

Speaking quite generally, and taking the montane tussock-grassland of the South Island in its entirety, it is made up of some 210 species of indigenous plants which belong to 39 families and 98 genera. Even more important from the economic standpoint than the specific distinctions of the plants are their growth-forms, for the actual form of a plant tells a good deal about its requirements; in fact, a knowledge of the growth-forms suitable for a certain environment may give a clue as to what plants of economic value are suited for introduction or experiment. But this matter of growth-forms is too complicated to introduce into this introductory article; here it need only be pointed out that the tussock form, the mat form, the tufted form, the turf-making form, the rosette form, and the cushion form are of great importance amongst the grasses, sedges, semi-woody plants, and herbs of the grassland. With regard to the shrubs, the leafless flat-stemmed form and the prostrate or dwarf (perhaps creeping and rooting) form are of considerable moment. Annuals are very few in number. Plants whose above-ground parts die to the ground yearly—e.g., the various forms of tutu (*Coriaria*)—are not many, but such plants may become extremely aggressive, as they can defy fire.

Besides the indigenous species of the montane grassland there are more than forty introduced species, some of them—e.g., cocksfoot, red clover, and white clover—of a much higher food-value than any of the indigenous species. It is doubtless the presence of the introduced plants which has saved the grassland from further deterioration. Some of these plants would not be thought desirable by the farmer of the lowlands, but anything which sheep will eat can fill a want in the mountain pastures. Amongst widespread plants of this latter class are the following: Sweet vernal grass (*Anthoxanthum odoratum*), fiorin (*Agrostis stolonifera*), red-top (*A. vulgaris*), Yorkshire fog (*Holcus lanatus*), meadow-grass (*Poa pratensis*), broom (*Cytisus scoparius*), sorrel (*Rumex Acetosella*), winged thistle (*Carduus pycnocephalus*), and catsear (*Hypochaeris radicata*).

The dominant species of the montane tussock-grassland is the fescue-tussock (*Festuca novae-zealandiae*), just as the silver-tussock (*Poa caespitosa*), a grass of very similar appearance, dominates the lowland tussock-grassland. These two associations are called "low tussock-grassland," to distinguish them from "tall tussock-grassland," where the red tussock (*Danthonia Raoulii* var. *rubra*), or one of its allies, are the dominant tussock-grasses. Frequently in montane tussock-grassland the small blue tussock (*Poa Colensoi*) is extremely common; generally that dark-stemmed spinous shrub, the wild-irishman (*Discaria toumatou*), is dotted about here and there. There are many other common members of the association, of which only a few can be cited here—e.g., various species of pipiriri (*Acaena*), the spear-grass (*Aciphylla squarrosa*), the spaniard (*A. Colensoi*), certain turf-making raoulias (*Raoulia subsericea*, *R. glabra*), the mountain-groundsel (*Senecio bellidioides*), and the pungent heath (*Leucopogon Fraseri*); but the frequency of any species differs greatly in different localities and under different conditions in the same locality.

CERTAIN GRASSLAND PROBLEMS.

There is problem after problem awaiting solution in order to prepare a path for advance in improving the montane grassland. The following