

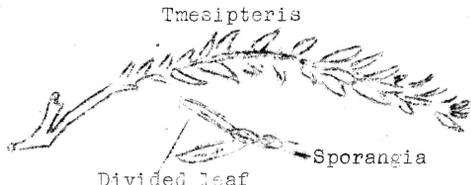
## A Long Time Ago

"What is there special about it?" enquired a member when I identified for her Tmesipteris tannensis Bernh. An apposite question, and as there is something quite special about both Tmesipteris and its near relative Psilotum nudum (Linn.) Beauv., a number of members might be interested in the answer.

Tmesipteris and Psilotum are living members of a group, the Psilophytales, members of which group have been unearthed away back in Silurian times, that is sometime between 340 and 310 million years ago.

Psilophytales comes from a Greek work psilos meaning naked, and phuton, a plant, and it alludes to the rootless and sometimes leafless condition of some of the species. The living members of the group include two genera of which we have two local representatives.

Tmesipteris, found throughout New Zealand, is common in our local bush. Occasionally it forks but usually it is unbranched. It does not grow very long here but down South it may reach three feet or more. The leafy shoots are pendent and bear narrow somewhat pointed leaves all round the stem.



The rhizome burrows along out of sight for quite long distances, forking and now and then throwing up a leafy shoot. It is brown and very brittle, hence not easy to dissect out, and is best collected in the south where it can be found on clumps of humus. The sporangia are borne towards the ends of the stems on special forked leaves. It is the division or "cutting" of these leaves that gives the genus its name, Greek, tmesis, cutting. The second part of the name, pteris, underlines its relationship to ferns. Its second name alludes to the place in the New Hebrides where it was first collected.

Psilotum nudum has nothing really worth calling leaves, merely small spiky structures here and there, hence the poor thing's nakedness is again emphasised in its specific name nudum. The sporangia are not limited

to the ends of the main branches but are developed here and there on very short branches and are divided into three parts. Their buttercup yellow colour when ripe causes them to stand out sharply against the green branches.

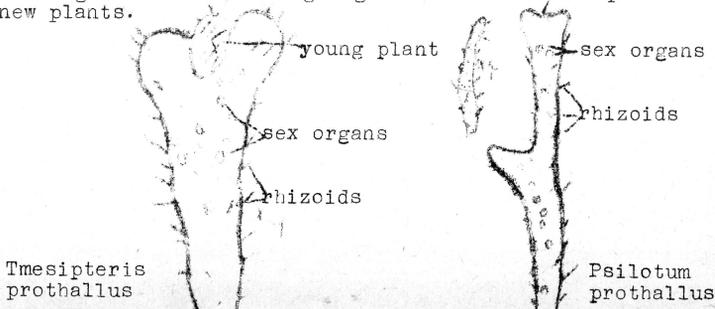
Psilotum does not grow in the bush, but locally is common on Rangitoto. Holloway remarks, "There is a peripheral belt one to two hundred yards wide, with numerous large basaltic rocks interspersed with hollows and small gullies. . . . Psilotum occurs in abundance in the peripheral belt, but is restricted to fissures in the basaltic rocks, and other such exposed places where often no other plants are to be found."

It is common on the Kermedecs. With Tmesipteris it is found in Australia and some Pacific Islands, but it is more wide spread extending to other tropical and subtropical parts.

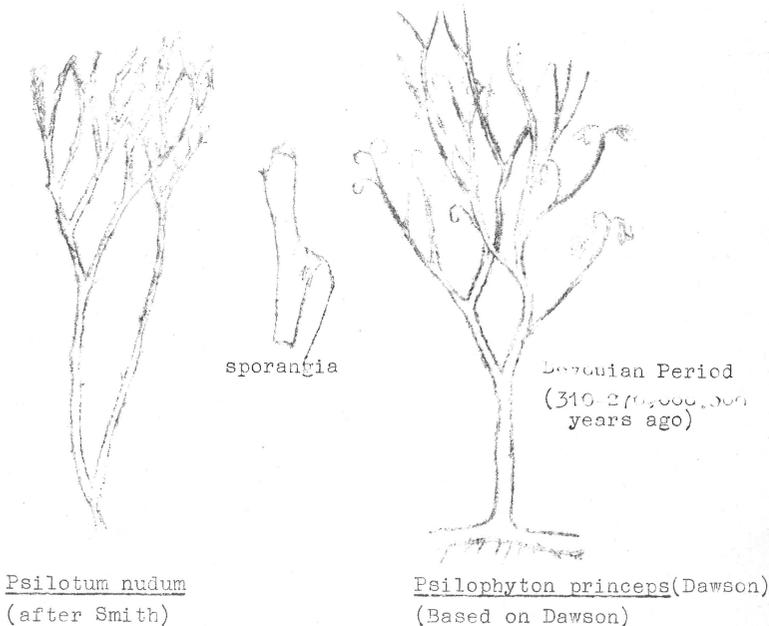
The prothalli of both Psilotum and Tmesipteris are somewhat alike and not in the least like the green heart-shaped prothalli common among ferns. They are rather large, without green colouring matter though an invading fungus (a mycorrhiza) is present. They possess rhizoids and are long lived. The Psilotum prothallus is the more complicated possessing a little conducting tissue and reproducing itself by means of buds, or gemmae (Lat. gemma, a bud or jewel). Holloway did much work on these prothalli and the young plants developing from them.

Tmesipteris prothalli be procured most easily in high rainfall areas. He describes how he once got them from Southern rata humus. From one particular tree he took at different times three parcels of humus which gave him in all 580 prothalli. Prothalli of Psilotum were sought on Rangitoto. The strongly growing prothalli came from pockets having an accumulation of soil "into which spores would be shed from adjacent fertile plants". Gemmae came usually from "crevices in the faces of large blocks" where fertile plants grew. "These crevices were opened by prizing off large flakes of the rock with a crowbar." It takes a lot to discourage a botanist.

The gemmae obtained might give rise to either prothalli or new plants.



After this account of two fascinating plants we come to the question, "What is special about them?" Actually they are the living representative of the ancient group Psilophytales, from which ferns and fern allies and indeed all higher land plants are believed to have sprung. A glance at the drawing below will immediately shown the resemblance between "then and now".



Members will now, I hope, be sufficiently interested to keep a keen eye out for Psilotum on the mainland. It has been reported from Rangaunu Harbour and from Motuhora Island Bay of Plenty, and it evidently has a penchant for the heated soil of hot springs etc. Cheeseman also says, "Auckland Isthmus, very rare." It appears to favour curious and unexpected places. It has been noted in three streets in Epsom growing in Tecoma hedges, and also in Remuera in a similar position. Mrs. Hynes tells me she discovered a plant springing from beneath her concrete path (Calgary St., Mt. Eden) and it once appeared in Maungahau Rd., (near

Mt. Eden) growing on the bulging root of the Crookes pepper tree (Schinus molle). All areas were volcanic ones. Members are then adjured to keep a sharp eye open for it - particularly under Tecoma hedges.

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WEEK-END TRIP

November, 1961

Many miles were covered during the week-end trip to the Kaimais on 25-26 November. Mr. A. Farnell was the leader.

The route taken was through Paeroa, Karangahake Gorge, Waihi etc., to reach a delightful lunch spot at Omokoroa beach near Tauranga. With the inner man satisfied we continued to a halt by the bridge over the Wairoa River on the Kaimai Road. Here we were met by two Hamilton members, Mr. Caldwell and Mr. Gudex, and we then entered a remnant of native bush where members found much of interest.

Oxalis lactea, Gnaphalium and Epilobium spp. were found on the river bank. Ixerba brexioides was in flower, always a lovely sight, and Melicytus lanceolatus, a rarity around Auckland, was noted.

Ferns were plentiful, the pendulous fronds of Mecodium demissum, M. scabrum and Sphaerocionium ferrugineum were much longer than average. I was particularly impressed with Leptopteris hymenophylloides, the single crepe fern. The fronds had a much thicker appearance than the species, tending towards the variety called 'intermedia'. Sometimes only the upper half of the frond or just a few pinnae would have this thicker texture which gives it such a crisped look. Blechnum nigrum and Leptolepia novae-zelandiae were also seen but time did not permit a full exploration of the area.

Our next brief stop was to visit an old logging track on the western side of the Kaimai Range. Here the blue flowers of the poroporo, Solanum laciniatum and the seed heads of the Clematis lightened the sombre bush. Carex lambertiana and Schoenus foliatus were plentiful on the track.

Then to our headquarters at Matamata and in the evening a swim at Crystal Springs to finish off the day.