

TAXONOMIC AND NOMENCLATURAL NOTES ON THE GENUS
WAHLENBERGIA IN AUSTRALIA.

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Synopsis.

A statement of nomenclatural changes made necessary by the provisions of the International Code of Botanical Nomenclature and typification of some other species. *W. stricta* Sweet must replace *W. trichogyna* Stearn and *W. consimilis* Lothian. A new name (*W. communis*, sp. nov.) is provided to replace the misapplied or invalid name *W. bicolor* Lothian, and one species (*W. graniticola*) is described as new.

The genus *Wahlenbergia* is a critical one in Australia from both the biological and nomenclatural aspects. The author has been examining the variation within it for some time, but these researches will take some years to complete. There are, however, some nomenclatural changes which are necessary and at least one, clearly marked, new species. These are reported below. References to Articles of the International Botanical Code of Nomenclature are to the 1961 edition.

1. *W. STRICTA* Sweet, *Hort. Brit.*, ed. 2, 593 (1830).

Absolute Synonyms: *Campanula gracilis* (var.) β *stricta* R.Br., *Prodr.*, 561 (1810); Roem. et Schult., *Syst. Nat.*, 5: 97 (1819); *W. gracilis* (var.) β *stricta* (R.Br.) A.DC., *Monogr. Camp.*, 142 (1830) et *Prodr.*, 7: 432 (1839); *Campanula erecta* Sweet, *Hort. Brit.*, ed. 2, 326 (1830); *W. bicolor* Lothian in *PROC. LINN. SOC. N.S.W.*, 71: 230 (1947).

Taxonomic Synonyms (but see discussion): *W. consimilis* Lothian in *PROC. LINN. SOC. N.S.W.*, 71: 223 (1947); Melville in *Bot. Mag.*, 172 t. 343 (1959); *W. vinciflora* (Vent.) Decne. f. *ericalyx* Domin in *Bibl. Bot.*, 89: 638 (1929); *W. trichogyna* W. T. Stearn in *Gard. Chron.*, 130: 169 (1951); Robertson in Black, *Fl. S. Austr.*, ed 2, 4: 810 (1957); *W. marginata* var. *grandiflora* Tuyn in *Fl. Males.*, Ser. I, 6: 118 (1960) nom. invalid., pro parte; *W. marginata* var. *grandiflora* sub-var. *trichogyna* (Stearn) Tuyn, loc. cit.

Misapplied illegitimate names: *Campanula vinciflora* Vent., *Jard. Malm.* t. 12 (1803) (as "*vincaeflora*") \equiv *W. vinciflora* (Vent.) Decne., *Rev. Hort.*, 3: 41 (1849); Black in *Trans. Roy. Soc. S. Austr.*, 58: 183 (1934); Domin in *Bibl. Bot.*, 89: 638 (1929); N. E. Brown in *Gard. Chron.*, 54: 355 (1913) pro parte (as "*vincaeflora*"); Lothian in *PROC. LINN. SOC. N.S.W.*, 71: 220 (1947) (as "*vincaeflora*") \equiv *Campanula gracilis* (var.) α *vinciflora* (Vent.) R.Br., *Prodr.*, 561 (1810) pro parte (as "*vincaeflora*") \equiv *W. gracilis* var. *vinciflora* (Vent.) Hook. f., *Fl. Tasm.*, 1: 239 (1856) pro parte (as "*vincaeflora*").

Typification: *W. stricta* Sweet—holotype—an illustration with dissections, Smith, *Exotic Botany*, t. 45 (1805); this is also the holotype of *Campanula erecta* Sweet. Smith's plate and description are labelled "*C. gracilis* Forst.", not "*C. stricta*" as Sweet says; the specific epithet '*stricta*' was not used at any time, in a published form, by Smith in this connection; it thus dates from Sweet. There is no doubt from Smith's plate and description that he was dealing with the species at present under discussion, despite his equating it with *W. gracilis*. It has not been possible to trace the original specimen used for the plate, but material in Smith's herbarium (LINN) collected by White and labelled by Smith as *W. gracilis* shows that his conception of *W. gracilis* was erroneous; this material also belongs to the species at present under discussion.

It is clear that Sweet recognized Smith's identification to be wrong and that he was supplying a name for this new species when he named it *C. erecta*, which therefore cannot be regarded as a superfluous name; the citation of "*C. stricta* Sm. non L." is either a mistake or the citation of a name conveyed to him personally; the citation of Smith's plate is quite clear. In the addendum Sweet transfers this species to *Wahlenbergia* as *W. stricta* with full citation; the addendum runs on continuously from the main part of the book, there is no difference in date and it was issued at the same time; therefore neither specific epithet has priority over the other. *W. stricta* is the earliest legitimate name available. The epithet "*erecta*" is not now available in *Wahlenbergia* as it is preoccupied by *W. erecta* (Roth ex Roem. et Schult.) Tuyn in *Fl. Males.*, Ser. I, 6: 113 (1960).

Campanula vinciflora Vent. As Stearn (*loc. cit.*) has pointed out this name was superfluous when first published as it included, as a synonym, *C. gracilis* Forst. f., Art. 63. Under Art. 7, note 4, its type is that of *C. gracilis*. It is therefore illegitimate, but has frequently been misapplied to this species. The spelling "*vinciflora*" should be adopted under Rec. 73G (d) and Art. 73, note 2.

W. consimilis Lothian—lectotype—Warby Ranges, N.E. Victoria, N. Lothian, 20th Sept. 1942 (MEL). The punctuation in the original citation makes it impossible to decide whether this or "Aust. Felix, F. Muell., Dec. 1848" was intended as the type. The former specimen is actually marked "Type" (although not in Lothian's handwriting) and it agrees fairly well with the description. It is therefore taken as the lectotype. The description seems to indicate that elements of *W. graniticola* may have been included, notably the type has no collar on the style at all, still less "two prominent collars. . . ."

W. bicolor Lothian. There seems little doubt that Lothian intended this to replace *C. gracilis* β *stricta* R.Br. He writes "Although originally described as *Campanula gracilis* var. *stricta* R.Br. . . ." indicating this, as does his inclusion of this variety, without further comment under synonymy. Therefore, it must be based upon the same type. Lothian's "lectotype" of his new species has little bearing here, since it should have been chosen from material referred to by Brown, Art. 7, note 3, i.e., material from Port Jackson, not from Port Phillip, the locality of the so-called "lectotype". On the other hand, it could be accepted that Lothian is providing a new name for R. Brown's specimens, which are not conspecific with the plate cited by Brown and not in complete agreement with his description. Lothian's "lectotype" might then be taken as a type of a newly described taxon. This would leave the epithet invalid, since there is no Latin description accompanying it and no reference to a previous valid Latin description (Art. 36).

The most satisfactory type for *C. gracilis* β *stricta* R.Br. seems to be the holotype of *W. stricta* Sweet. *W. bicolor* Lothian can be interpreted as a synonym of *C. gracilis stricta* R.Br. and therefore of *W. stricta* Sweet or, rather less plausibly, as an invalid name based on Brown's misidentifications. The former argument is accepted here (see also the typification of *C. gracilis* β *stricta* R.Br. and under *W. communis*, n. sp.).

W. trichogyna W. T. Stearn—holotype—New South Wales, Ingleburn, F. M. Hilton, No. 448 (MEL).

C. gracilis (var.) β *stricta* R.Br.—lectotype—the plate Smith, *Exotic Botany*, t. 45 (1805). It is clear that Brown intended to base his variety primarily on Smith's plate, misidentified as *W. gracilis*; the citation of the unpublished epithet "*C. stricta*" for this plate indicates that this was so. The short description agrees better with the plate than with the Port Jackson specimens also cited by Brown. The plate then is the type. The specimens referred by Brown to this variety, moreover, are not conspecific with the plate; they are misidentifications of specimens of *W. communis*. Brown referred some of these specimens to the manuscript name "*W. bicolor*". This bears no relationship whatsoever to *W. bicolor* Lothian (see above), the "lectotype" of which latter was labelled "*W. gracilis* a" (i.e., a *vinciflora* R.Br.) by Brown.

W. vinciflora f. *ericalyx* Domin—holotype—In silvis permixtis apud flumen Logan River in arenosis, III, 1910, Domin no. 8739 (PR): isotype 8738 (PR). These appear to be the same collection. No number is cited by Domin.

W. marginata var. *grandiflora* Tuyn. The author of this variety includes both *W. consimilis* Lothian and *W. gloriosa* Lothian as synonyms. No specimens are cited and neither of the synonyms is clearly indicated as the type of the new variety, which must therefore be rejected as invalid (Arts. 33, 37). The two species in question are quite distinct.

DISCUSSION: This species has had a very chequered nomenclatural history. It is fairly widespread in open forest communities throughout the south and eastern temperate areas of Australia, but not in very dry conditions, probably also in Western Australia in similar communities, extending into Tasmania and New Zealand. Lothian separated the specimens with hirsute capsules as "*W. vincaeflora*" and those with glabrous capsules as *W. consimilis*. No other character difference is consistently correlated with the glabrous capsule and both capsule forms have frequently been found growing side by side. There seems no justification for separating them at the specific level. The type of *W. stricta* shows a hirsute capsule.

2. *W. BILLARDIERI* Lothian in PROC. LINN. SOC. N.S.W., 71: 226 (1947).

Absolute Synonyms: *Campanula littoralis* Labill., *Nov. Holl. Pl. Sp.*, 49, t. 70 (1805); Poir., *Encycl. Meth.*, Suppl. 2: 56 (1811) \equiv *C. gracilis* (var.) γ *littoralis* (Labill.) R.Br., *Prodr.*, 561 (1810) \equiv *W. gracilis* (var.) γ *littoralis* (Labill.), A.DC., *Monogr. Camp.*, 142 (1830) et *Prodr.*, 7: 433 (1839) \equiv *W. vinciflora* (Vent.) Decne. var. *littoralis* (Labill.) N. E. Brown in *Gard. Chron.*, 54: 355 (1913) \equiv *W. marginata* (Thunb.) A.DC. var. *littoralis* (Labill.) Hochr. in *Candollea*, 5: 29 (1934) (non *W. littoralis* Schlechter et Brehmer in *Bot. Jahrb.*, 53: 127 (1915)).

Typification: *Campanula littoralis* Labill.—lectotype—Nouvelle Hollande, Herb. Labillardière ex Herb. M. E. Moricand (GEN). There is little doubt that Labillardière's original collection contained two distinct elements, both of which appear to have been used in drawing up his diagnosis. Thus the description states that a thickened style is present, whilst the plate shows no such character. Moreover, the majority of Labillardière's specimens examined have scattered leaves whilst the plate and description show them as being opposite. Both elements are represented on sheets at Geneva. Two of these sheets have "Hb. Delessert" labels and are apparently specimens of the *W. multicaulis* Benth. group of species which have a distinct styler swelling. This element is also represented at BM, P, & FI. A third, donated by the executor of Herb. M. E. Moricand in 1908, and clearly labelled "Herb. Labillardière", corresponds very well with the original plate.

W. billardieri Lothian was intended as a transfer of *C. littoralis* to *Wahlenbergia*. The specific epithet "littoralis" was not available and a new one was provided. It is quite clear that Lothian intended *W. billardieri* as nomenclatorially equivalent to *C. littoralis* Labill. Despite this, nowhere does he consider authentic type material. Instead, he considers a Gaudichaud collection at Geneva, which is irrelevant to the typification. As this is inadequate he selects a neotype from amongst Robert Brown's material. This neotype must be rejected as Labillardière's material is extant.

DISCUSSION: This species, in fact, may prove not to be distinct from *W. stricta*. The typification was so involved, however, that this discussion has been included here.

3. *W. COMMUNIS*, sp. nov.

Plantae multicaules erectae plerumque ad basin ramosissimae. Folia alterna vel opposita, plerumque linearia, non undulata. Sepala linearia vel lineari-deltaidea, acuta. Corolla coerulea externe interdum plus minusve aurea, campanulata vel fere cylindrica. Stamina filamenta trapezi-formia, humeris acutis. Stylus haud vel obscure constrictus, glandulas 6-9 ferens, 3-fidus. Fructus elongato-obconicus vel subglobularis, glabratus.

Taxonomic Synonyms: *Campanula gracilis* (var.) δ *capillaris* R.Br., Prodr., 561 (1810) \equiv *W. gracilis* (var.) δ *capillaris* (R.Br.) A.DC., Monogr. Camp., 142 (1830) et Prodr., 7: 433 (1839); Hook. f., Fl. N. Zeal., 1: 159 (1852) et Handbook N. Zeal. Fl., 170 (1864); *W. multicaulis* var. *dispar* N. E. Brown in Gard. Chron., 14: 338 (1913).

Misapplied Names: *C. gracilis* Forst. f. (var.) β *stricta* (non R.Br.) R.Br., Prodr., 561 (1810); *W. gracilis* (Forst. f.) DC. (var.) β *stricta* (non (R.Br.) A.DC.) A.DC., Monogr. Camp., 142 (1830) et Prodr., 7: 433 (1839); *W. gracilis* (var.) *a vinciflora* (non (Vent.) R.Br.) R.Br., Prodr., 561 (1810) nom. illegit., pro parte; *W. multicaulis* (non Benth.) N. E. Brown in Gard. Chron., 14: 337 (1913) pro parte; *W. bicolor* (non Lothian) Lothian in Proc. Linn. Soc. N.S.W., 71: 230 (1947); Robertson in Black, Fl. S. Austr., 4: 810 (1957).

Perennial herbs with thick fleshy tap-roots and frequently erect white rhizomes. *Stems* numerous, erect, usually much branching at or near the base, glabrous or with scattered stiff scabrous white hairs, basally terete or ridged by the decurrent leaf margins 20–40 cm. tall, 2 mm. wide (or less) at the base. *Leaves* scattered, or opposite, linear or rarely narrow-lanceolate, 10–35 mm. long, 2–3 (4) mm. wide, acute or \pm obtuse, scarcely tapering towards the base and usually quite sessile, glabrous or with stiff scattered white hairs: margins often thickened and cartilaginous, remotely callous-dentate, not usually undulate, flat or \pm recurved. *Flowers* arranged in irregular loose cymes on elongated glabrous naked pedicels, the lower ones subtended by linear bracts c. 10 mm. long or shorter. *Sepals* 5, rarely more, linear to linear-deltoid, 4–6 mm. long, c. 0.5 mm. wide, acute, glabrous. *Corolla* blue, sometimes \pm golden-yellow outside, narrow-campanulate to almost cylindrical; tube 5–8 mm. long, 4–6 mm. wide in the throat; lobes 5 (very rarely more) narrow to broad-elliptic or ovate, 6–8 mm. long, 3–5 mm. wide, generally acute, as long as or longer than the tube, \pm ascending. *Stamens* 5: filaments trapezial with acute shoulders, ciliate on upper margins, c. 1.5 mm. long with an awn about equally as long: anthers oblong, 3–4 mm. long: pollen white or pale yellow. *Ovary* 3-locular; style unconstricted or with an indistinct constriction low down, pubescent in the upper two-thirds with 6 or 9 glands, 9 mm. long: stigmatic branches 3, \pm flat, 2–3 mm. long. *Fruit* elongate-obconic, 3–10 mm. long, 3–4 mm. wide, glabrous, prominently ribbed and crowned by the persistent sepals with a valvular cone c. 1 mm. high: valves 3, suborbicular, obtuse, \pm exserted. *Seeds* oblong to ellipsoidal, c. 1 mm. long, pale-brown or yellow, shining, smooth.

Typification: *W. communis* sp. nov.—holotype—Glen Innes N.S.W., On roadsides—disturbed soils in pastoral country. R. Carolin No. 2095, 1.1961. (NSW).

C. gracilis (var.) δ *capillaris* R.Br.—lectotype—"New South Wales; Botany Bay, Bustard Bay, Bay of Inlets"—Banks and Solander (BM). R. Brown does not indicate by 'v.v.' or 'v.s.' whether he observed this taxon alive or preserved. There are no specimens of R. Brown's at BM labelled as 'var. δ ' or 'capillaris' except this lectotype which is labelled "*Campanula juncea*" and "*C. gracilis* Forst. capillaris" in a hand which is not Brown's. This specimen also bears a "TYPE" label, probably affixed by N. E. Brown. It seems likely that R. Brown drew upon this specimen for his description, with which it more or less agrees. It is a specimen of *W. communis* with \pm globular fruits.

Campanula capillaris Lodd., Bot. Cab., 15: 1406 (1828), was published in a nurseryman's catalogue and neither the illustration nor inadequate description is such that the original plant can be identified. There is no reference to any previously published epithet, specific or varietal. It has not been possible to trace any material appertaining to this description. Indeed, the description is scarcely one at all, but was intended as a guide to gardeners who wanted to grow the particular plants supplied by Loddiges' nursery, not as a diagnosis. The illustration is at variance with the description. The binomial is herewith treated as a *nomen nudum* and therefore invalid.

W. multicaulis var. *dispar* N. E. Brown—lectotype—Fraser Range, W.A., R. Helms, Elder Exploring Expedition, 29.10.1891. No specimens are cited in the original description, but there are three specimens at Kew labelled "TYPE" by N. E. Brown.

One, Guildford and Claremont near Perth (W.A.) Ex. Herb. Cecil Andrews, 1st Coll. No. 591, does not agree with the type description and is, in fact, a specimen of the *W. multicaulis* group. The other two agree very well. *W. multicaulis* is distinct from the species at present under discussion in having a more open campanulate to sub-rotate corolla and a style which is definitely constricted just below the stigmatic lobes; in fact, it is closely related to, if not conspecific with, *W. tadgellii* Lothian.

DISCUSSION: Apparently a very widespread species in open forest and grass land communities which is extremely variable. It may be possible to recognize intra-specific taxa eventually. Specimens of it have usually been referred to *W. bicolor* Lothian, but this name is a synonym of *W. stricta* Sweet, q.v.

4. *W. GRANITICOLA*, sp. nov.

Caules pauci stricti vel ascendentes ad basin hirsuti pilis albis. Folia alterna sessilia ad basin plus minusve attenuata. Flores solitarii vel pauci. Sepala anguste deltoidea, 2.5–5 mm. longa. Corolla campanulata late 6 mm. lata in fauci, lobis obovatis vel ellipticus 9–12 mm. longis. Stamina filamentis acuminatim trapezi-formibus. Stylus tumidus ad medium glandulas 6 vel 9 ferens. Lobi stigmatis 3. Fructus obconicus vel subglobularis glaber vel hispidus, conum valvularem brevissimum ferens.

Perennial herbs with thick fleshy roots. Stems usually few, erect or ascending, hirsute at least towards the base with stiff white hairs, ridged with the decurrent leaf margins, 20–50 cm. tall, 1–1.5 mm. wide at the base. Leaves alternate, linear to lanceolate, usually with scattered white hairs especially on the mid-rib, \pm acute; margin thickened, subcartilaginous, slightly recurved, remotely callous-dentate, often \pm undulate; lower leaves 1.5–5.0 cm. long, 3–9 mm. wide, \pm tapering towards the base but scarcely petiolate. Flowers solitary or few on each stem. Sepals 5, usually narrow-deltoid, 2.5–5 mm. long, up to 1 mm. wide, glabrous. Corolla blue, paler in the tube, spreading campanulate: tube 2–4 mm. long, c. 6 mm. wide in the throat, usually as long as or slightly longer than the sepals: lobes 5, obovate to elliptic, 9–12 mm. long, 5–8 mm. wide, \pm obtuse or with a short awn, c. 2 mm. wide and 2 mm. long and with short acute shoulders, ciliate: anthers oblong, c. 3 mm. long; pollen white. Ovary 3-locular: style 5–7 mm. long with a constriction about midway, pubescent from this point upwards, with 6 or 9 glands; stigmatic lobes 3, c. 1.5 mm. long. Fruit shortly obconic to subglobular, 4–7 mm. long, 3–4 mm. wide, glabrous or hispid, prominently ribbed and crowned by persistent sepals and with a very short valvular cone: valves 3, broad-deltoid, scarcely exerted. Seeds oblong, brown, smooth, shining.

Typification: Holotype—Lithgow to Mt. Victoria 6 miles, open forest on granite, R. Carolin No. W 106, 11.1956 (NSW).

DISCUSSION: The description which Lothian gives for *V. consimilis*, and specimens cited under that species, indicate that he included the present species within it. It differs, however, from *W. consimilis* (i.e., *W. stricta* Sweet, q.v.) in the wide-campanulate corolla, the broader corolla lobes, the swollen style and alternate leaves. It also resembles *W. tadgellii* Lothian, differing from it in the less rotate corolla, the much lower swelling of the style, and the filament shape. Its distribution, as known at present for certain, is the central and southern tablelands and western slopes of New South Wales from the Blue Mountains southwards to the Australian Capital Territory.

5. *W. FLUMINALIS* (J. M. Black) Wimmer ex Hj. Eichler in *Taxon*, 12: 297 (1963).

Absolute Synonym: *Cephalostigma fluminale* J. M. Black in *Trans. Roy. Soc. S. Austr.*, 58: 184 (1934); Robertson in Black, *Fl. S. Austr.*, ed. 2, 4: 809 (1957).

Typification: Holotype—Murray River, Capt. S. A. White, Dec. 1913 (AD).

DISCUSSION: Recently Tuyn (*Fl. Males.*, Ser. 1, 6 (1961)) has reduced the genera *Lightfootia* and *Cephalostigma* to *Wahlenbergia*. The first is not concerned in the present discussion. De Candolle first described *Cephalostigma* (1830) as having "La corolle divisée profondément en 5 lanières étroites comme dans *Lightfootia*. . . .

Le stigmaté est en tête." It has been indicated by most subsequent authors that the latter statement is incorrect due to De Candolle having examined the style, which is swollen at the top, before the stigmatic lobes had separated.

The species at present under discussion shows little in common with *Cephalostigma* as defined by De Candolle and subsequent South African authors. In particular the corolla-lobes do not widen towards the base, the filaments are not deltoid or 2-lobed, there is no strongly developed valvular-cone, and the habit is much less branched. The only character held in common is the swollen upper part of the style. Other species (e.g., *W. graniticola* and some forms of *W. communis*) show intermediate conditions between that of *W. fluminalis* and the unswollen style (e.g., *W. stricta*) both in position of the constriction and its prominence. Brehmer indicates that the same gradations exist in the South African species (*Bot. Jahrb.*, 53).

It seems clear, then, that the Australian species showing the "cephalostigmatous" styler form belong to *Wahlenbergia*. It also seems clear that they are not closely related to *Cephalostigma* in De Candolle's sense. Thus, whereas Tuyn may have been a little precipitate in combining these genera, his action has no relevance to the Australian species.

6. *W. GYMNOCLADA* Lothian in *PROC. LINN. SOC. N.S.W.*, 71: 227 (1947).

Typification: Holotype—Gorae West, near Portland, Victoria, C. Beaglehole. (MEL).

DISCUSSION: There is no doubt about the holotype, but the description supplied by Lothian is at variance with it in the particularly important character of styler shape. He writes: "... style simple, napiform", which can only be interpreted as meaning a swelling high on a style with unopened lobes ("cephalostigmatous") similar to the *W. multicaulis* group and *W. fluminalis*. The type shows an unswollen style. The description may have been constructed using elements of *W. tadgellii* Lothian. Lothian includes four varieties as synonyms. They are, in fact, misapplications of the names involved.

7. *W. GRACILIS* (Forst. f.) Schrad.

W. marginata (Thunb.) A.DC. var. *neocaledonica* Lothian in *PROC. LINN. SOC. N.S.W.*, 71: 214 (1947) (as "neo-caledonica").

Typification: Lectotype—*C. gracilis*—Forster GÖTT).

DISCUSSION: The type, at Kew, which Lothian cites, is derived from J. R. Forster's herbarium (Carolin, *PROC. LINN. SOC. N.S.W.*, 88). There is, in fact, no real evidence that this specimen was collected in New Caledonia. There appears to be no difference between this specimen and all the other Forster specimens of *W. gracilis* scattered throughout Europe (BM. K. GÖTT. KIEL) and they may all be part of the same gathering. It seems that Lothian based var. *neocaledonica* on an isotype of *W. gracilis* (Forst. f.) Schrad. The Göttingen specimen has usually been accepted as the type without having any real claim to first consideration (see Carolin, *PROC. LINN. SOC. N.S.W.*, 88); it is herewith taken as the lectotype. Lothian's confusion seems to have been complete as he cites the collection of W. Anderson, made in New Caledonia and housed in the British Museum, under both the "typical *W. gracilis*" (which he considers to be part of *W. marginata*) and *W. marginata* var. *neocaledonica*. The present author does not consider that *W. gracilis* (Forst. f.) DC. and *W. marginata* (Thunb.) are conspecific.

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