Difficulty of access and consequent cost of cartage, for the most part, preclude all present attempts to commercially utilise the forests of these mountain-valleys; and all attempts in the past of utilising these swift snow-born rivers for flotation of timber have been disastrous and ruinous.

The approximate total area of "mountain forest"—*i.e.*, between 600 ft. and 2,000 ft. above sea-level—is 1,627·8 square miles, or 1,041,280 acres.

Forest in the Low Lands.

As noted above, the low lands comprise fairly high hummocky rounded hills, glacial moraines of all classes, high tablelands, broad plateaux, immense areas of sea-formed terraces, lacustrine formations, and the ordinary fluviatile deposits in the numerous river-valleys.

Dispersed all over these low lands are numerous lakes. All vary in character—coastal tidal lagoons, shallow reedy sheets, deep hill-girt waters. The deeper lakes occupy the basins scooped out by ancient glaciers that have receded ages ago. Some, again, are slowly filling up with the shingle poured into them by the mountain rivers and streams, whilst others are rising very slowly but definitely, and a few are only remnants of very extensive sheets of water, as the high marginal lake-formed terraces prove.

In conjunction with their effluents, these lakes, in some cases, form valuable waterways for the transport of timber, minerals, produce, and goods.

Numbers of pakihi, or open lands, of more or less extent, occur all over the district, these, of course, being devoid of forest.

Leaving out the lands already denuded of bush by the settler, sawmiller, and miner, and also the comparatively small areas of the lakes, pakihi, rivers, and swamps, we may say that the whole of the low lands is covered with forest. The varieties of trees differ considerably, according to soil and altitude. Kamahi and rata are the chief timbers—very useful for firewood and mining purposes; and, being spread nearly over the whole district, constitute an inexhaustible supply. Rimu is the chief milling-timber, and this also, intermixed with miro and hinau, is widely distributed from the seaboard to the interior uplands. Valuable stretches of white-pine belt the low-lying coastal lands, river-margins, environs of lakes, and swampy depressions; and the same may be said of the silver-pine, though numerous detached areas of these timbers also occur on many broad terraces where free drainage is checked by the impervious nature of the impacted glacial drift on which the soil rests. Patches of black-pine (matai) are met with, generally on the deep alluvium of river-bottom lands; also rarer clumps of totara; stunted totara frequently occur on the small ridges and hollows of the strips of the sand-dunes along the sea-coast; while cedars, more or less singly, are scattered along the flanks of the inland hills and all over the lower terraces and plateaux, but rarely within six miles of the coast. Very often isolated "islands" of fine tall cedars occur in the saddles between the interior high lands and the foothills and the elevated terraces of the low lands. Kowhai never grows large, and is rarely found inland, but often lines the sluggish streams and lagoons immediately along the sea-coast; but, owing to its small size hereabouts, it is of no commercial value. Broadleaf is found in dry-bottom lands, mostly in scrub form and in patches, but scattered isolated mature trees of workable size occur in many localities. All the forest, in a narrow strip along the sea-coast, is "wind-clipped"; the result of exposure to the prevailing westerly gales from the open ocean being that all these timbers, great or small, are toughened and full of "pattern," as the furniture-men say.

"Wind-rows" are of infrequent occurrence, and only four of any magnitude are known—viz., in the Teremakau, Thomas, Arawata, and Ahaura Valleys. These are invariably due to the easterly gales which, at times, sweep up the eastern faces of and over the main divide, to roar down the Westland valleys, often for a few days, and do immense damage to much of the inland forest.

At irregular intervals—from eight to twenty years—we have heavy successive falls of snow, often followed by a great easterly wind, the double effect of the snow and wind pressure being to devastate the forest, principally in a belt lying between 1,200 ft. and 2,500 ft. above sea-level. Sometimes the strip of fallen timber extends right along the mountain-faces of the mountain-range, with breaks here and there, principally on the subsidiary ridges and spurs, where partial shelter obtains. Again, it frequently happens that the main gale and snowfall are confined in extent and strength to the north or south, and thus certain forest lands are either swept or escape damage. The effects of this extraordinary weather-damage to the mountain forests remain for many years, for in scrambling up through the bush which so closely coats our hillsides we often fall in with a belt of fallen timber, and experience much toil and vexatious delay in dodging a way over and under an interlocked abatis of prostrate tree-trunks, greasy with decay, and smothered in between with a dense undergrowth eagerly pushing its way into the unwonted sunlight. A certain quantity of forest is periodically destroyed by land-slides and river-floods. In the higher regions of the watersheds of our great alpine rivers an irregular descent of small snow-slides occurs; these gash lanes through the alpine forest, leaving streaks of bare rock and shale completely swept of vegetation. At long intervals, immense avalanches plunge down from the high, surcharged snowfields and ice-filled gullies, tearing away large quantities of forest, eventually sweeping into and often completely filling up the whole valley-floor, and there overlying a fair extent of timber. Again, in the inland valleys, during the intervals of rest, the mountain-sides become gradually covered with a coating of dust, sand, and disintegrated shale, derived from the frost-riven rocks above the bush-line. This shale and dust coating is constantly working its way down through the bush (which roots into and partially binds it), partly by gravitation and partly by snow-thaws, until it reaches the base of the mountain, and there for many years may remain at rest. Eventually a wave of shingle (the residuum of some great avalanche higher up the valley) raises the bed of the river, and forces its waters against the toe of this shale-screen; the boulders, driven by the raging current, pound and hammer down the loose drift, with the frequent result that large slips, loaded with timber, come down for thousands of feet. Often this shale accumulates on these sidelings, being held back by the tree-