The writer has, in the course of a number of trips, listed as indigenous: 59 dicotyledons, 15 monocotyledons, 2 gymnosperms, 19 ferns, and 7 club-mosses for the parts covered above. The probable origins of these over the last 80 years could form a basis for specultion. NO exclusively alpine species are present, a reflection of Tarawera's isolation from other high mountains, though Celmisia gracilenta, three of the four Raoulia spp. present, Helichrysum bellidioides, and Muehlenbeckia axillaris are in common with many alpine areas. Several other species of special interest are Ophioglossum coriaceum (on the Plateau), korokio (Corokia buddleoides var. linearis), and raukawa (Pseudopanax edgerleyi), and Hymenophyllum pulcherrimum (all in forest).

To summarise, the whole vegetation pattern has probably developed according to available water, and the ability of plants to withstand desiccation. The extremely porous nature of the deep scoria layer allows water to penetrate rapidly beyond the reach of plant roots. Under these conditions, soil development is slow also, and only a limited selection of the species which must have reached Tarawera in the last 80 years could have survived in the skeletal soils and the extremes of drought, temperature and wind.

Belying the "alpine" appearance of the vegetation are the occasional finds of lowland species in rock crevices on the plateau. Some recorded are Asplenium flaccidum at 3110 feet, and Coprosma robusta at 3230 feet. These examples can be multiplied by a study of certain areas within the crater, between 3400 feet and 3600 feet. Here there is a return of forest species absent in at least the previous 600 feet in altitude, including kamahi, broadleaf, Hebe stricta, rangiora, Phymatodes diversifolium, and Pseudopanax colensoi.

Also, there occur in the crater some species not recorded elsewhere on the mountain, including Grammitis pumila, Blechnum vulcanicum, Lycopodium australianum, L. varium, and in the vicinity of steaming ground in the "Chasm", Gleichenia microphylla and Lycopodium cernuum.

Mount Tarawera is unique geologically, and presents some fascinating problems and rewards botanically. It is to be hoped that present negotiations to have it set aside as a scenic reserve or national park will be successful.

C.C.Ogle.

C E N T R A L R U A H I N E S

The Old Rangiwahia Ski - Grounds.

The way led up the side of a steep gorge, always climbing sharply, through a stand of open beech forest (Nothofagus fusca) with little underneath. Coprosma tenuifolia occurred sparingly, a tree of 8 or 9 feet with thin brownish-green leaves, to be found only from Te Aroha to the Ruahines. Gaultheria subcorymbosa grew in austere places, attractive bushes with dark green leaves and quite large panicles of flowers.

The dominant subalpine shrub was Senecio elaeagnifolius, Olearia nummularifolia with its yellow-green round leaves contrasted with the many darker-leaved divaricating shrubs, which all look superficially much the same with their small leaves. Pittosporum rigidum was a tiny shrub with a few little seeds, hard and flat; P. divaricatum with scarcely two leaves the same; juvenile plants of pokaka (Elaeocarpus hookerianus); Phyllocladus alpinus with stiff thick leaves.

We crossed a very wet rocky place, shaded most of the day, and down by a stream were several large plants of Ranunculus insignis, with clear golden flowers on 20 inch stalks, the rounded leaves fringed with brown hairs. There were plenty of seedlings amongst the crevices.

Up through the tussock, with Dracophyllum filifolium, were Hebe venustula, a shining shrub, and everywhere Pimelea buxifolia, very beautiful in flower.

On the top the view was incredible : to the south, the Tararuas, Kapiti Island and the Kaikouras; to the N.W. across interminable high hill country, Ruapehu and Ngauruhoe could clearly be seen, and all round us the rounded tops of the Ruahine mountain system, all much the same altitude. The skiers who used this area 20 years ago before the development of Ruapehu must have been hardy souls, carrying skis and pack for a weekend.

The tussock harboured so much to delight : the great colonies of Celmisia (C.incana and C.gracilenta), Euphrasia (E.cuneata and E.revoluta) with Ourisia caespitosa forming bright mats and in flower everywhere; Coprosma pumila; Pentachondra pumila; Wahlenbergia pygmaea with pale blue flowers; Myrsine nummularia in abundance; Forstera bidwillii and Celmisia gracilenta amongst them all.

We then turned south and descended through the tussock and some of the largest Hebe tetragona, 5 to 6 feet with thick trunks, and a steep hillside covered with Olearia colensoi, 7 to 9 feet high. We slid overthe top of the firm crowns of the shrub - it is impossible to penetrate, especially with a pack. It is a fine tree with thick leathery leaves and was in full flower. Interspersed frequently with it was Aciphylla colensoi, many 4 to 5 feet high - a formidable plant to be respected. There were large specimens of Celmisia spectabilis and Senecio bidwillii, a very desirable shrub with thick tomentose leaves. In the stream bed were Helichrysum bellidioides and Raoulia tenuicaulis.

We followed the stream down, an ill-advised procedure, as we ran into difficulties when we came to the gorge, and at one stage had to wade up to our arm-pits in water. We encountered several waterfalls from 20 to 50 feet, and were obliged to climb the near vertical cliffs with precarious foot and hand holds. One area we crossed where the river curved widely was completely carpeted with Libertia pulchella, with pure white flowers. Very large Blechnum fluviatilis and B.patersonii were in quantities on the damp cliffs, in company with large and thriving Ourisia macrophylla.

A Ruahine Bog

We found this Sphagnum bog above the old Rangiwhai ski-grounds at about 5000 feet. It occurred in a depression in the rounded tops, which are so characteristic of the Ruahines. The land fell away sharply on a steep incline, but the water was retained by a definite rim of sphagnum-moss, 1 to 2 feet deep. The water was seeping down from the top of the mountain filtering through the sphagnum, creating crystal clear tarns little larger than a bath, and then continuing on down, to finally become a stream. The sphagnum was firm and spongy, and the whole area shook when we jumped on it.

Thickly growing throughout was Astelia linearis, a small stiff tufted plant 4 to 6 inches high, and the dominant shrub was Dracophyllum filifolium, though the adjacent hillside was entirely covered with Pimelea buxifolia in full flower, the plants with male flowers being much more spectacular.

Herpolirion novae-zelandiae was much in evidence, not in flower unfortunately. The elegant little alpine sundew (Drosera arcturi), a tiny red plant glistening in the moss, some bearing a single white flower, and plenty of cushion-sedge, Oreobolus pectinatus, and Carpha alpina were present.

G.M.Bedford