

GASTRODIA AND ITS NUTRITION

The mycologists and the orchidologists will both be pleased with Miss Ella Campbell's excellent trilogy on the mycorrhiza of the New Zealand Gastrodia species. They appear as follows in Trans.R.S.N.Z. -

G.cunninghamii - 1:#24.p289.1962
G.minor - 2:#6.p73.1963
G.sesamoides - 2:#18.p237.1964

The idea of the parasitic orchid originated quite early on. Solander, writing in 1769, describes Dendrobium, Eerina and Sarcophilus as '...parasitica in arboribus...' It was of course eventually proved that the epiphytic orchids were not parasites in the sense that the mistletoes were, but the nutrition of the leafless, non-green saprophytes remained a mystery. That they were associated with mycorrhizal fungi was obvious, but the how and why was never apparently followed up. In 1959 Frank Bartlett wrote me that the Silverdale colony of Gastrodia sesamoides appeared, as he put it, to live on the roots of Acacia melanoxylon. In 1962 Miss Campbell studied this association and found that a bracket fungus (Fomes) infected both the roots of the Acacia and the tubers of the orchid, forming a living bridge between the two. The fungus is parasitic on and draws nourishment from the tree roots, while the orchid breaks down and digests part of the invading fungal tissues, thus living quite literally on the Acacia, but at second hand, in much the same way as we can be said to live on grass by eating the animals which use it for food.

Gastrodia cunninghamii is associated in a similar way with beech (Nothofagus) species, using the different fungus Armillaria.

The fungus connecting Gastrodia minor with the manuka (Leptospermum scoparium) could not be identified, but enough of it was isolated to prove that it was not an Armillaria. E.D.H.

MEETING 1 April 1964

Mr. Lediard showed his slides of the South Island trip. These were colourful and most interesting, and highlighted the Newsletter account in a remarkable way. Full of flower and fruit and hill and dale, and odd penguins and cloudy skies and bits of river, historic buildings and familiar faces. I never can get used to the South Island scenery, not to its plant life. It points most definitely the fact that the thousand odd miles of New Zealand's length extends from the subtropical to the subantarctic. Mr. Lediard is to be congratulated on his photography, I would like to be able to do as well. E.D.H.