Pseudopanax gilliesii is a very attractive garden plant. Mine keep pruned and shapely because of the numerous requests I have for cutting wood. The brief flowering time, mid-November, differs from that of P. lessonii, January and that of P. arboreus, August. Although there are many unifoliate leaves as well as some irregularly lobed the overall appearance is of trifoliate leaves. This is in contrast to raukawa, P. edgerleyi with its large shining unifoliate leaves on mature plants. The fresh green that brought it to our attention in Whangaroa strikes a pleasant note in my garden and my memory.

25 January 1984

FRUIT SET AND SEED GERMINATION OF RHABDOTHAMNUS SOLANDRI (GESNERIACEAE)

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Rhabdothamnus solandri, our sole indigenous member of the gesneriad family, in a familiar shrub in Auckland forests advertising its presence by its dainty orange and red flowers. As D. Petrie (TNZI, 35 321-3, 1903; 45 264,1913) concluded it is one of our few bird-pollinated plants. In ABS Newsletter, 38(2) 24-5, 1983 I described an experiment which demonstrated that active pollination is necessary to effect fruit set; flowers left to their own devices do not set. In Table 1 some more details of this experiment are given along with an estimate of the number of seeds formed per ovary. At the time of dehiscence the dry fruits contained a large number of plump seeds and also many relatively small collapsed seed-like structures which were presumably unfertilised ovules. The seeds escape through slit-like cracks in the fruit wall in the manner of pepper being shaken from a pepper-pot. Although rather less than half of the total number of ovules were fertilised, mean seed number per fruit still exceeded 100. These figures relate of course to fruits resulting from hand pollination and I suspect that natural pollination will not be quite as successful.

The seeds themselves are small measuring in mm 0.53 ± 0.03 x 0.31 ± 0.03 (length x breadth ± S.D. based on 10 seeds from a naturally pollinated specimen collected at Hukutaia Domain ex Little Barrier stock). I tested the germination of seed samples from 5 artificially pollinated fruits by sowing them on moist filter paper in petri dishes and incubated the plates in our porch, shaded from direct sunlight. The first seeds germinated about 30 days after sowing both from seeds sown within a few days of collection and, in one case, after being stored dry for 78 days after collection. The time course of germination of 2 fruits is illustrated in Fig. 1. Final germination for seed from 5 fruits was 71 ± 16% (mean ± S.D.)

Fig. 1 shows a selection of various stages of germination up to the cotyledon stage. Germination is clearly epigeous with the hypocotyl region below the cotyledons elongating to elevate the cotyledons which soon became green. About 100 days after sowing the first true leaves began to appear. These young seedlings are very small and tender and many I transplanted

dried through drying out. My only successes were seedlings kept in an almost sealed plastic bag; after about 1 year they were vigorous seedlings about 12 cm tall. The susceptibility of the very young seedling to drying out probably explains why this shrub is typically found along shaded stream banks. Once established it is, however, quite tolerant of direct sun as shown, for example, by the goat browsed shrubs along the edge of grassy clearings on the ridge track to the Dome near Warkworth.

Table 1. Seed formation following artificial pollination of Rhabdothmnus solandri*

#**	Flower state at pollination		Number per fruit		% fertilisation
	anthers	stigma	ovules	seeds	
1	freshly dehiscing	equal to anthers	677	142	21
2	freshly dehiscing	equal to anthers	476	154	32
3	freshly dehiscing	past anthers	294	62	21
4	wilted	past anthers	554	169	31
5	wilted	past anthers	301	113	38
6	wilted	past anthers	459	53	12
	MEAN ± S.D.		460 ± 148	116 ± 49	26 ± 9

* Plant growing at Royal Oak, Auckland of Little Barrier Stock.

** #1-5, individual flowers self-pollinated 8 February 1983, fruits brown and ripe with wall splitting in some cases 23 April 1983.
# 6, self-pollinated 1 March 1983, fruit brown and ripe with wall beginning to split 30 April 1983.

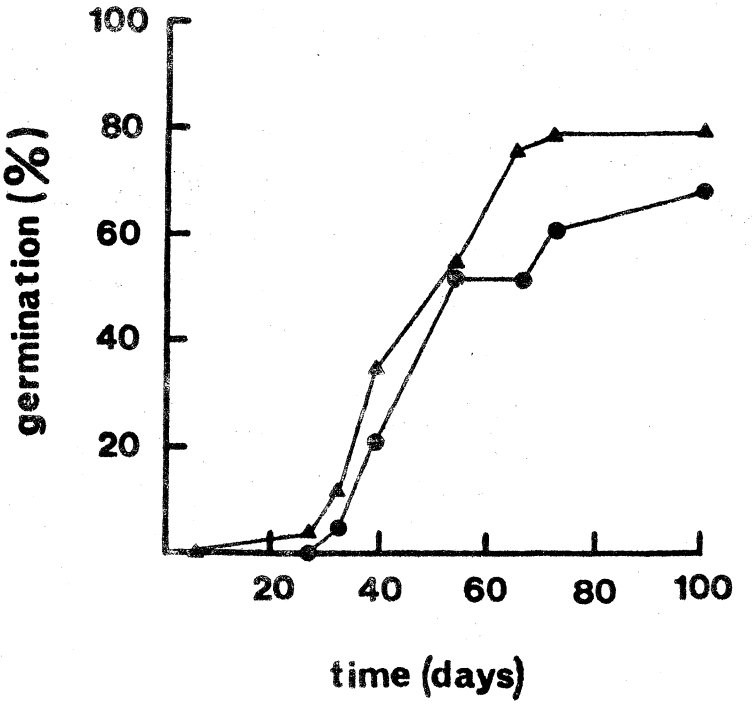

Fig. 1. Time course of germination of seeds of Rhabdothamnus solandri from two different fruits.

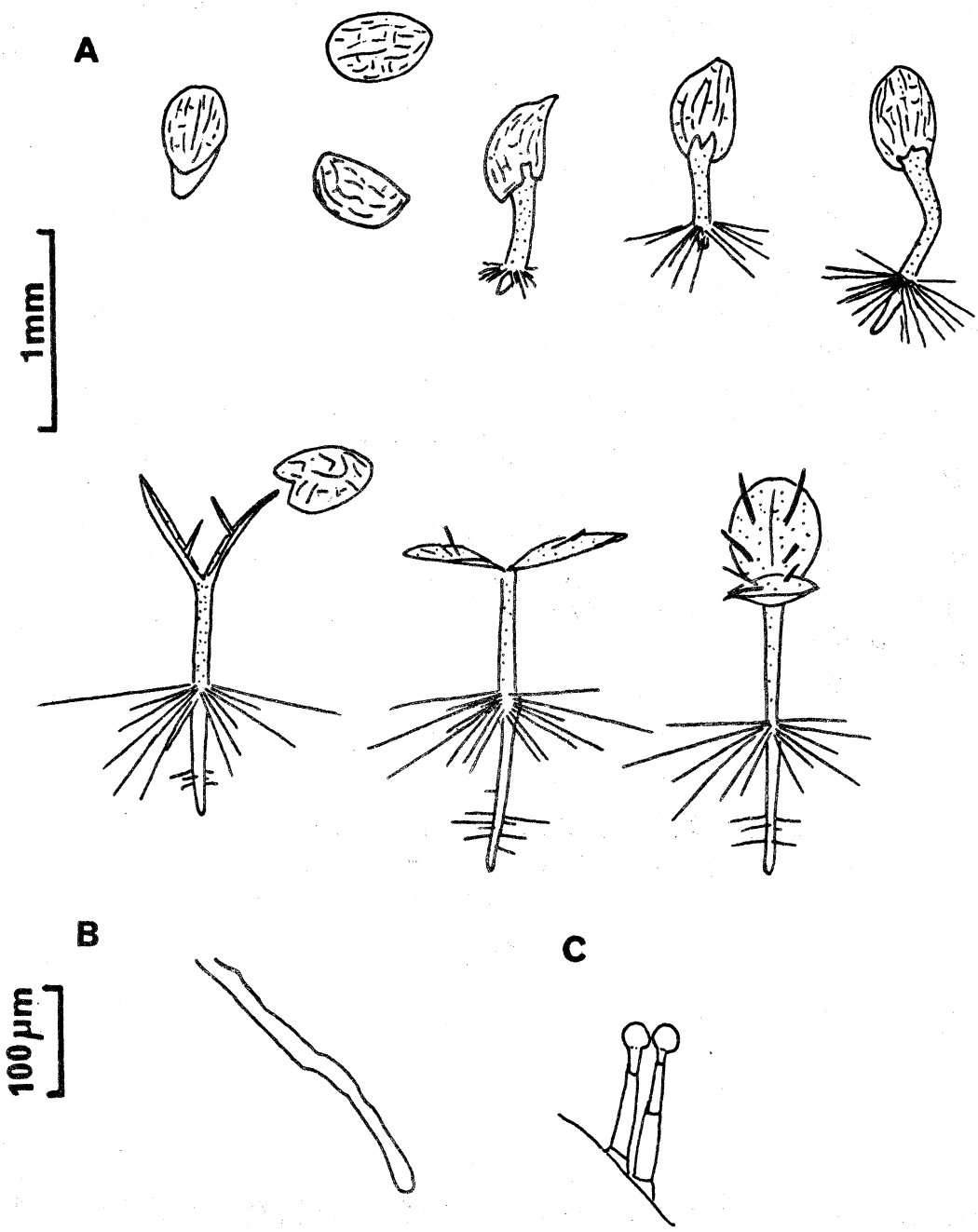

Fig. 2. A. Stages in the germination of seeds of Rhabdothamnus solandri 5 weeks after sowing.

B. Detail of root hair.

C. Detail of glandular hairs on surface of cotyledons.