

- Estrelata neglecta* (Schlegel) (Phillip's Fulmar). Pl. 64.—A very variable species, with a wide range.
- Estrelata gularis* (Peale) (Mottled Fulmar). Pl. 68.—*Affinis* of Buller, &c.
- Estrelata leucoptera* (Gould). Pl. 69.—Not hitherto on our lists, but seen by Gould to the north of New Zealand.
- Estrelata cooki* (Gray). Pl. 71.—Northern parts of New Zealand.
- Estrelata axillaris* (Salvin) (Chatham Island Fulmar). Pl. 72.
- Macronectes (Ossifraga) gigantea* (Jacq. & Pucher). Pl. 76.—The white form of this bird is noticed.
- Daption capensis* (Linn.) (Cape Fulmar, or Cape Pigeon). Pl. 80.
- Halobœna œrulea* (Gm.) (Blue Petrel). Pl. 81.
- Prion vittatus* (Gm.) (Brown-billed Blue Fulmar). Pl. 82.
- Prion banksi* (Smith) (Banks Blue Petrel). Pl. 83.
- Prion desolatus* (Gm.) = *P. turtur* (Dove-like Petrel). Pl. 84. A. H.

3. "Die tertiäre Flora der Seymour-Insel," by P. Dusén. (Wiss. Erg. d. Schwed. Südpolar-Expedition 1901-3. Lief. 3, 28 pp., 4 Tafeln. Stockholm; 1908.)

The Swedish Antarctic Expedition, as is well known, made the extremely important discovery of fossils in a sandstone formation of Tertiary age on Seymour Island (about lat. 64° S.), the present vegetation of which desolate spot is, according to Skottsberg, of the scantiest character, consisting of "faint traces of moss-tufts in rock crevices and two kinds of lichen with their body reduced to almost nothing more than the apothecia." That the climate in Tertiary times was very different, and probably similar to that of the North Island of New Zealand to-day, is plainly evident from the identification of the fossils as follows:—

*Miconiophyllum australe*, Dus., n.sp. (*Melanostomaceæ*), is related to the living *Miconia* species of south Brazil.

*Lauriphyllum Nordenskjoeldii*, Dus., n.sp., is of doubtful affinity, but probably related to the *Lauraceæ* of subtropical South America.

*Calchvia mirabilis*, Dus., n.sp. (*Cunoniaceæ*), is closely related to the south Chilean *C. paniculata*, D. Don, a forest-tree.

*Laurelia insularis*, Dus., n.sp. (*Monimiaceæ*), calls to mind the south Chilean tree *L. sempervirens* (Ruiz and Par), Tul., the genus consisting only of two or, according to some botanists, three species, one of which is endemic in New Zealand.

*Mollinedia seymourensis*, Dus., n.sp. (*Monimiaceæ*), is related to *M. micrantha*, Perk., a forest-shrub of south Brazil. The genus is confined to the tropics of South America, and especially of Brazil.

*Drimys antarctica*, Dus., n.sp. (*Magnoliaceæ*), is closely related to *D. Winteri*, Forst., a very common low tree or shrub of Chile and Fuegia. The genus consists of about twelve species occurring in South America, New Zealand (three endemic species), Australia, New Caledonia, New Guinea, and Borneo.

Two species of *Ilex* related to the south Brazilian *Ilex* species (*Ilicinaceæ*): *Lomatia angustiloba*, Dus., n.sp.; *L. Seymourensis*, Dus., n.sp. (*Proteaceæ*), are closely related to the south Chilean-Patagonian species of the genus. *Lomatia* occurs in South America, Australia, New Caledonia, Polynesia, and China, but is wanting in New Zealand.

*Knightria Andreae*, Dus., n.sp. (*Proteaceæ*), is of especial New Zealand interest, since the genus contains only three species; one, the type, being confined to New Zealand, and the other two endemic in New Caledonia, but belonging to a subgenus *Eucarpha*.

*Fagus Dicksoni*, Dus.; *F. obscura*, Dus., n.sp. (*Fagaceæ*), have no living representatives in the Southern Hemisphere, but the former is probably identical with a fossil Fuegian species.

*Nothofagus magellanica*, Englh.; *N. pulchra*, Dus., n.sp. (*Fagaceæ*): The former is probably identical with a fossil species on Fuegia, and the latter is related to the present temperate South American species. The genus is confined to temperate South America, New Zealand, Australia.

*Myrica Nordenskjoeldii*, Dus., n.sp. (*Myricaceæ*), is related to fossil species in the Tertiary rocks of South Chile.

*Araucaria imponens*, Dus., n.sp. (*Pinaceæ-Araucariæ*), is an extremely important discovery, since it is not closely related, so far as habit goes, to the well-known Chilean *A. imbricata*, but resembles much more the far-distant *A. brazilensis*, of Brazil, and *A. Bidwillii*, of Australia. It is interesting to point out that Dusén some time ago proved the existence of a fossil *Araucaria* in Fuegia.

Nine species of ferns are noted, amongst which are *Alsophila antarctica*, related to the south Brazilian *A. feeana*, and *Polypodium Nathorstii*, Dus., n.sp.; *Pensoperis 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 Andreae*, 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 *Lomaha* 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 Chilean 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.