

hirsuta), narrowleaf fleabane (*Erigeron linearis*), several star-thistles (*Centaurea*) and desert pink (*Stephanomeria tenuifolia*). Other more mesophytic shrubs of wider distribution occur in the less arid portions.

Columbia Forest Region.—A large part of the Kootenay River Valley, the upper valleys of the Thompson and Fraser Rivers, and the Quesnel Lake area of British Columbia are included in this Region. Upon encountering the mountains of this area (roughly from south to north, the Selkirk, Purcell, Monashee, Columbia and Cariboo ranges), the eastward-moving Pacific air masses rise, cool, and condense moisture, resulting in what is known as the "Interior Wet Belt". Up to an altitude of about 4,000 feet, the forest bears a strong resemblance to that of the Pacific Coast, dominated by western hemlock (*Tsuga heterophylla*) and western red cedar (*Thuja plicata*), with varying amounts of Douglas fir (*Pseudotsuga mucronata*), western white pine (*Pinus monticola*), lodgepole pine (*P. contorta* var. *latifolia*), Engelmann spruce (*Picea engelmannii*), and alpine fir (*Abies lasiocarpa*) and, in the southern section, scattered grand fir (*Abies grandis*) and western larch (*Larix occidentalis*). Black cottonwood (*Populus trichocarpa*) favours recent alluvial soils.

Climatically similar to the Coast Forest Region and with its valleys interpenetrating the Montane and Subalpine Forest Regions, the shrubby and herbaceous vegetation of the Columbia Forest Region is very similar to that of these other Regions, although the Selkirks, being rather a plateau with emergent peaks, afford a remarkable development of alpine meadows, with the characteristic plants of such higher Regions.

Alpine Floral Region.—This Region includes all of the mountainous areas above the tree-line (in general, above the 3,000-foot level on Vancouver Island and the adjacent Coast Range to above the 5,000-foot to 6,800-foot level in the Selkirks and Rockies). Many alpine species are also circumpolar in arctic regions and constitute a group known as arctic-alpine. The Canadian distributions of three arctic-alpine species, alpine bistort (*Polygonum viviparum*), snow draba (*Draba nivalis*) and woolly fernweed (*Pedicularis lanata*), and three alpine species, Lyall's saxifrage (*Saxifraga lyallii*), heartleaf arnica (*Arnica cordifolia*) and Hooker's mountain avens (*Dryas hookeriana*), are shown in the *Atlas of Canada* (1957, sheet 38, maps 2 and 9).

In addition, the following are representative of the rocky summits, ledges and talus slopes above timber-line: several grasses of the genus *Poa*, many sedges (*Carex*), several rushes (*Juncus*; *Luzula*), dwarf willows (*Salix*), umbrella-plants (*Eriogonum*), mountain-sorrel (*Oxyria digyna*), sandworts (*Arenaria*), alpine bitter cress (*Cardamine bellidifolia*), several drabas (*Draba*), roseroot (*Sedum roseum*), several cinquefoils (*Potentilla*), luetkea (*Luetkea pectinata*), several locoweeds (*Oxytropis*), black crowberry (*Empetrum nigrum*), several willow-herbs (*Epilobium*), four cassiopes (*Cassiope*), glandular Labrador-tea (*Ledum glandulosum*), alpine azalea (*Loiseleuria procumbens*), three mountain heaths (*Phyllodoce*), Lapland rosebay (*Rhododendron lapponicum*), dwarf blueberry (*Vaccinium caespitosum*), bog blueberry (*V. uliginosum*), a scorpion-weed (*Phacelia sericea*), alpine speedwell (*Veronica alpina*), beard-tongues (*Penstemon*), several everlastings (*Antennaria*), several arnicas (*Arnica*), alpine hawk's-beard (*Crepis nana*), several fleabanens (*Erigeron*) and several ragworts (*Senecio*).

Moist or wet alpine meadows, particularly in the Selkirks, commonly harbour such mesophytic species as alpine timothy (*Phleum alpinum*), cotton-grasses (*Eriophorum*), sedges (*Carex*), western dog's-tooth-violet (*Erythronium*), Indian hellebore (*Veratrum eschscholtzii*), rein-orchises (*Habenaria*), western pasque-flower (*Pulsatilla occidentalis*), white marsh-marigold (*Caltha leptosepala*), a buttercup (*Ranunculus eschscholtzii*), globe-flower (*Trollius laxus*), a grass-of-Parnassus (*Parnassia fimbriata*), a saxifrage (*Leptarrhena pyrolifolia*), fern-weeds (*Pedicularis bracteosa* and *P. groenlandica*), Sitka valerian (*Valeriana sitchensis*) and arnicas (*Arnica*).

Typical lists of alpine and subalpine floras as observed in Jasper and Banff National Parks, Alta., are given by Porsild (1959). Underhill (1961) has prepared an illustrated guide to some of the alpine plants of Manning Provincial Park, B.C., near the Washington boundary.