# THE GENUS LINOCIERA (OLEACEAE) IN NEW CALEDONIA *

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THE POSSIBILITY THAT THE GENUS *Linociera*, might occur in New Caledonia, first became apparent when type material of *Notelaea brachystachys* Schltr. was examined. This suspicion was later brought to certainty in the field, on the lower slopes of Mt. Ignambi, toward the northern end of New Caledonia, when two small oleaceous trees were found with the flowers and fruit of a *Linociera*. That the phytogeographic distribution of this genus should include New Caledonia is not unexpected, for, with many species in the East Indies and New Guinea, others are known from Australia, Lord Howe Island, Fiji and Niue Island.

Furthermore, there have been reasons for doubting the distinctness of the genus *Sarlina*, described from New Caledonia in 1951, and examination of the type material shows that it, too, is a *Linociera*, as are other species previously treated as *Notelaea* or *Osmanthus* and not accounted for in the relatively recent revision of *Osmanthus* from New Caledonia (Green, Jour. Arnold Arb. **43**: 268–283. 1963). Type material for all the Oleaceae described from New Caledonia has now been examined and I should like to express my gratitude to the directors and curators of the herbaria cited below, either for facilities to study their material or for its loan. All the material cited has been examined unless otherwise stated, and the respective herbaria are indicated by the abbreviations published in the *Index Herbariorum*, supplemented by those in Kent (*British Herbaria*, 1957).

**Linociera brachystachys** (Schltr.) P. S. Green, comb. nov.

*Notelaea brachystachys* Schlechter, Bot. Jahrb. **39**: 228. 1906; Guillaumin, Ann. Mus. Col. Marseille II. **9**: 191. 1911; Bull. Mus. Hist. Nat. Paris **28**: 199. 1922; Bull. Soc. Bot. France **89**: 232, 233. 1942, et Fl. Nouv.-Caléd. 283. 1948.

*Notelaea francii* Guillaumin, Bull. Mus. Hist. Nat. Paris **28**: 198. 1922; *ibid.* II. **10**: 520. 1938; *ibid.* **14**: 456. 1942; Bull. Soc. Bot. France **89**: 232, 233. 1942, et. Fl. Nouv.-Caléd. 283. 1948.

*Osmanthus brachystachys* (Schltr.) Knoblauch, Repert. Sp. Nov. **41**: 152. 1936.

*Osmanthus francii* (Guillaum.) Knoblauch, *loc. cit.*

*Sarlina cylindrocarpa* Guillaumin, Bull. Mus. Hist. Nat. Paris II. **23**: 539. 1951.

Evergreen *tree* 4–15 m. tall; branches glabrous. *Leaves* glabrous; petiole 10–25(–30) mm. long, glabrous; lamina thickish, slightly coriaceous,

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oblanceolate to broadly obovate, or more or less elliptic, (4.5–)7–14(–19) cm. long by (2.5–)3–5.5(–7) cm. broad; margin entire, scarcely thickened, more or less flat; apex obtuse (or acute) often almost rounded, sometimes very slightly and very shortly acuminate, tip blunt; base obtuse to acute, attenuate into the petiole; venation more or less obscure, except for slightly raised primary veins above and below, 6–8 per side. *Inflorescence* axillary, with or below the leaves, decussate, 1–3 cm. long, 7–13-flowered with a single terminal flower, pubescent, with somewhat flattened hairs; bracts broadly triangular, 1–1.5 mm. long, pubescent, deciduous. Flowers hermaphrodite, pale yellow, inodorous (?); pedicels 0.5–2 mm. long. *Calyx* 1–1.5 mm. long, pubescent, with somewhat flattened hairs, lobes 4, bluntly triangular, 0.5–0.75 mm. long, pubescent, especially toward the apex. *Corolla* thickish, lobes 4, joined in pairs by the filaments, 2–2.5 mm. long, strongly valvate, cucullate, enclosing the stamens in bud. *Stamens* 2, 1.5–2 mm. long; filament broad, 0.5 mm. long. *Ovary* 1.5 mm. long, more or less conical, tapering to style and stigma 0.5 mm. long, shallowly bifid; bilocular with four axile ovules. *Drupe* club-shaped, 4.2 cm. long, 2 cm. broad, obscurely ridged, mesocarp thick, fleshy, "rosé" (*Guillaumin & Baumann-Bodenheim 10424*), endocarp very hard, 1.5–2 mm. thick.

Bois des montagnes, Balade, 1861, *Vieillard 97* (P); humid forest, about 700 m. alt., Mt. Ignambi (about 10 km. south of Pouébo), 7 Dec. 1963, *Green 1764* (A); margin of humid montane forest, about 600 m. alt., Mt. Ignambi, 7 Dec. 1963, *Green 1798* (A); in den Wäldern der Berge bei Ou-Hinna, ca. 800 m. alt., 2 Jan. 1903, *Schlechter 15600* (isotypes: BM, E, K, LE, P, Z); forêt hygrophile sur schistes, 500 m. alt., Mé Aoui, 7 Feb. 1951, *Guillaumin & Baumann-Bodenheim 10270* (P); *ibid.*, *Guillaumin & Baumann-Bodenheim 10271* (P, not seen); *ibid.*, 8 Feb. 1951, *Guillaumin & Baumann-Bodenheim 10424* (A, P); Ourai, 31 Oct. 1876, 500 m. alt., *Lécard s.n.* (P); vallée de la Thi, 1951, *Sarlin 76* (holotype of *Sarlina cylindrocarpa*: P); forêt rocheuse, Prony, 15 Sept. 1914, *Franc 1867* (holotype of *Notelaea francii*: P; isotypes: A, BRI, K, P); *ibid.*, Dec. 1914, *Franc 1867a* (A, Z).

The divided corolla clearly distinguishes *Linociera* from *Osmanthus*, and its relatively massive fruit from both *Osmanthus* and *Notelaea*. The decussate inflorescence is common to all three genera, although in one or two places on the type material of *L. brachystachys* the inflorescence is slightly compound with three flowers borne where a single one is normally found (see the discussion under *L. paniculata* below).

Bud material was fixed in the field and flown to Dr. Barbara Briggs of the Royal Botanic Garden at Sydney, Australia, who examined it cytologically. I would like to take this opportunity to express my sincere gratitude to Dr. Briggs for her interest and willing help. Unfortunately, the material was not in proper condition for an accurate count but it was found that there were about 46 chromosomes in the somatic cells. This is close to a count of $2n = 46$ obtained by Dr. Briggs on material of *Linociera quadristaminea* (F. Muell.) Knobl. which I fixed on Lord Howe Island, and agrees with the number almost uniform throughout the whole subfamily *Oleoideae* (see Taylor, Brittonia 5: 363. 1945).

**Linociera paniculata** (Guillaum.) P. S. Green, comb. nov.

*Notelaea ? paniculata* Guillaumin, Bull. Soc. Bot. France **89**: 233. 1943, et Fl. Nouv.-Caléd. 283. 1948.

Evergreen *tree* 10 m. high, branches glabrous. *Leaves* glabrous; petioles 8–12 mm. long, glabrous; lamina thickish, elliptic-oblanceolate, (4.2–) 6–9 cm. long by (2–)2.5–3 cm. broad; margin entire, scarcely thickened, flat; apex acute, tip blunt; base acute, long attenuate into the petiole; venation obscure above, only primary veins visible, slightly raised below, 7–8 per side. *Inflorescence* axillary, paniculate-decussate (? abnormal), 3.5–4.5 cm. long with up to 50 flowers, glabrous; bracts triangular, acute, very small, early deciduous or absent, 0.2–0.5 mm. long. Flowers hermaphrodite, pedicels 1–2 mm. long. *Calyx* glabrous, 0.75–1 mm. long, with 4 very shallowly triangular, more or less rounded lobes 0.25–0.5 mm. long. *Corolla* thickish, lobes 4, joined in pairs by the filaments, 2.25–2.5 mm. long strongly valvate, cucullate, more or less enclosing the stamens. *Stamens* 2, 2–2.25 mm. long; filaments flat, broad, 0.5 mm. long and 0.5 mm. wide. *Ovary* 1.5 mm. long, broadly conical with barely discernable style and two small stigmatic lobes 0.2–0.3 mm. long. Fruit unknown.

Sommet du Nékou, au-dessus de Bourail, vers 600 m. alt., 3 Apr. 1862, *Balansa 1224* (holotype and isotype, P).

It is strongly suspected that the paniculate condition of the inflorescences on these specimens is abnormal. The tree from which the branches were taken was obviously stunted in growth and a pair of leaves on the isotype are fasciated at the base. Knoblauch, has determined the specimens as *Notelaea brachystachys* and it is interesting to note that a careful examination of the type of this latter species (*Schlechter 15600*) shows slight subsidiary branching of the inflorescence in one or two places, where three flowers are borne in the place of a normal single one. When more collecting has been done, and more material is available for study, this may possibly prove to be the correct disposition, and, were it not for the specimens mentioned immediately below, I would be inclined to agree with Knoblauch.

In 1950 three specimens were collected on Mt. Koniambo in central New Caledonia, which bear immature fruit and appear to belong to *Linociera* (sur serpentine, Mt. Koniambo, 21 Dec. 1950), *Guillaumin & Baumann-Bodenheim 9458, 9479, 9487* (A, Z). They appear to represent a different species from *L. brachystachys*, for the fruits, which are probably slightly immature, are shorter and broader in proportion (12–20 mm. long, 7–13 mm. broad), and the leaves are somewhat different (elliptic to slightly oblanceolate, (3.5–)5–8(–9) cm. long and (1–)2–2.5(–3) cm. broad, with the veins more obscure).

Another gathering which is difficult to place, with the limited material at present available, is one collected in the Loyalty Islands by Däniker (vereinzelt im Walde am Weg von Donkin nach Nathalo beobachtet, Lifou, 2 Nov. 1923) *Däniker 2366* (Z). Judging by the size and narrow-

ness of the leaves this may prove to be conspecific with the Guillaumin and Baumann-Bodenheim material from Mt. Koniambo but it may also be a small-leaved expression of *Linociera brachystachys*.

**Linociera** sp.

*Tree* 12 m.; branches glabrous. *Leaves* glabrous; petioles 4–5.5 cm. long, glabrous; lamina thickish, oblanceolate, 15– ca. 23 cm. long and 5–9 cm. broad; margin entire, scarcely thickened, more or less flat; apex ? acute; base acute, long attenuate into the petiole; venation raised and more or less reticulate towards the margins above and below, 10–11 primary veins per side. *Inflorescence* ? decussate, ? ca. 5 cm. long. Flowers unknown. *Drupe* asymmetrically ellipsoid, obscurely ridged, 4.7 cm. long and 2 cm. broad (? immature), with blunt apex.

Col d' Ignambi, above Oubatche, 900 m. alt., 1 Oct. 1956, *McKee 5379* (HLU).

This specimen, with its large leaves, bears a very close similarity to some of the species of *Linociera* from the East Indies and New Guinea. However, until at least the Asiatic members of this genus are revised, it is impossible to say whether it is different from all the previously described species. The material is inadequate for description as a new species. The opposite, exstipulate leaves, covered on both surfaces by small, sunken, peltate scales, and the type of fruit, all place the specimen in the Oleaceae. The type of fruit indicates *Linociera* and the size of the leaves and petioles distinguish it from *L. brachystachys*.

It is apparent that much collecting needs to be done in the more remote areas of New Caledonia. The flora in the northern part of the island and the mountainous hinterland is still inadequately known. It is to be hoped that future collectors will endeavor to obtain material from these relatively inaccessible areas at times of the year when they have not, as yet, been visited.

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