

immature and non-commercial trees were included in a tree census, the Western hemlock, for reasons to be stated later, would be found to outrank the fir in mere numbers.

The largest fir trees, from four to eight feet in diameter, and 200 to 300 feet high, occur in the deep sandy loam soils of the first bench lands above the lakes, streams and along the innumerable re-entrant arms of the sea. According to the writer's observations, they occur at present only in scattered groves, or relatively small patches, or scattered among trees of much smaller size. They are usually in situations well protected from fire, and this is doubtless the reason they have been spared. The medium-sized trees, from one and one-half to four feet in diameter, and from 150 to 200 feet high, are found on the stony loams and the sands of the second bench lands of the inland waters and of the old sea terraces of the coast. They are also found on soils of similar nature on the numerous glacial sand plains at the mouth of the mountain valleys. These medium-sized fir trees, in addition, extend up the lower slopes of the mountains to an elevation between 600 and 800 feet. The situations in which the medium-sized trees grow are very extensive, and they furnish by far the greater portion of the fir saw-logs.

Above an altitude of 600 to 800 feet the mature fir trees as a whole are small, from ten to thirteen inches in diameter, and from 75 to 125 feet high. Some medium-sized trees, however, may run up the ravines to the higher elevations. The soil is thin and very rocky, although, when not burned, the rocks are hidden by a luxuriant growth of mosses, ferns and small, woody undergrowth. The stands are dense and have every appearance of being "growth bound." This type of fir forest is quite extensive. Small mature trees also occupy the numerous gravel plains at lower elevations.

Western hemlock is the commonest associate of the Douglas fir in the coastal region under consideration, but it rarely, if ever, attains the proportions of the fir. Away from the immediate coast, it grows in rather more moist situations than the fir, or is more abundant and of larger size when it shares with the fir the better soil conditions. It is found in good development particularly along streams and on north-facing stream slopes, on flats at the head of lakes, in gullies and depressions in the sand plains. Hemlock occurs in suppressed condition, often in dense thickets, beneath nearly all of the mature fir stands whatever the kind of soil they may occupy, so that if these small trees be counted, the hemlock very often surpasses the fir in numbers, although the fir dominates the stand. The hemlock evidently recovers from its suppression when released by the death of the over-topping fir, for a break in the crown cover of the fir is usually occupied by