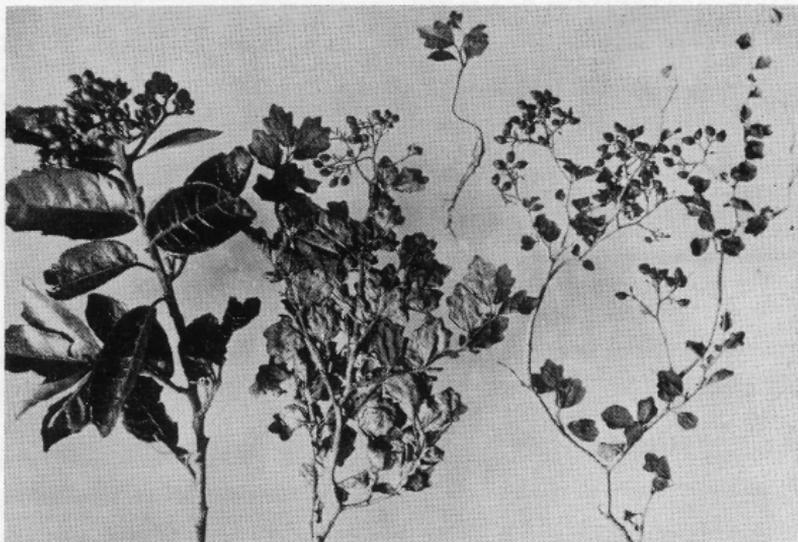


Precocious Fruiting of *Pennantia Corymbosa*

Contributed by A. D. Beddie, Wellington, from notes prepared with the help of Dr. Leonard Cockayne in 1934.

FROM the earliest botanical times in New Zealand certain trees have puzzled experienced botanists. In these species the plant is first a divaricating shrub and finally a tree pure and simple, the shrub and tree being connected by intermediate forms. *Pennantia corymbosa* is an oft-quoted type. Here the seedling has cotyledons 10 x 8 mm., oval and entire. The first true leaves are about 9 x 8 mm. and mostly three-toothed. The little plant of open erect habit soon develops into the densely tangled divaricating juvenile form with leaves about 15 x 11 mm. This is followed by the more open and upright, but still dense, intermediate form with leaves about 20 x 14 mm. Later comes the adult canopy tree with leaves much larger, often about 4 x 3.5 cm., but varying in size, being larger in shady or sheltered positions and smaller where more exposed. For a longer or shorter time the juvenile and semi-juvenile forms persist but finally they disappear and the plant then becomes purely a tree, sometimes with almost or completely entire leaves. The fruits, though often described as black, are certainly purple when ripe in the Wellington district.

For anyone with no previous experience of this kind of thing here is a collection of puzzles, and when he thinks he is familiar with this amazing tree he learns that it can actually flower in the intermediate and even in the juvenile stage. If he is fortunate he may also find fruits in plenty accompanying intermediate and juvenile foliage. He can experiment with these fruits and determine their germinating capacity,



and if they germinate he can record their life history. The illustration shows twigs with adult, intermediate and juvenile foliage, all bearing fruits, and also a seedling plant.

Cockayne has discussed the general topic of such precocious flowering in several papers, and in "The Vegetation of New Zealand" (ed. 2, 1928, p. 140) he has listed twenty species which have been observed blooming when juvenile. Many New Zealand botanists have at different times collected flowering juvenile specimens of *P. corymbosa* and examples may be seen at the Dominion Museum from the herbaria of B. C. Aston, H. Carse, T. Kirk and L. Cockayne.

In 1932 L. Cockayne found at "Casa Loma" the home of Mr. John Mitchell on Western Hutt Road near Melling Station a specimen *P. corymbosa* with some peculiar features. His notes are as follows: "The tree is about 4.5 metres tall. At about 30 cm. up the trunk a branch has sprouted and reached 2 metres high. Most of the intermediate tangle on the trunk is higher than this yet this branch is of adult foliage, except for one small twig with intermediate leaves at the bottom. Not only is the foliage of adult form, but there were, when it was photographed, no fewer than twelve bunches of more or less ripe fruit on this branch, some little more than one metre above the ground. This branch is evidently of later growth than most of the rest of the tree by the colour of the bark and the fact that it springs from a callus or swelling. Why should this young branch be developed from near the bottom of the trunk? Why not at the top of the tree like the rest of the adult foliage? A possible cause is seen in that the trunk opposite the young branch is decayed. It is as if the trunk, being unable to carry more branches on top, has sent forth from the healthy side near the bottom this young shoot." There are now, in 1958, no *P. corymbosa* plants left in this garden.

In November 1933 A. D. Beddie found near the shore of Palliser Bay *P. corymbosa* plants with flowers associated with each of the three types of foliage. Specimens were sparingly collected so that there would be better chance of getting fruits later on. In February 1934 ripe fruits in abundance were obtained on all three forms from many trees. These trees, on the north side of the well-known landmark Barnes' hut, were exposed to much of the force of the sea breeze, being less than half a kilometre from the sea and almost without shelter. Most of them were short and stunted with leaves smaller than usual, especially on the side facing the sea. Three had practically no adult foliage at all, especially one with a broken top. No fruits were found at less than 1.5 metres from the ground, most of them being a good deal higher.

Seeds from these Palliser Bay fruits were sown at the State Forest Service at Wellington, and seedlings were obtained from all three stages. Exact percentages are not known, but the fact that seeds will germinate from juvenile and intermediate twigs was established. Most of the progeny has been lost sight of in the intervening years but one seedling from a juvenile twig has been kept under observation in the

Petone garden of A. D. Beddie. It produced no flowers with the juvenile foliage, and on twigs with intermediate foliage there were flowers but no fruit sets. There is no longer any juvenile foliage on it. It is suggested that the bleak weather conditions at Palliser Bay may have helped to stimulate precocious fruiting, whereas in the sheltered Petone garden growth was more normal.

Notes on Some Cladonias of Otago and Southland

W. Martin, Dunedin

FOLLOWING the Science Congress of A.N.Z.A.A.S. held at Dunedin in January 1957, a party of members of the Botany Section spent a week examining the vegetation of Otago and Southland under the guidance of Prof. Baylis, the writer assisting with the cryptogamic flora, but paying particular attention to the lichens of the genus *Cladonia* to which the following notes refer.

The first area studied was a remnant of the once extensive Awarua bog between Invercargill and Bluff. Here in a clump of manuka the first plants were collected. These included *C. aggregata* and *C. cornutoradiata*, each in several forms, the former being mostly brownish plants with polished but perforated stems forming bushy cushions, the latter comprising mainly unbranched white or green stems (podetia) with dull powdery walls. One variety has three or four series of cups each originating on the margin of the cup or scyphus below, from which fact the name—var. *replitoprolifera*—has been derived. It is a very attractive lichen. *C. verticillata*, in three forms, was also present. These also have several ranks of scyphi, but each originates in the centre of the lower cup. The rare *C. carneola*, which also occurs here, was not seen on this occasion.

The next area investigated was the herbfield and grassland lying between the bush-line and the summit of the Longwood Range. On one rock with a scanty soil veneer the small *C. pitgreai* formed a compact turf in association with two "pixie cup" species—*C. pleurota* with scarlet "fruit" (apothecia) and the brown-fruited *C. fimbriata*, usually sterile, however. Near the summit *C. Sullivani* put in an appearance. This is a bushy, brown species with very numerous wall perforations through which the black-coloured interior is visible. It ranges from the Volcanic Plateau to Stewart Island, usually in subalpine or montane areas but is very common in peat swamps near Kuriwao near Clinton.

The third area examined was the manuka heath close to Lake Manapouri Hostel. Of numerous species growing in this area the largest, commonest, and most conspicuous is *C. leptoclada*, a species not hitherto reported from New Zealand. Doubtless it would formerly have been listed as a form of *C. pycnoclada*; but this species is now said to be endemic to South America. Three scarlet-fruited species are