

Some of the flowers on the bush that I'd seen the tui visit at Hukutaia had small holes near the base of the corolla tube. Petrie attributed similar corolla damage to bird visitors and indeed this was one of his reasons for suggesting bird pollination. However I'm not convinced that the examples I saw were caused by birds. Perhaps the holes were made by a nectar raider that removes nectar by "smash and grab" rather than using the front door; and in so doing avoids pollinating the flower. House sparrow and chaffinch are known to raid puriri flowers in this manner, and bumble bees take a similar short cut to the nectar of clover and broad bean flowers.

So the next time you see R. solandri look to see if the flowers are damaged, check for fruit set and stage of ripeness of any fruit, and then having earned a rest, spend a relaxed time quietly watching from a discreet distance!

### IS PITTOSPORUM FAIRCHILDII A TETRACOT?

Lynne Scott

Angiosperms (flowering plants with seeds contained in an ovary) can be further subdivided into monocotyledons and dicotyledons. Seeds of monocots (grasses, lilies &c) have one seed leaf or cotyledon. In contrast seeds of dicots (legumes, buttercups &c) have two cotyledons.

The function of the cotyledons is to supply food for seedling development. They can act as food storage organs and completely fill the seed. Examples of these cotyledonous seeds, among the native flora, are: Corynocarpus laevigatus, Sophora spp., Metrosideros spp., Leptospermum spp., Knightia excelsa. Conversely, they may be surrounded by the food of the endosperm which they absorb. Examples of these endospermic seeds are: Elaeocarpus dentatus, Elingamita johnsonii, Pennantia baylisiana and P. corymbosa, Entelea arborescens, Aristotelia serrata, Pittosporum spp. As the seedling develops the cotyledons may remain below the soil inside the seed coat, or leave it and become the first visible 'leaves' increasing in size and becoming green. The latter is the case with Pittosporum spp.

Some so-called dicots have one cotyledon and some three, or four or even five. This variation in number occurs occasionally among different species of the same genus. For example, several N.Z. pittosporums, P. crassifolium, P. tenuifolium, P. rigidum, P. anomalum, P. divaricatum, P. crassicaule and P. lineare have three to five cotyledons, while P. tobira from Asia and P. undulatum from Australia have the normal two (Stebbins 1974). I have made observations recently that could add another to the list.

P. fairchildii is a Three Kings Islands endemic growing on all four islands in the group. On West Island it grows in forest scrub on a steep cliff face, with two other endemics, Elingamita johnsonii and Brachyglottis repanda var. arborescens (Baylis 1956).

Seeds from a plant under cultivation in Birkenhead were sown in a petri dish on damp blotting paper in October 1981. Two germinated about six months later and were transferred to soil in pots. One seedling, A, was placed in a controlled environment greenhouse, receiving water and fertilizer regularly and the other, B, placed on a window sill. It was a few weeks before the cotyledons appeared. They were somewhat curled up and my first impression was that the seedlings were abnormal.

The cotyledons did not straighten out before dropping off when the seedling became well established.

As these observations are based on only two seeds I sought to extend them by determining how consistent is the character tetracotyledon. The ground under the cultivated tree was searched for seedlings but only one could be found and it had lost the cotyledons.

In February 1983 more seeds were collected. On dissection it was found that they contain hard endosperm in which the tiny embryo lies deeply embedded. I was unable, however, to determine if the embryo had four cotyledons. Seeds have been sown again and it is hoped they germinate, and it can be shown for certain that P. fairchildii can join the other New Zealand tetracots.

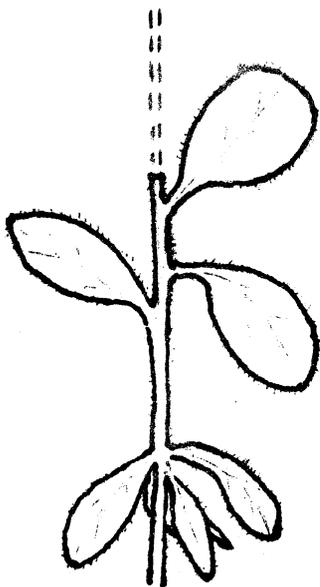
With thanks to Dr R.E. Beever for referring me to the Stebbins reference and to Mr and Mrs N. Gardner for the P. fairchildii seeds.

#### References

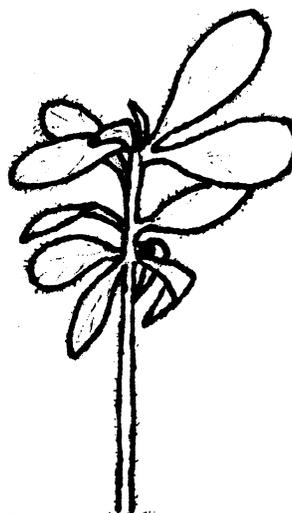
Baylis, G.T.I. 1956. A botanical survey of the small islands of the Three Kings group. Records of the Auckland Institute and Museum 5 (1-2): 1-12.

Stebbins, G.L. 1974. "Flowering Plants. Evolution Above the Species Level". Edward Arnold.

Footnote: Since writing the above I have spoken about the subject to G. Platt of Platts Native Plant Nursery. His observations are that not only P. fairchildii has four cotyledons, but also P. ralphii, P. virgatum and P. ellipticum, while P. eugenioides has the usual two.



A. Roughly nine inches high after 6 months under greenhouse conditions



B. Roughly three inches high after 6 months on a window sill.