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THE WHENCE AND THE WHITHER OF THE NEW ZEALAND FLORA.

Summary of the Presidential address given at the July meeting.

If we wish to discover how the flora of New Zealand came to be what it is we might proceed along two lines. First we might study the past floras and see what was the actual succession of plants in New Zealand, secondly we might study the relationship of the present flora of New Zealand to those of other lands in the Pacific area.

Every natural region has its peculiar species. Australia for instance has a high proportion of endemic species yet its flora is very different from that of New Zealand. All or most of our species belonging to the genera, Carmichaelia, Aciphylla, Anisotome, Hebe, Coprosma, Celmisia, and Dracophyllum are endemic. If we wish to visualise what is meant by the expression "New Zealand's unique flora" we must think in terms of these and similar generic groups that may be considered to have evolved in New Zealand and not in terms of the propertion of peculiar species.

If there were preserved in the rocks of New Zealand a fairly representative series of the plants that lived in the past the question of the origin of the present flora would be a matter of discovery and description of fossils. The record is, however, woefully incomplete. It is like a work of four volumes of which only a few pages of the second and last have been preserved.

The earliest plants known from New Zealand belong to the Jurassic period, but there was a long, now lost, history before this. However in Jurassic times there were in the world two main ~~botanical~~ regions, one in the northern hemisphere and another in the southern but including India. New Zealand of course, belonged to the southern region. Its flora consisted mainly of of ferns (e.g. Taeniopteris), fern-like seed plants (Pteridosperms) and cone-bearing plants (Gymnosperms e.g. Elatocladus that looks like miro), but included only a few true flowering plants. There was a considerable resemblance between the plants of New Zealand and southern South America. In fact these places were probably connected by continuous land by way of Antarctica. There would be another land bridge with the region to the north-west, that is in the direction of New Guinea and Malaya. This in brief is the first picture we have of the flora of New Zealand. It is mostly different from what we see to-day but there are resemblances in the Gymnosperms and the beech-like flowering plants (Artocarpidium).

As the ages passed vast changes took place. The sea overflowed the land extensions towards New Guinea and South America, and New Zealand has remained an island group ever since. The ancient ferns and Pteridosperms became extinct and in their place there appeared true flowering plants and modern ferns, probably mainly immigrants from the direction of Malaya before the land bridge finally disappeared. In early Tertiary times therefore we find a flora consisting, as at the present day mostly of flowering plants but with a proportion of Gymnosperms and ferns. But there were plants like sycamores and large-leaved beeches more like those of the northern hemisphere, alongside those which might be termed the beginnings of the present flora. Coming nearer the present day this early flora gradually changes.

What we learn from the careful study of fossil plants therefore is that the modern New Zealand flora developed from part of one that extended from Malaya to S. America, by the elimination of plants of wide affinities, such as sycamore

fruit. [illegible]
long and nearly every liverwort was fertile.

and beeches and the more ancient Pteridosperms, and the simultaneous evolution and multiplication of the flowering plants that had probably arrived along the north-westerly land bridge.

By the method of comparing the present flora of New Zealand with that of other Pacific countries we arrive at somewhat similar results. For instance there are genera that are related to South American plants, such as Fuchsia, Uncinia, Libocedrus, Nothofagus and others; there are many groups with relations in New Guinea and the Malay Archipelago; and there are others that occur in Australia as well as New Zealand. Judging by the strength of these alliances we should say that New Zealand last extended towards the North-west, that at an earlier period it extended towards the southern end of South America; and that if there was ever a direct connection with Australia it was with the north-eastern part only. The present Australian flora including Eucalyptus, Acacia, the Proteaceae, Epacridaceae and others has little relation to the flora of New Zealand. The resemblance between the plants of New Zealand and Australia lies mainly in those genera which are found also in Malaya. Finally, New Zealand has given species as well as received them. Several distinctive New Zealand genera, such as Coprosma, Celmisia, and Hebe have outliers in the islands of the Pacific, temperate South America, and in Australia and Tasmania.

Slides used to illustrate the lecture showed some reconstructed scenes of Devonian and Carboniferous forests in the Northern Hemisphere and a series of New Zealand plants of Jurassic and Tertiary age. Specimens exhibited were collected in New Zealand and included impressions of leaves of a sycamore and what is possibly a Grevillea of early Tertiary age, and a slab of hardened volcanic tuff from the Coromandel Peninsula showing many casts of leaves of the appearance of a large leaved species of beech.

A NATIVE GARDEN IN THE MAKING : AUGUST.

Pimelea arenaria in sunny positions smothered in white blossom, a few stray heads of Cotula pyrethrifolia already appearing, and one long-stalked Ranunculus loulatus bright with yellow shining petals and some buds; Pomaderris elliptica, Clianthus puniceus and Brachyglottis repanda laden with buds, all calmly awaiting warmer weather. I should l... to know of any other native flowers this wet August.

Mrs. W.W. Samson.