Nine species of ferns are noted, amongst which are *Alsophila antarctica*, related to the south Brazilian *A. feeana*, and *Polypodium Nathorstii*, Dus., n.sp.; *Pæropteris blechnoides*, Dus., n.sp.; *Asplenium antarcticum*, Dus., n.sp.; *Dryopteris Seymourensis*, Dus., n.sp.; *D. antarctica*, Dus., n.sp., all of which more resemble subtropical forms of south Brazil than those of temperate South America.

The remaining fragments of leaf-impressions were not in sufficiently good preservation to allow of their determination with any degree of certainty.

A superficial glance over the above determinations of the specimens shows that the former plant-world of Seymour Island is related to two present South American floral regions—namely, the temperate flora of southern Chile, and, but even more closely, the subtropical plant-world of south Brazil. Thus the Tertiary flora of Seymour Island is a mixture of temperate and subtropical species. Dusen seeks to explain this remarkable phenomenon. He dismisses the idea of transportation by ocean-currents, as such would bring a dispersion rather than a collecting-together of plant-remains: his opinion is that there existed in Tertiary times on Seymour Island a mixed flora, partly temperate and partly subtropical, the former occupying the high lands and the latter at low levels, such as is the case in southern Chile at the present time, and that the remains of both now exist together, the temperate species having been brought to the lowlands by streams and there mixed with the remains of both of the subtropical forms. [The reviewer is of opinion that probably temperate and subtropical forms grew side by side, as in almost any lowland forest of New Zealand at the present time, and that the hypothesis of floods bringing down the mountain-plants is not required.]

That the plant fossils of Seymour Island probably belong to the Tertiary period is supported by the fact that they are very similar to existing species.

The author lays stress on the fact that there is little relationship between the flora under consideration and that of Australia and New Zealand as now existing. He cites *Knightia* as the sole connecting-link, and concludes that land connection between the Antarctic and Australasia must have been severed at a very early date—namely, before Tertiary times. The species of *Knightia* is considered by the author, together with that of New Zealand, to have been derived from the same antarctic stem-forms.

[The above summary of a work of the greatest scientific importance to us in New Zealand is unfortunately only built up from two reviews—one by Neger, in *Naturwissenschaftliche Wochenschrift* for the 5th July, 1908, and the other by Gothan, in *Botanisches Centralblatt* of the 12th January, 1909. The reviewer considers that too little stress is laid on the Australasian affinity with the Tertiary flora of Seymour Island when, besides the presence of *Knightia Andreæ*, whose only close relative is *K. excelsa*, of New Zealand, there are also such remarkable genera, common to New Zealand and Australia as well as South America, as *Nothofagus*, *Drimys*, and, above all, *Laurelia*. Australian affinity is also shown by *Lomatia* and *Araucaria*, though this latter might suggest an earlier land connection than Tertiary.] L. C.

4. "Grundzüge der Pflanzenverbreitung in Chile," by Karl Reiche. (Bd. viii der "Vegetation der Erde," herausgegeben von A. Engler und O. Drude. i–xiv und 1–374 pp., mit 55 Fig. im Text und Tafeln, und 2 Karten. Leipzig, Engelmann; 1907.)

The fourth part of this comprehensive work deals with the relation of the Chilian flora to other floras, and Chapter ii is devoted to its relationship with that of New Zealand, the various elements being respectively designated "tropical," "austral" (southern extremity of South America), "antarctic," and represented by the following signs: "trop.," "aus.," "ant." Lists are given of the families identical to the two regions, 83 in number; of the identical genera without identical species, 101 in number, some of which have species closely related in both floras; of identical species, 65 in number; of families occurring in New Zealand but absent in Chile, 11 in number; and of families occurring in Chile but absent in New Zealand, 44 in number.

Regarding mosses, 50 species are common to the Magellan region (45° to 56°) and to New Zealand and Tasmania, one or both.

With regard to drawing any conclusions from a statistical study of the respective floras, the author points out that New Zealand extends through far fewer degrees of latitude, corresponding merely to the part of Chile lying between the Province of Colchagua, 34½°, and the Gulf of Penas, 47½°. This excludes the whole of the northern desert flora, and many types of the extreme south. Such a limitation, the reviewer would point out, does not recognise the new botanical region as extending.

The author draws the following conclusions from his analysis of the two floras :—

1. Amongst the identical families many are of very general distribution ; others, such as the *Elæocarpaceæ, Aristoteliæ, Cunoniaceæ, Halorrhagaceæ,* &c., are of wide distribution over the Southern Hemisphere ; others, again, have their headquarters in the tropics, extending thence into the neighbouring regions (*Sapindaceæ, Anacardiaceæ,* &c.).

2. The comparison of identical genera not possessing identical species emphasizes the correspondence with genera of the Southern Hemisphere, and especially of the Antarctic region, more than does a comparison of families, the ferns alone showing a special affinity to the tropical flora.

3. The identical species are either markedly ubiquitous, as along the coast-line, or belong to the Southern Hemisphere in general, while of special interest are the numerous Antarctic species.

4. Regarding the families which occur in New Zealand but not in Chile, some have a wide distribution (*Caprifoliaceæ* and *Pittosporaceæ*), others belong to the tropics, and *Stackhousiaceæ* and *Myoporaceæ* are Australian types.

5. As for the families found in Chile but not in New Zealand, naturally many are American, whilst some are confined to Chile (especially Andine South America or Juan Fernandez). The greater number of genera in these families than in (4) depends upon the greater extent of Chile, and, moreover, on the fact that it is bound by land to the rest of South America, whereas New Zealand is an archipelago.

Finally, it must be pointed out that the *Eucryphiaceæ* of southern Chile are absent in New Zealand, but occur in Australia. L. C.

5. "The Male Gametophyte of *Dacrydium*," by M. S. Young. (*Botanical Gazette*, xliv, pp. 189–96, pl. xix. 1907.)

The material used for the investigation was collected in New Zealand by the reviewer, and consisted of staminate strobili of *Dacrydium biforme, D. Bidwillii, D. cupressinum, D. laxifolium,* and young ovules of the two last-named and *D. intermedium*. No complete series was obtained from any one of the species. At the time of the research the only previous work on the subject was that of Coker in 1902 on *Podocarpus coriacea*, the gametophytes of the *Podocarpineæ* being quite unknown. The following is the author's summary of her results :—

"1. There are two prothallial cells cut off from the main body of the spore. In *Dacrydium Bidwillii* usually only the second divides ; in *D. laxifolium* and *D. cupressinum* both divide.

"2. The generative cell divides by an anticlinal wall, one daughter cell functioning as a body cell, and the other being sterile. In some cases both produce body cells.

"3. The walls of the prothallial cells and the two generative daughter cells disappear.

"4. The mature pollen-grain contains the body cell and five or six free nuclei, according as the first prothallial cell has or has not divided." L. C.

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