



Fig. 3. Cross section of thallus showing loose medulla with filaments, large inner cortical cells, and outer photosynthetic cortex (the dark layer with cells obscured by section thickness). Scale bar = 100µm. Microscope image from AK 378183, Mike Wilcox, 15 June 2019.



Fig. 4. Herbarium specimen AK 378182 from Orewa (MW 6249). Scale bar = 5 cm. Photo: Mike Wilcox, 15 June 2019.

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Two yellow-flowered garden plants: *Justicia aurea* (Acanthaceae) and *Reinwardtia indica* (Linaceae)

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I was impressed by the profuse winter-flowering of these two shrubs this year (Figs. 1, 2) and wondered whether it was because of the record hot summer we had just had. A sceptic would point out though that their native habitats are not alike: the *justicia* comes from the inland savannas of Brazil and the *reinwardtia* from the mountains of east Asia. Regardless, I do not want to board the climate-change bandwagon here; I just want to mention some features of their flowers.

Justicia aurea, the yellow, or Brazilian, plume flower, despite being colourful, easy to grow, and

not especially susceptible to frost, is rather uncommon in Auckland's gardens. There is little problem in determining its family, even from vegetative features alone: a lack of stipules, and opposite entire leaves marked by minute raised pale cystoliths (check the dead leaves) immediately suggest Acanthaceae (with Nyctaginaceae a not-so-near miss). Getting further is trickier; the family is a large one and its genera continue to be tinkered with. There is a feature of the *J. aurea* flower that might be more or less characteristic of the genus, though: the style lies appressed to the curved-over uppermost side of the corolla



Figs. 1 & 2: 1. *Justicia aurea*. Inflorescence 20 cm long. Cultivated, 13 Don Croot St, Kingsland, not vouchered. 2. *Reinwardtia indica*. Corolla 5 cm diam. Cultivated, 26 Tennyson St, Balmoral, not vouchered.

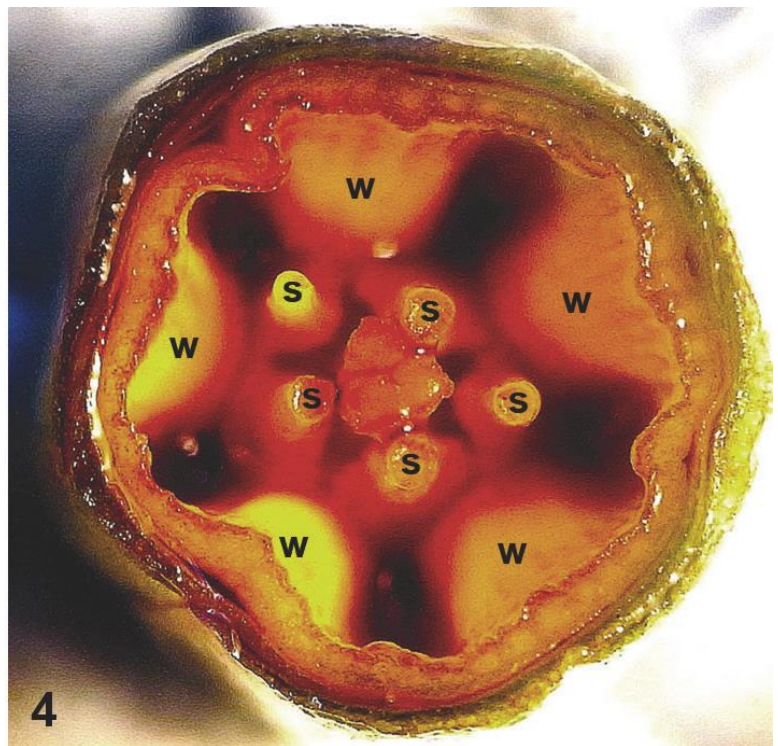
and is more or less covered and held in place there by two low ridges of tissue (Fig. 3).

Another unusual feature of the *J. aurea* flower is the presence of fleshy, triangular, backwards-directed flaps, in a row each side of the midline, just where the lip departs from the tubular lower half of the corolla (Fig. 3). The flaps appear not to produce scent or nectar but they might be involved in some aspect of pollination. This is probably performed by hummingbirds (all conditions) and butterflies (dry sunny weather).

The second shrub, *Reinwardtia indica*, is rare in our gardens, with the herbarium of the Auckland War Memorial Museum (AK) having only two specimens, one from the University and the other from Eastwoodhill Arboretum. It also grows in a Balmoral garden (obs. ROG 2019). Its identification was relatively difficult, e.g., it is listed in Sunset Magazine's *New Western Garden Book* (Brenzel 1995) but is not shown in any of its numerous colour photographs.

A position in Linaceae is shown especially by the superior ovary with its three partly conjoined styles (Fig. 4) and especially, by the five stamens each flanked by, and partly fused to, a pair of short, membranous staminodes. The petals are free from one another but form a broad tube by virtue of the five, firm and upright, broadly sheathing sepals. The petals have a swelling at their base on their adaxial side, the stamens similarly but abaxially. Possibly all are responsible for producing the nectar that accumulates between these two floral whorls. In its homeland, the principal agents of pollination seem likely to be butterflies.

Reinwardtia indica is the only member of its genus. (An extraordinary-sounding old name, *Linum cicanobum*, celebrates the plant's discovery in Nepal). It is distinguished from *Linum* by having only three styles and a capsule that splits into only six parts. It seems not to have been found as a serious weed anywhere in the world, but two collections made by Peter de Lange



Figs. 3 & 4: **3.** Flower of *Justicia aurea*, cut longitudinally and opened out. **Sc**, fleshy triangular scales at base of lip; **sh**, slender style held in its sheath (concealed except towards the base); **s**, stamen filaments. Scale bar 5 mm. Same plant as in Fig. 1. **4.** Flower bud of *Reinwardtia indica*, cut transversely just above top of ovary. The cut filaments of five stamens (**s**) surround the base of the three styles. The adaxial swelling (**w**) at the base of each of the five petals has been made more apparent by the addition of iodine solution to the bud's interior. Bud is 5 mm diam. Same plant as in Fig. 2.

from the Auckland University gardens in 2004 and 2006 (AK 297055 & 297916) do include self-sown seedlings.

The plant at the Balmoral garden is a solitary one, and at the time of writing (August) has made some amount of fruit.

Reference

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Red-gum trees (*Eucalyptus* spp., Myrtaceae) in Auckland

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This article examines three closely related eucalypt species, *Eucalyptus blakelyi*, *E. camaldulensis* and *E. tereticornis*. They are rather uncommon members of Auckland's "urban forest" (Gardner 1987, 1989; Wilcox 2012) but do provide some points of discussion with respect to the genus as a whole.

History

In *Eucalyptus* the character of the bark is critically important. The bark of *E. blakelyi* is thin (except

right at the ground) and falls off more or less annually in strips or flakes. The trunk then is a smooth one, patterned in shades of grey, olive and yellow. Such a tree is said to be 'gum-barked', but why?

The reason lies right back with James Cook, who coined the name 'gum tree' for the eucalypts he and his botanists, Banks and Solander, saw in 1770 on the east coast of Australia (Hawkesworth 1774,