FURTHER NOTES ON THE VEGETATION OF THE MIDDLE WAIPARA GORGE REGION

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In No. 8, 1975 of this Journal, Andrew Dobson wrote a short account of the vegetation of one of Canterbury's limestone areas, entitled "Aspects of the Vegetation of the Waipara Gorge Region". Botanists in Canterbury appear to have had eyes mainly for the mountain regions of the province and in their desires to reach the distant ranges they have tended to ignore many areas closer to Christchurch. The Waipara region, in common with a number of other areas, is one which, until recently, was rather neglected.

In April of this year the Society visited the area described by Dobson and members have been able to add a few more species to those listed in his account. The area is most interesting and Mt. Brown alone would be well worth another visit. The middle gorge of the Waipara River looks enticing, while some of the tributary streams, such as Boby Stream, also appear to offer quite a lot of promise.

The limestone cliffs and rocky slopes of Mt. Brown are most interesting and one of the highlights of the day was to see Gentiana astonii in flower. In places it was quite abundant on sunny ledges on the cliffs and generally formed rather compact plants which hugged the ground fairly closely. The largest plants would have measured some 20 cm. in diameter and no more than 3-4 cm. in height. The pure white, goblet-shaped flowers are greenish in the throat and are most attractive. These Waipara plants differ from those I have seen in the type locality, in the valley of the Waima River, Marlborough, in several respects. Plants from the Waima River have leaves that are generally quite narrow, flat and straight, whereas those from Mt. Brown appear to have generally broader leaves which are deeply channelled or Vee-shaped and usually quite strongly recurved towards the tip. Similarly, the flowers also differ. The corolla lobes of the Waima plants are rather narrow and wide-spreading, tending to open out rather flat; while those from Mt. Brown are broadly-ovate and the flower tends to have more of the goblet-shape which is typical of many New Zealand gentians.

A forget-me-not, previously identified as Myosotis goyenii, was also abundant on Mt. Brown and its tufts of silvery foliage were quite distinctive. Dr. L.B. Moore, who had previously identified the plant, now states that there is some doubt as to whether it is really M. goyenii. An Asplenium which appears to be A. anomodum was to be found on the limestone rock, nearly always securely tucked into a little pocket, or tightly wedged into a crevice. Lower down amongst tumbled limestone boulders another Asplenium was found; much larger and with fronds up to 30 cm., or more, in length. It resembled A. lyallii, but did not appear to be typical of that species and is probably a hybrid. In the same locality some fine bushes of Hymenanthera alpina were growing. They were very well fruited and being erect, instead of the usual more or less prostrate form, the fruits were well displayed.

A prominent plant on the cliffs and rocks was Hebe raoulii var. maccaskillii which Dobson lists simply as H. raoulii. Some very large bushes of it were seen, the largest measuring fully 1 m across, and it would be worth making a return visit in the Spring when it is in flower.

This species is also fairly plentiful across the river, on the South Dean. Pimelea concinna was not uncommon on the lower slopes and the largest plants formed rounded bushes up to 60 cm or so in height. It should be mentioned here that there is obviously a typographical error in Dobson's account, the name being misspelt "coccinea".

In the somewhat scrubby gully just above the road Coprosma propinqua and a range of hybrids were fruiting very well. The colours of the drupes varying from dark blue to translucent flecked with blue, and plain yellow. A large bush of C. brunnea right on the road bank was also displaying its bright blue drupes.

Some members explored the lower slopes of the South Dean, but in general there was not as much to be seen as on Mt. Brown. Dobson states that, floristically, the South Dean is richer so that another visit there to explore the higher tops would be well worthwhile. A rocky outcrop runs most of the way up the ridge and plants such as Gentiana astonii and Myosotis sp. were to be seen on the limestone rock, but not as commonly as on Mt. Brown. Sophora prostrata was common and generally grew into a tightly interlaced shrub up to about 1.5 or 2 m in height. Although it was growing along an exposed ridge, nowhere did the plants exhibit the tightly divaricating, low-growing form that one would expect in such a situation. Asplenium anomodum was seen again and always tightly tucked into a pocket in the rock. Hebe raoulii var. maccaskillii also reappeared on this side and followed the rocky ridge for most of its length.

The following is a list of some of the plants noted by members of the Society together with those mentioned by Dobson. The latter are marked A.D. Many plants remain to be added to the list, but at least it will make a useful starting point for the future.

Ferns

Asplenium anomodum
Asplenium ? hybrid, like A. lyallii
Pteridium aquilinum var. esculentum

Grasses and Sedges

Baumea rubiginosa A.D.
Juncus caespiticus A.D.
Poa caespitosa
Schoenus pauciflorus A.D.

Herbs

Calystegia tuguriorum
Celmisia gracilenta
Convolvulus verecundus
Craspedia sp.
Gentiana astonii A.D.
Gingidium enysii var. enysii A.D.
Myosotis sp. aff. goyenii A.D.
Phormium cookianum
Rumex flexuosus
Samolus repens A.D.
Senecio glaucophyllus ssp. raoulii
Senecio haastii
Tetragonia trigyna A.D.

Trees and Shrubs

Clematis afoliata A.D.
Coprosma brunnea A.D.
Coprosma propinqua
Coprosma propinqua hybrids
Dodonaea viscosa A.D.
Hebe raoulii var. maccaskillii
Hymenanthera alpina
Linum monogynum A.D.
Muehlenbeckia astonii A.D.
Muehlenbeckia australis
Muehlenbeckia complexa
Myoporum laetum A.D.
Pimelea concinna A.D.
Pimelea sp. aff. prostrata A.D.
Senecio monroi A.D.
Sophora prostrata A.D.

TORTULA PAPILLOSA

by Max Visch

No interested person walking through the New Zealand bush could fail to notice the enormous richness and diversity of mosses, liverworts and lichens that clothe the trunk and branches of almost every tree and shrub. This is in marked contrast to their almost total absence on trees in the Christchurch parks and gardens. No doubt a variety of factors contribute to this scarcity. The dry and windy summer conditions in the city area may well be beyond the tolerance levels of most species. Research in New Zealand and overseas has shown that mosses and lichens are much more sensitive to atmospheric pollution than the higher plants and disappear when pollution levels become intolerant. Daly 1970 has shown that for the Christchurch area the number of species of both mosses and lichens falls sharply as one approaches the inner suburbs with their high levels of atmospheric pollution during the winter. Not all species are equally sensitive either. Quite a few "hardy types" of mosses, lichens and even some liverworts resistant to at least moderate levels of pollution may be found growing on brick and stonework, on concrete paths and kerbs, along street drainage channels and in lawns. A few species may even be found on the bark of trees growing in favourable situations.

Last June as I was walking along the Heathcote River along the base of the Cashmere Hills opposite the Karitane Hospital I noticed some rather large patches of the moss Tortula papillosa covering the trunks of some European Ash (Fraxinus excelsior).

There are quite a number of these trees along the river bank with diameters of up to $2\frac{1}{2}$-3 feet. The trees appear to have been lopped many years ago to judge from the rather broad crowns that many possess. In a few cases the axils of some of the larger branches have formed shallow basins filled with water. These were the trees that had the most luxuriant covering of Tortula papillosa.

It appears that following a fall of rain and probably for some considerable time after, perhaps through cracks caused by rotting of the bowl's rim, water drains down the trunk providing a suitably moist substrata for this moss to grow on. Further down the trunk the moss cover gradually thins out and becomes mixed with such lichens as Physcia. Tortula papillosa was almost exclusively growing on the southern, shaded side of