

OFFICERS FOR THE YEAR 1948-1949, ELECTED JULY, 1948.

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HON. SECRETARY: Miss A. Hutson, C/- Botany Division, Scientific &
Industrial Research Dept., 8 The Terrace, Wellington,
C.I.

The Council has appointed Mr. A. P. Druce to be Editor of Bulletins following this one.

BULLETIN RESERVE FUND.

We wish to thank Mr. and Mrs. I. D. Parsons, Mr. R. D. Cresswell, Mrs. Stickells, Mrs. M. Hickman, Mr. N. Potts, Mr. R. Hair, Miss E. Johnson, and Mr. M. G. Maxwell for their contributions to the Bulletin Reserve Fund. Their donations amounted to £2. 4. 9. The sales of native seeds by Mrs. Samson amount to £3. 0. 0. The Bulletin Reserve Fund benefits this year to the extent of £5. 4. 9, bringing the total to £25. 9. 7.

COMMENTS FROM AN EARLY VICE-PRESIDENT.

Mr. F. S. Pope, one of the Society's first Vice-Presidents (1939-41) now lives at 4, Maleme Avenue, Belmont, Auckland. He writes to say how our Society's work and its bulletins impress him as he enters his 80th year of age. "New Zealand must continue to be, to a rapidly increasing extent, one of the world's main sources of soil products, and also one of its principal resorts for recreational travel; therefore botany and botanists have a most important part to play in its maintenance and development. That being so, I feel that the Society can do a great work in stimulating the zeal of its members in a large variety of ways, and moreover that it has made an excellent beginning in the performance of that work. The Bulletins in particular strike me as being remarkably good. I am not competent to criticise them botanically; but I can congratulate all concerned upon the good style in which they are written, some passages being of distinct literary, and even poetical, merit, and the consistently correct spelling of the botanical names being a pleasing feature throughout. If I may make a small suggestion, it would be that, for the sake of the occasional layman reader, more use should be made of vernacular names, not, of course, instead of the scientific names, but in addition to them. May abundant success attend the work of the Society!"

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THE VEGETATION OF THE KAIMANAWAS. Mr. N. Elder, 17. 3. 48.

To the west of the Kaimanawas lie the Rangipo desert and the fern-covered slopes above Lake Taupo; to the north the Kaingaroa Plains; to the east the forested Ahimanawa and Kaweka Ranges and to the south the tussock of the Ngamatea Plateau and the Inland Patea. Meteorological information is inadequate. Poronui Station on the north-east boundary has an average rainfall of nearly 80". To the south along the Taihape road the rainfall is about 40". The plants are an unreliable guide to rainfall as the whole area has been blanketed with pumice and this frequently has a determining influence on the composition and type of vegetation. Access is easiest from north-east or south-west and the first trips were made diagonally in that direction following parallel natural routes. Later trips across the grain of the country sampled a wider range of habitats.

Podocarp-broadleaf forest is present in any strength only on the slopes

above Lake Taupo, though in the south where the Rangitikei valley leaves the range there are a few lowland forest species beginning to appear. The northern extremity of the range is under continuous forest, but in the main block of the range the Waipakihi and Rangitikei are the only important forested areas. Even here the forest line tends to be irregular, while on the eastern and southern flanks, even down to 3000' trees occur in infrequent clumps and patches. No doubt forest was somewhat more extensive before sheep were introduced, as recently burned logs are still conspicuous, particularly in the Mangamaire and Moawhango valleys.

The dominant species of the upper cold temperate zone is Nothofagus cliffortioides and it is also in general the dominant species of the isolated clumps of forest in the lower zone. The association is almost pure, with such common species as Podocarpus hallii poorly represented, and is very open with individual trees well developed. A good deal of light reaches the floor and there is plenty of undergrowth, frequently juvenile Nothofagus though extensive masses of Rubus cissoides are characteristic, as are the forest koromiko (Hebe "Makorako") Suttonia divaricata, various heaths, and, particularly on forest margins, a small leaved Aristotelia.

Nothofagus fusca is dominant in the lower cold temperate zone in the northern area and in the lower Waipakihi valley but has not been observed in the Rangitikei valley at a comparable altitude. N. menziesii is common in the north in the same zone as N. fusca and is dominant in the forest margins at the head of the Mohaka. It is also present in the Waipakihi. In a limited area at the head of the Ngaruroro it replaces N. fusca as the dominant species of the zone. The rainfall here apparently approaches 80" and there is a fine stand of timber with a great quantity and variety of epiphytes. N. menziesii does not appear to extend into the zone of N. cliffortioides. For example, in an isolated patch of forest at Tapui-o-marua-hine on the Ngaruroro, which is the southern limit of both N. menziesii and N. fusca on this side of the range, N. menziesii is dominant below 3600' with N. fusca, common, and N. cliffortioides dominant above 3600'.

With forest discontinuous or absent over so much of the area, tussock is important at all altitudes, but as stock was introduced into the inland Patea in the fairly early days of settlement, grazing (by deer also) and even burning have occurred to 5000' or more, so that the original tussock association must have been considerably altered. On the higher ridges the amount of bare ground, often terraced by wind or heaved by frost, is considerable. The yellowish areas of freshly disturbed soil and rock fragments where frost striation is active are typical of the more flat-topped crests of the Kaimanawas, particularly of the Middle Range. They extend down the slopes in yellowish tongues which from a distance suggest the clay wash from slips, though they are actually formed of rock fragments compacted with soil, and are usually on a gentler gradient than that of scree. Occasional hummocks containing coarse pumice indicate that a covering of this has been removed in comparatively recent times from the crests of the ridges.

Further south around Patutu, wind terracing is conspicuous. One particularly well-marked pattern was photographed in 1931, 1938, and 1947. The most recent photograph suggests a weakening of the vegetation that fringes the terraces. Other observations suggest that the drought of 1946 was responsible for this. Clumps of Phyllachne are frequent on Patutu and Karikaringa, though nowhere else on the range, and in 1947 almost every clump had a black centre, though the margins were still green. Other indications of drought were on the dry terraces of the Taruarau valley where xerophytic shrubs with the dead leaves still attached were conspicuous, and dead Nothofagus saplings, also with leaves still attached, were frequent on the descent into the Rangitikei valley. In the adult Nothofagus forest immediately behind the Golden Hills Hut at the head of the Taruarau a large proportion of the trees were dead.

Deer have once been numerous from the evidence of well graded and well beaten tracks, and signs of grazing, but even in 1933 they were becoming scarcer and in 1947 only 7 head of deer were sighted on a 9 day trip by a fairly varied route. The open country lends itself to the operations of deer-cullers, and deer at present seem to be mainly about the forest margins at the northern end. Japanese deer, which appear to be more a

forest species than red deer, have their headquarters here, in the valleys of a limited area. Traces of cattle were common in the forest basins of the northern end as recently as 1938, but ^{they} have either been shot out or have died since.

Above the forest the vegetation is usually sparse and open, except in occasional sheltered hollows or the wide boggy basins at the head of the Moawhango. Danthonia rigida is the dominant tussock species at this end of the range, but north of Patutu its place is taken by D. flavescens, though this grows luxuriantly in only a few limited spots. As Ngapuketura is approached going north along the Middle Range Danthonia has almost died out. This has happened quite recently for tussocks are still there, now and again putting out a few green shoots. Apparently it has been overgrazed by deer. Its place is taken by large tussocks of a sedge, Gahnia procera, which has here established itself above the forest line.

Where the forest line is discontinuous it usually abuts on tussock, but towards the northern end of the range there are instead fairly extensive scrub associations. However, in the absence of such aggressive shrubs as Olearia colensoi, Senecio eleagnifolius and Pittosporum rigidum these are not especially dense.

The discontinuity of forest appears to be connected with the presence of pumice. This is shown most clearly in the Taharua valley at the head of the Mohaka valley on the boundary of the 80" rainfall area. The valley floor is ecologically a 2½-mile long continuation of the Kaingaroa Plains, barren pumice with a thin covering of Dracophyllum subulatum and Festuca novae-zealandiae. Immediately above the valley floor is the forest margin of Nothofagus menziesii. Areas of manuka mark former forest burns. Pumice terraces occur in the main valleys of the Kaimanawas, in each case with a maximum elevation of 200' above the valley floor. They support tussock or scrub more readily than forest, and tussock lanes running down the valleys from the alpine tussock or up them from the surrounding tussock plains are characteristic.

A striking botanical feature of the Kaimanawas is the absence or marked rarity of species that form an important element of the corresponding associations to north and south of them, although the conditions and particularly the rainfall provide a wide range of variation. Of the 60 odd species occurring in the Ruahines but not so far observed in the Kaimanawas, the most striking examples are such common alpinas as Celmisia incana (abundant on Ruapehu) Euphrasia revoluta and Astelia linearis and the shrub species Olearia colensoi, Senecio eleagnifolius, Pittosporum rigidum and probably Gaultheria rupestris. Of trees Libocedrus bidwillii, Melicactus lanceolatus and Hoheria sexstylosa are not recorded at all and Dacrydium biforme from only one locality, while of other forest species Danthonia cunninghamii, Libertia ixioides and L. pulchella appear to be absent.

Almost as striking is the limited distribution of numbers of species abundant in the corresponding associations of the Ruahine Range. Oxalis lactea, Oreomyrrhis andicola, Lycopodium fastigiatum, Geum parviflorum, and Caltha novae-zealandiae are comparatively rare, and Ranunculus insignis, Phyllachne colensoi and Helichrysum bellidioides confined to limited area. Of scrub species Olearia ilicifolia and Dracophyllum urvillianum and of forest species Podocarpus hallii, P. ferrugineus, Cordyline indivisa, Pseudowintera colorata, and Leptopteris hymenophylloides, L. superba, and Ourisia macrophylla are equally infrequent and unimportant members of their communities.

As against these, records of some 16 South Island species not previously listed or with only one isolated record for the North Island have been extended to the Kaimanawas, e.g., Caladenia lyallii, Epilobium pycnostachyum and Myosotis australis. With one or two exceptions, these sixteen and as many more have already been observed in the Ruahines. The range of two northern species, Phyllocladus glaucus and Prasophyllum patens have also been extended to this area. Parahebe olseni is shared with the Ruahines, also the handsome Hebe "Makorako". Hebe colensoi extends from the Inland Patea to the flanks of both ranges and the Kawekas as well, and Myosotis eximia reaches the Kaimanawa boundary near

the Rangitikei Bridge.

The lack of endemics and the absence or comparative rarity of species elsewhere common suggest that the Kaimanawas are still in process of being colonized, perhaps recolonized after the destruction of the original vegetation by falls of pumice hot enough to produce the charred fragments of timber embedded in it. It may be possible to reach some conclusions as to the history of the vegetation by an examination of the Ngamatea Swamp which is a large bog lying out in the centre of the plateau and within the area of the main pumice showers which extend at any rate to the Taruarau Bridge. If borings were to show the sequence of vegetation and possibly also the sequence of pumice showers it should be possible to form a picture of the changes that have occurred and to explain the state of the vegetation at the present day.

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BOTANICAL INCIDENTS ABROAD.

After the business of the Annual General Meeting on July 19th, Miss V. Norman entertained us with an illustrated talk. With her we saw first the flamboyant Poincianas and misty blue Jacarandas, the date palms and the cotton of Egypt. Irrigation by primitive buffalo-power water wheels, along the Sweet Water Canal, the King's terraced gardens in Alexandria, and native villages and camels loaded with locally-made hay all came into the story.

In Jerusalem we saw the Old City, the Garden of Gethsemane and the Mount of Olives, where grow wild olives and lupins. In strong contrast is the modern city of New Jerusalem, with beautiful avenues shaded by citrus trees. A Jewish community farm on land reclaimed from a malaria swamp by the Sea of Galilee was impressively prosperous-looking. Tel Aviv, Nazareth, Haifa, the Dead Sea, and Jericho were all visited. Flowers of Palestine shown included the date palm, the Lily of the Fields (Anemone coronaria), the Rose of Sharon (Narcissus tazetta), wild cyclamen, Bethlehem Star (Ornithogalum), the olive, gladiolus, Opuntia ficus-indica (of which the prickly pear fruits are sold in markets) the red Tulipa montana, and Iris helenae.

From Beirut a hair-pin bend road of alarming steepness led through terraced land with corn and grapes to orchards of peaches and apples and finally at 6000' reached the Cedars of Lebanon. Of the 400 remaining trees seven are said to be over 1000 years old; the height is 60-90', the girth 30-40'. Cones are said to form only after trees are 100 years old and take two years to ripen. The seed is handpicked in efforts to maintain some measure of regeneration. Covering a rounded hilltop the grove looked most attractive even without seeing the floor carpet of mauve and yellow autumn crocuses and scarlet poppies.

At Damascus we saw the most modern bus transport, and the Street called Straight, said to be the oldest in the world.

In Britain we had glimpses of Surrey and Cardiff and the Lake District. Actual specimens of well-known flowers included mock-orange and London Pride from Dove Cottage, pink campion, dog violets, wood anemone, wood hyacinth, butterwort, the bog cotton Eriophorum, and wild thyme. Plants from Skye were dwarf willow, bladder campion, orchids, geum, Hebe speciosa from a garden hedge, germander, the English blue bell Scylla non-scripta, the Scottish harebell Campanula rotundifolia, purple saxifrage, primrose, thrift, heather and the rose-bay willow herb (Epilobium augustifolia). A quick look at Glasgow, Edinburgh and the Trossachs completed a fine set of pictures.

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