

B O T A N Y.

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THE first thing that strikes the student of botany when he observes the more conspicuous vegetable growth of Tasmania is what would naturally be expected, namely, the close relationship between the flora of this and nearest extensive tract of land, the south-eastern portion of Australia. Another feature of interest is the vast number of European aliens which have established themselves, and, in the more settled centres, threaten to exterminate the native growth, at least of the herbaceous plants. We may estimate that, in Tasmania, with a fairly inclusive definition of the word species, a collector may amass about 1100 flowering plants and ferns which may be considered native, or established. Out of this collection no less than 110 have been introduced from Europe, about 3 from America, 2 from Africa, and 4 or 5 from the neighbouring States in Australia and New Zealand. A phenomenon of great interest to students of distribution is that, out of our small flora, no less than 68 indigenous forms are common also to England. Of endemic species, we have the respectable total of 142. By far the greater number of the balance, 770, are confined to south-eastern Australia; about 20 per cent. spread to Queensland, New Zealand, and the eastern borders of Western Australia, while a few species extend even to South America and Japan.

Of the special features of the landscape here, as in Australia, it is dominated by the sombre Myrtaceæ; but in number of species of this order, Tasmania is poor. Of Eucalypts we have but about 13 species, against 250 for Australia, and of the whole order 29, against about 750, though it should be noted that of this large number Western Australia alone claims nearly 500 endemic species. One other order of plants gives a marked feature to the country in parts, the *Casuarineæ*, or native oaks. Their equisetum-like foliage gives them the aspect of a survival from an

earlier age. The order is small, and, except *C. equisetifolia*, which spreads from Polynesia to Asia and Africa, is confined to Australia.

That ancient and keenly-interesting order *Proteaceæ* is very poorly represented in Tasmania. We possess but 24 species, and out of these 11 are endemic. Of the large genus *Grevillea*, of which Australia can boast some 173 forms, Tasmania can only lay claim to one, *G. australis*, and, in *Hakea*, to 7 out of 115; *Conospermum*, 1 out of 36; *Personia*, 2 of 70; *Banksia*, 2 of 50. Many large genera are quite unrepresented. On the other hand, of the ancient genus *Orites*, whose ancestors may be still traced in the Cretaceous period, Tasmania absorbs as her exclusive possession 4 out of the 6 existing in the present day. Also, the monotypic genera, *Bellendena*, *Agastachys*, and *Cenarrhenes*, are endemic. The *Leguminosæ* and *Compositæ* here, as elsewhere, form a preponderance of wild flora. Among the former, the Acacias constitute a graceful and beautiful portion of the shrubland so novel to the European visitor, and none of them possess this grace and beauty more than our endemic prickly mimosa, the drooping *A. riceana*. There is nothing about the *Compositæ* that calls for exceptional notice, except the feature common to the Southern Hemisphere, the numerous forms of everlastings. The asters are fairly numerous, but are mostly shrubs (*Olearias*). The wild daisies (*Brachycomes*) are mostly blue or mauve, and the Senecios occasionally are arborescent. *Abrotanella forsterioides*, which occurs only on mountain-tops, forms dense pulvinate masses, and has a superficial resemblance to moss. *Pterygopappus lawrencii* has a somewhat similar habit. *Donatia novæ-zelandiæ*, among the *Stylideæ*, and *Dracophyllum minimum* amongst the *Epacrideæ*, have also the same peculiar appearance. An order of exceptional interest in Tasmanian botany is the *Epacrideæ*. Of the 290 Australian forms, West Australia claims about 145 as endemic; of the remainder, 60 appear in Tasmania, of which 30 are recorded as endemic. The genus *Epacris*, with nominally 11 species, is ill-defined, and requires revision. The beautiful climbing *Epacris*, *Prionotes cerinthoides*, with its long crimson bells, is of more than passing interest in that its partially-bilocular anthers connect this order with the more northern *Ericaceæ*. The genus *Richea*, with simple leaves with linear venation and broad sheathing bases, is, except one species, *R. gunnii*, found sparingly in the highlands in Victoria, exclusively Tasmanian. It, with the allied genera, *Dracophyllum*, *Andersonia*, and *Sprengelia*, form a decidedly primitive type of foliage for so highly-organised

shrubs. *R. pandanifolia* and *D. milligani*, when well developed, grow erect and unbranched, with a head of long sword-like leaves, often many feet in length, recalling the aspect of a cordyline or a palm rather than a dicotyledon. The *Rhamnaceæ*, *Rutaceæ*, and *Rubiaceæ* are all fairly represented, and with a large proportion of endemic types. *Caprifoliaceæ*, on the other hand, is represented by but one common Australian species, *Sambucus gaudichaudiana*. *Rosaceæ* again, as in Australia, is but poorly represented; still, we have two interesting endemics, a *Geum*, *G. renifolium*, with reniform leaves and large strawberry-like flowers. Unfortunately, it occurs only towards the summit of Adamson's Peak and La Perouse. It appears, however, not very difficult to acclimatise to a low altitude. The other is a Raspberry, *Rubus gunnianus*. It is small, with a creeping habit, and bears, when well developed, a scarlet fruit nearly an inch in diameter, consisting of drupels each nearly $\frac{1}{3}$ -in. The flavour is poor, and though most common towards mountain-tops, it seems to resist all efforts of cultivation. The large order, *Stylidaceæ*, though almost confined to Australia, is hardly to be found in Tasmania. Only one species, *S. graminifolium*, the familiar trigger-plant, with its irritable column and tall raceuse of crimson-rose flowers, is ordinarily met with. The *Cupuliferæ*, which supply the broad-leaved trees to the forests of the Northern Hemisphere, are here replaced by the *Myrtaceæ*. But, in Tasmania, we still have two *Fagus* of this order. *F. cunninghami*, a noble tree, with wood of an excellent quality, is abundant in rich forest land throughout the Island, and *F. gunnii*, a small Alpine tree, that occurs only at a high elevation in the West and South-West. This latter has the singular distinction of being the only deciduous indigenous species in Australia. In *Hydrocharidaceæ*, *Valisneria spiralis*, as here found, is more robust than the European type, and the peduncles create annoyance by refusing to retract in the orthodox coil. *Elodea canadensis* has also come here from Europe, America, or somewhere. As in England, so here, only the ladies of the species have arrived, but this seems to be not at all disconcerting, and its propagation in watercourses is often more generous than entertaining. The orchids are fairly numerous; about 70 kinds, mostly of the Australian genera, *Pterostylis*, *Caldenia*, *Thelymitra*, *Diuris*, and *Prasophyllum*. Probably none are endemic; only one, *Sarcochilus parviflorus*, epiphytic. Two, *Gastrodia sesamoides* and *Dipodium punctatum*, are, doubtless, parasitic on roots of higher plants, but the connection has never been traced. Amongst the *Iridaceæ*,

Hewardia tasmanica is of unusual interest, in so far that the pistil is only partially immersed in the floral tube; this feature is responsible for this plant usually being placed amongst the lilies. The flower is rather nice, deep chocolate, purple, or pale yellow, and about 2 inches across, but it does not care to depart from its native habitat, the highlands of the West and South-West.

Among the *Burmanniaceæ* there is one interesting little beast, a *Thismia*, that is sparsely found in gullies of Southern Tasmania. It has no immediate relative nearer than Borneo or Java. Its presence is a decided puzzle. Such an ephemeral saphrophyte could hardly have been transmitted over long distances by bird-assistance, besides its immediate relatives are not only far off, but not identical. The lilies do not call for special attention in such a restricted space. The pond-weeds, duck weeds, and other fresh-water plants, as might be expected, are, as elsewhere, of the commonly-distributed types of the Old World, but the *Restiaceæ* and *Centrolepideæ*, so common in Tasmania, belong to a type of plants decidedly Southern Hemispheric, and probably the remains of a former type. The perianth is still there, but primitive and uncertain; the leaves are reduced and sheath-like, and the whole type gives one the idea of an early effort thrust aside by the more robust development of the sedges.

The sedges, or *Cyperaceæ*, an order of keen interest, must be passed for want of space, except to allude to the paucity of species of *Cyperus*, two only occurring here, *C. lucidus* and *gunnii*. *Fimbristylis* is entirely absent, but *Lepidosperma* makes its presence recognised by some nine or ten species.

Of the grasses, Tasmania is very poorly off for indigeneous species, 45 forms, and of these, only 2, *Microlæna tasmanica* and *Deyeuxia gunniana*, are endemic; but we make up for it, on the other hand, by the numbers of aliens, chiefly European, that are steadily dispersing themselves far and wide. *Anthoxanthum odoratum* and *Holcus lanatus*, above all others, are making themselves very much at home. It is surprising that, with so easily-transmitted species as grasses, only six forms, *Imperata arundinacea*, *Aira cæspitosa*, *Trisetum subspicatum*, *Glyceria fluitans*, *Festuca duriuscula*, and *Phragmites communis*, should be common alike to Europe and Tasmania.

The conifers of Tasmania are of great interest to the botanist. We have no true pines or firs. We have one genus, *Arthrotaxis*, belonging to the *Taxodium* section of *Pinoideæ*; it contains three species, all

confined to Tasmania. Unfortunately, it lives only at a considerable elevation, and objects to cultivation. *Calitris*, of which we have two species, *C. rhomboidea*, distributed also to South and East temperate Australia, and *C. oblonga*, confined to Northern Tasmania, together with the curious little shrub, with minute crowded 4-rowed leaves, *Fitzroya archeri*, belong to the Cypress section. The remainder are all yews. *Dacrydium franklinii*, a noble tree of the West and South-West, that yields the valuable Huon pine, has minute overlapping leaves, and as minute few-flowered cones. It is an excessively slow grower, and inhabits only low-lying swamps; wherefore, its age of usefulness is limited. *Phyllocladus rhomboidalis*, the only Tasmanian representative of the New Zealand genus, is a useful timber-tree, but is seldom found of much size. The leaf-like *Cladodia* are somewhat the shape of the leaf segments of *Apium graveolens*, whence the tree is locally known as celery-topped pine. *Podocarpus alpina* is small and procumbent, with yew-shaped leaves and red fleshy peduncles to the solitary seeds; *Microcachrys tetragona* is procumbent, leaves minute four-rowed, and the cone many-seeded, the bracts crimson and fleshy, the cone having the appearance of a small crimson mulberry $\frac{1}{2}$ in. long; *Pherosphaera hookeriana* is very similar to *Dacrydium franklinii*, only dwarf, and the cones have many scales of cartilaginous consistency. These three are Alpine and endemic. In ferns, though we cannot approach New Zealand, Tasmania is fairly well off. We have about 70 species; most of them are confined to New Zealand and Australia. None are endemic. *Hypolepis tenuifolia* and *Polypodium punctatum* run absolutely into one another in our bush; also do *Asplenium bulbiferum*, *laxum*, *hookerianum*, and *flaccidum*, and some forms approximate very nearly *A. obtusatum*. Of tree-ferns, we have *Dicksonia antarctica*, *Alsophila australis*, and *Cyathea cunninghami*, and *Todea barbata* sometimes assumes that form. *Pteris aquilina*, *Asplenium trichomanes*, *Gymnogramme rutæfolia*, *G. leptophylla*, *Aspidium aculeatum*, *Cystopteris fragilis*, *Hymenophyllum tunbridgense*, and *H. wilsoni*, occur also in Europe.

Space will not permit even a cursory glance at the lower cryptogams; nor would such a glance be of any value, if it did.