

There are a considerable number of herbaceous twiners, such as *Dioscorea* and *Ipomoea*, while woody twiners or lianes are exemplified by *Celastrus*, *Menispermum*, and some species of *Lonicera*.

Water-plants are well represented in the Canadian flora, as might be expected in a country with so many rivers and lakes of all sizes. The adaptations shown by water-plants to the surrounding medium are very varied in the different species, but one of the most characteristic features is the occurrence of air-spaces throughout all parts of the plant. These serve not only to give buoyancy to the stem and leaves, but also serve for the passage of gases throughout the tissues. A full discussion of the various adaptations will be found in the survey by the present author.<sup>16</sup> While it is difficult in some cases to draw the line between typical water-plants and swamp-plants, it is safe to say that there are 40 genera containing representatives of this group. Some of these, such as *Lemna*, *Callitriche*, and *Hippuris*, have a very wide distribution throughout the world. Among the more interesting members of this group are: *Wolffia*, one of the tiniest seed-plants known; *Phyllospadix*, growing in the sea on the Pacific coast; *Podostemon*, the only representative in Canada of a peculiar group of plants found attached to stones in running water; the Pickerel-weed (*Pontederia cordata*); the Water-shield (*Brasenia Schreberi*), and the American Lotus (*Nelumbo lutea*), both of which belong to the Waterlily family.

Spiny or prickly plants are probably adapted to defend themselves against browsing animals. They are represented by 2 genera of the Cactus family, namely *Mammillaria* and *Opuntia*, by various species of *Ribes*, also by Prickly Ash (*Xanthoxylum americanum*), Devil's Club (*Echinopanax horridum*), and others. Presumably belonging to the same ecologic group are plants with stinging hairs, such as *Laportea* and *Urtica*.

Halophytes or salt-loving plants are well represented in the Canadian flora. Some of the most striking examples are the Sea Lungwort (*Mertensia maritima*) and the Sea Lavender (*Limonium carolinianum*) found only on the Atlantic coast, while Scottish Lovage (*Ligusticum scoticum*), Beach Pea (*Lathyrus maritimus*), and Sea Ragwort (*Senecio Pseudo-Arnica*) occur on both the Atlantic and Pacific coasts. Some species, such as Lyme-grass (*Elymus arenarius*), Beach-grass (*Ammophila arenaria*) and Sea Rocket (*Cakile edentula*), are restricted to areas of drifted sand, while others, such as Sea Arrow-grass (*Triglochin maritima*) and Salt-grass (*Distichlis spicata*) are partial to the salt marsh.

It is worthy of note that a considerable number of plants belonging to this group, such as Beach Pea, Rocket, Beach-grass, and Knotweed Spurge (*Euphorbia polygonifolia*), also occur on the shores of the Great Lakes, indicating that those bodies of water were formerly connected with the sea. Other salt-loving plants, such as Sea Arrow-grass, Salt-grass, Sea Milkwort (*Glaux maritima*) and species of *Salicornia* and *Plantago*, occur also on saline soil in the Prairie Provinces.

A much fuller account of the relation of the above groups to environmental conditions, as well as methods of dispersal of seeds and fruits by wind and animals will be found in the "Survey"<sup>16</sup> by the author.

**Exotic Flora.\***—In addition to the native or indigenous flora many other species have from time to time found their way into this country. Some of these have evidently come to stay and have proved themselves to be much more aggressive in their demand for elbow room than the indigenous species. Others may persist for a few years and then disappear. The majority have probably been

\* See footnote, p. 33.