





(This paper should be read in conjunction with -  
Hatch - Notes on the structure and development of the terrestrial orchids  
Newsletter no.2,p.4.

Campbell E.O. - The morphology of the fungal association of Corybas cryptanthus  
- J. Roy. Soc. N.Z. 2 1972,p.43)

In order to understand Corybas cryptanthus it is necessary to know something about the development, of the more normal Corybas species.

Corybas trilobus, since it comes into the story, will do as an example. In Auckland the trilobus tubers begin to sprout about August, meristem soon branches, one rhizome running along the surface beneath litter, another rising towards the light. The horizontal rhizome develops secondary branches which wander in all directions for several centimetres and eventually form terminal tubers (enlarged nodes), The size of the tubers (on which depends the size of the next season's plants) varies with the amount of organic matter and mycorrhizal fungi in the surface litter. The vertical rhizome goes on to develop a leaf, which again varies with the size of the original tuber, the larger the tuber the larger the leaf. Leaf size also affects the size of the new season's tubers, the greater the area of chlorophyll exposed to the light, the more nourishment synthesised, and so until, after several season's growth, the tuber is large enough (has enough food stored) to produce a flower and the tall seeding peduncle. This elongation of the peduncle, which occurs also in Chiloglottis, assists in dispersing the seed over a wider area than would be possible from ground level. The new tubers produced by the flowering/seeding plant are usually (not invariably) small, and the build-up cycle begins all over again. In Auckland the flowering plants begin to show in June, followed (as I said above) in August by masses of leaf-only plants, so that until the end of the season a colony will present a mat of green, soil-hugging leaves, scattered through with a much smaller number of seeding peduncles. When cryptanthus is also present, its peduncles are only distinguishable by a few red flecks on the stem and the absence of a leaf. Not surprising that it is overlooked! In the Atuanai State Forest I have also seen trilobus growing with Yoania so that the uninitiated could quite easily assume that the leafless Yoania flower-stems belonged to the flowerless leaves of the Corybas. So much for trilobus.

Corybas cryptanthus - It will be obvious from the above that the chlorophyll in the green leaf provides nourishment for the tubers to store, and that the tubers (a) tide the plant over the dry/cold season and (b) provide a means of vegetative increase. In the epiparasitic group (Yoania, Gastridium and Corybas cryptanthus in New Zealand) nourishment is obtained from fungi which are themselves parasitic on host plants.

C. cryptanthus lives then, on the beech and manuka at second hand, much as we could be said to live on grass by eating the animals which use it for food. The chlorophyll, now no longer necessary, disappears from the plant and the leaf becomes redundant and shrinks to a mere bract which sheaths the flower in the bud. The rhizome being perennial the tubers are reduced to tiny globules in the axils of the bracts. The plant lives in areas which are more or less damp throughout the year. In the event of the substrate drying out, which it sometimes does, tubers are formed. Vegetative reproduction is achieved by the plant growing and branching ahead and dying away behind. When the point of dissolution reaches a fork the branch rhizome becomes a separate plant.

Corybas cryptanthus was first found by William Colenso in a 'Fagus forest' near Norsewood in 1860. It was growing among trilobus and this confused Colenso considerably. In Trans. N.Z. Inst.16:1604,p.336, he described (as Corysanthes hypogaea = underground) a composite plant with the green leaves and green-and-red flowers of trilobus, and the underground flowering habit of cryptanthus. This description is so nearly that of trilobus that it is treated as a synonym, (see also Flora 2:1970, p.120)\*

There is no further record of cryptanthus until September 1924, when Mrs E.A. Hodgson found it at Hendley in northern Hawkes Bay (A.P. Druce W'gtn, Bot. Soc, Bull. 26: January 1953 p. 19).

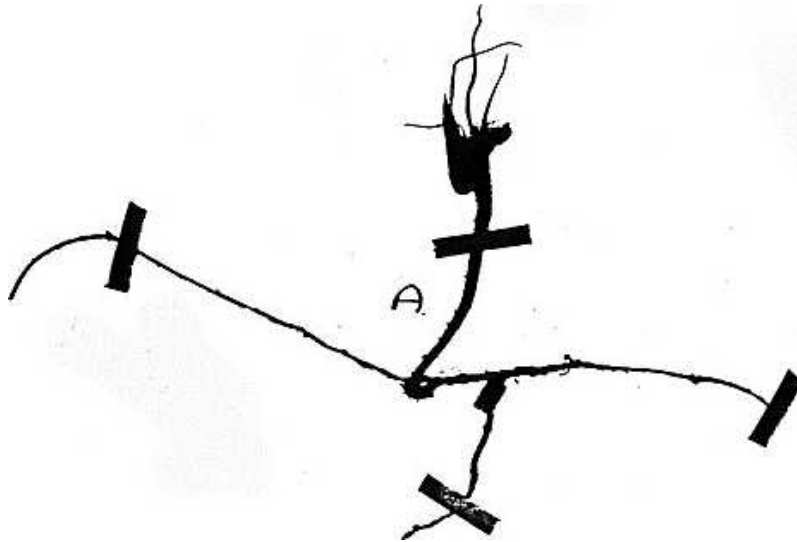
Between January and March 1934 K.W. Allison collected plants from 3 localities on the Napier road from Taupo to Opepe, and placed specimens in the herbarium at AK. (Hatch Trans. R.S.N.Z. Bot.2:1963, p.188).

On 25 October 1949» Bruce Irwin and Owen Gibson were returning to New Plymouth from a holiday in the far north and Stopped near Wellsford for lunch.(Irwin Wgtn. Bot. Soc. Bull.23:September 1950,p.23; Hatch N.Z. Gardener September 1951,p.27). Here in manuka scrub Owen found a most unusual colony of seeding Corybas. which lacked leaves, tubers and chlorophyll, and yet appeared to be thriving. Late in the evening of that same day they brought me specimens and sketches.

In December 1949 Bruce Irwin found 3 seeding plants growing with trilobus under beech in the Waitotara valley near Wanganui.

On June 5 1950, Bruce Irwin and I, with Frank Bartlett of Silverdale, went to Wellsford and after a little trouble (the tree to which it had been tied had blown over) found the handkerchief which marked the spot. Of the original colony there was no trace, (perhaps the digging around had upset the delicate balance of the association) but after some search we found 2 plants in early bud. On 29 July 1950 Bartlett and I went again to Wellsford and this time our persistence was rewarded by a single plant in full flower, which I described (Trans. R.S.N.Z.79:1952,p.366,t.71) as Corybas saprophyticus.

Alick Dockrill was quick to point out to me that this name had been used by Schlechter for a quite different species of Corybas from New Guinea in 1911, and in Trans. R.S.N.Z.83:1956.p.577. I renamed it Corybas cryptanthus = hidden flower. It has since popped up all over the place, usually being sat on for lunch, mainly under Nothofagus solandri. but sometimes with manuka (Leptospermum scoparium). Corybas(saprophyticus)cryptanthus Hatch



A no.569 Leptospermum scrub between Warkworth and Wellsford. 29.7.1950

B same locality; 25.10.1949 J.B.Irwin and O.E. Gibson