trunks and matted undergrowth until it fairly curves out into an unsafe bulge, which, on becoming saturated with water, and receiving the impact of a sudden thaw, streams downward in forest-devastating strength. Frequently the whole of the sides of a great inland valley are screened by the accumulated rock-waste and shale of ages past, and these so completely overgrown by scrub and forest that hardly a break is visible in its splendid canopy of varied greenery. But, as noted above, the "safety" slope of the water-soaked mass of loosened mountain waste eventually becomes so weakened that even such a "shoogle" as the continued tremor of an earthquake sets the shale into such destructive motion that the valley now presents aspects of bare, rugged faces, destitute of all vegetation except that clinging to those portions of the ridges and spurs, which from their rocky nature and location were immune from this disaster.

Fires never cause any serious damage in the low lands. This is owing to the humid climate, for it may be confidently asserted that it is impossible to burn the standing forest; and the extreme difficulty of getting a "good burn," even of fallen bush and other undergrowth, is one of the greatest drawbacks to our pioneer settlers. Along the main roads, the "second growth" has to be periodically cut down, and when dried is frequently fired, but in no case does the fire extend into the adjoining forest. In a few localities, where immature bush intermingled with manuka scrub skirts the road, the fire may spread for a few chains, but does no damage to any commercial timber. In a short time these semi-burnt areas are again overgrown.

Sometimes the sheep-farmers, who in summer depasture flocks on the grass lands immediately above the bush, set the strong, coarse herbage in a blaze, and consequently fire the adjoining alpine forest, which is thereabouts chiefly composed of stunted brooms, akeake, yellow-pines, &c.; all these shrubs are full of turpentine, and therefore very combustible. Nevertheless, such fires rarely extend more than a short distance down or along the faces of the mountains, and, as only a few scattered grass-grown hilltops are available as sheep pastures, a very small area is liable to be burnt. Comparatively small scattered acreages of timber in the low lands are killed by water being dammed back by land-slides, and also by the *débris* and tailings from gold mining and sluicing claims; but the total damage from these sources during the past forty-five years aggregates comparatively a small acreage.

In Westland, wherever the forest has been destroyed by either natural or artificial causes, its recuperative powers are magnificent, for whenever spaces are swept of bush by landslides in the high lands almost immediately these bare streaks are covered with greenery, usually in the first place *fuchsia* and lace-barks, and in a few years these gaunt scars are quite healed up, and it takes the expert's eye to detect the locations of the original slips. Likewise, in the low lands, the abandoned sites of sawmills, mining camps, or other artificial clearings are soon covered with luxuriant small bush; in fact, our settlers experience considerable difficulty in keeping down and effectually getting rid of what is known as the "second growth."

In ancient times this district was occupied by a forest, of which only a few isolated gigantic trees now exist, and these are scattered singly all over the low lands; they comprise white, red, silver, and black pines, hinau, totara, manuka, and beech, as well as birch. A small number are still erect and flourishing, but others again have fallen, and startle the bushmen, when they happen on them, by the huge size of their prostrate trunks. So far as we yet know, no extra large trees are to be met with on the high lands of Westland: they all occur on the low lands, between the foothills and the sea-coast.

One marked feature of our forest is the absence of old trees—that is to say, no decayed matured trees, either standing or fallen, are to be seen. In the high lands certainly, dead, fully matured trees occur amongst the beech, cedars, and totara in the higher mountain forests, but rarely below 1,500 ft. above sea-level. As this upper timber naturally decays, rimu and other kinds which are completely new to higher lands are taking their place, and these young immature trees may be easily picked out as they dot and fleck by their bright foliage the sombre older forest.

All over the low lands, in almost every place where clearings in the forest are made or occur through land-slides, certain shrubs, plants, and ferns (totally distinct from the ordinary bush undergrowth) forthwith spring up with a strong and vigorous vitality, thus showing that in ancient times the district was more or less destitute of bush, and was assuredly mostly covered with the ordinary vegetation characteristic of open country. Contemporaneously with these scrub and bracken-fern growths, possibly the old giant forest, previously noted, may have been distributed over this champaign country in clumps and irregular strips, whence the present forest may have gradually spread, and, owing to climatic changes, obtained complete possession; the seeds of the previous open-country growths meanwhile lying dormant in the soil, ready to shoot up when exposed to direct sunlight.

The approximate total area of forest in the low lands—*i.e.*, between the seaboard and 600 ft. above sea-level—is 1,181 square miles, or 755,840 acres.

The total area of forest lands in Westland is 3,621·3 square miles, or 2,317,660 acres.

Varieties of Timber Trees, and Uses.

Note.—In the following descriptions, the sizes of the barrels of the separate timbers are given, as for sawmilling, and not the actual height, &c., of the whole trees.

2. *Totara.*—Occurs in limited areas, from Nelson boundary down to Gorge River, in South Westland. Usually grows on stony flats of rivers, on the lower foothills, and (only as stunted trees and creeping wind-clipped scrub) immediately along the sea-board. Grows in fairly large patches, but usually as scattered trees amongst other timber. Average size, 20 ft. by 2 ft.; a fair number of odd trees 50 ft. by 4 ft. It is principally used for house-building, stock-yards, fencing-posts, shingles, sleepers, window-sashes and fittings, bridge-work, and especially for fine furniture. It will not do for boat-building, as it is too easily cracked; but the small gnarled twisted trees which grow along the narrow strips of old sand-dunes bordering the sea-coast and adjoining lagoons furnish first-class knees, thwarts,