi faucium inserta, inclusa, subdidynamia; filamenta glabra; antherae lineari-oblongae, basi incisae. Granula pollinis globosa, sparsipora, minutissime tuberculata. Staminodium impar nullum. Discus annularis vix conspicuus. Ovarium utroque locula ovulis circ. 6; stylus glaber; stigmatis lobus posticus rudimentarius, anticus oblongus. Capsula cylindrica, estipitata, utroque loculo seminibus circ. 6; retinacula hamata validiora, apice integra. Semina lenticularia, margine non incrassata, ubique pilis mucosis vestita.

Distributum speciebus adhuc notis 4 in Australia.

Species typica *Brunoniella acaulis* (R.Br.) Brem. nov. comb., *Ruellia acaulis* R.Br. in Prodr. Fl. Nov. Holl.: 479. 1810.

Species aliae: *Brunoniella pumilio* (R.Br.) Brem. nov. comb., *Ruellia pumilio* R.Br. l.c.; *Brunoniella australis* (Cav.) Brem. nov. comb., *Ruellia australis* Cav., Ic. 6: 62–1801; *Brunoniella spiciflora* (F. v. Müll. ex Bth.) Brem. nov. comb., *Ruellia spiciflora* F. v. Müll. ex Bth., Fl. Austral. 4: 547. 1869.

The last-mentioned species differs in its habit rather conspicuously from the three other ones. It is a plant with comparatively (up to 30 cm)

high shoots and with flowers arranged in spiciform cymes, but in its other characters it seems to come very near to the type species and its two nearest allies. The seeds, however, could not yet be studied.

SUMMARY

The reduction of *Nelsonia campestris* R.Br. to *N. canescens* (Lam.) Sprengl. was not justified; *N. campestris* is a species confined to Australia or, perhaps, to Australia and New Guinea; arguments are adduced against Bentham's view that *N. campestris* would be a common tropical weed. *Thunbergia arnhemica* F. v. Müll. was erroneously sunk in *Th. fragrans* Roxb.; the latter is confined to India and Ceylon and *Th. arnhemica* to Australia. *Ruellia acaulis* R.Br., *R. australis* Cav., *R. pumilio* R.Br. and *R. spiciflora* F. v. Müll. ex Bth. are transferred to a new genus *Brunoniella*, which is confined to Australia.