

being the case, Dr. Macoun contends that it is not reasonable to expect it to take to cold and damp localities in the north. Without a doubt, however, this species ranges from Newfoundland, Anticosti, Nova Scotia and New Brunswick, through Quebec and Ontario, westward to the forest limit of Manitoba. In the prairie region it is found on the sand-hills bordering the first prairie steppe. Occasionally trees are met with in the Saskatchewan Valley and in the ravines of the Cypress Hills are numerous small groves. It ascends the Bow River from Calgary, and becomes intermixed with *Picea Englemanni* at Silver City, within the Rocky Mountains. Richardson gives its range as throughout Nova Scotia and Canada, to within twenty miles of the Arctic Sea and on the Coppermine River; in latitude 67 degrees it attains a height of twenty feet or more. Spruce trees have no tap root, the roots are all lateral, so that the soil in which they grow need not be deep. The seed ripens in autumn and one pound contains about fifty thousand pickles, of which about eighty per cent. germinate under ordinary conditions. The seed is winged, and this is a common characteristic of the family, as of all of the conifers, it is contained in cones of overlapping scales. The white spruce attains a height of about fifty feet and a diameter of two feet at the base. Forests composed of these trees may be felled every ten or fifteen years for lumbering purposes, provided that all trees less than a foot in diameter are left standing. A great part of the sub-arctic forest is composed of white and black

spruce. White spruce is being more generally used now for railway ties, fence posts, piles and telegraph poles, besides the general building purposes already mentioned; black spruce is considerably best suited of the two for masts and spars.

Engelmann's spruce (*Picea Engelmanni*), according to Prof. Macoun, is first met with in the Bow River Valley, on the line of the C. P. R., about the Cascade Mountains, but does not completely supersede the white spruce until Castle Mountain is passed. At Laggan and all points westward it is the only spruce, and at Kicking Horse Lake there are groves containing many fine trees. In the Columbia Valley and all the valleys of the Selkirk Mountains, it grows to great size, often being four feet in diameter, and having an average height of over 150 feet. It is more a tree of the valleys than of the mountains, seldom ascending more than six thousand feet. The tree appears to characterize the interior plateau and eastern part of the Province of British Columbia, with the exception of the dry southern portions of the former, and forms dense groves in the mountains. It borders nearly all the streams and swamps in the northern portion of British Columbia, between about 2,500 and 3,500 feet elevation, and forms dense groves in the valleys of the Rocky Mountains. The wood is largely used in bridge and trestle work and for heavy construction work generally. The wood is very like that of the black and white spruces, and is used for the same purposes. It was the chief wood used in the construction of the Canadian