remembered that the latter journey can only be performed by Alpine climbers, with proper appliances, and even they would run extra risks in these mountains, through the changeable nature of the climate.

To those who simply wish to see the Fox Glacier without much trouble, a journey to point K is all that is required. By crossing the glacier at that place to anywhere near point M the whole of the two ice-falls and Mount Haidinger can be seen comfortably. By far the best view of the country, the glaciers, Tasman, and the Cone Ridge, is to be seen away down near the hot springs, and a far better idea of the past and present appearance of the glacier can be seen from there than anywhere else. After clearing out the hot spring one can lie in the tepid water and watch the blocks of ice rolling down the Fox River within a few feet of him. There is no doubt that before long this spring will be as great an attraction as the glaciers. It is situated on the south bank of the river, and about 40 chains below the terminal-face. At present it is covered with a layer of river-shingle, but its position can be found at once by the peculiar sulphurous smell coming through the shingle. The spring can be cleaned out at any time without much trouble.

Old Ice-lines.

The Fox Valley shows, perhaps better than any other in Westland, the old action of ice and weather denudation on the slopes of the hills. The lines are mostly well defined, both by the nature of the vegetation and the remains of the rock-ledges, showing the ice-levels at different periods. The regularity of their distances from each other, and their uniformity of grade, as shown not only in this valley but in almost every other in Westland, show that the same causes were at work on them all; and no doubt those lines of lateral moraines and rock-terraces are of nearly the same date all over the country. They are totally unlike the raised sea-beaches of the southern bluffs, which are sea formations entirely. The ice-ledges in the mountains slope for miles parallel to the flow of present or ancient glaciers; the sea-ledges, as far as I have examined them, are independent of each other, no two being of the same height above or below sea-level, and their dip is always in line with present contour of the coast. This shows that their present position is caused by the undulating rise and fall of the land; while the ice-lines all bear some affinity to each other, in distance apart, and uniformity of slope.

Take, for example, lines 1, 2, and 3 on the map of the Fox Glacier: they are at a certain distance from each other, their slopes also have certain uniformity, and the opposite lateral moraines are on the same level and slope with reference to the flow of the ice. Examine any other river where such features show, and it will be found that one rule holds good with respect to them all. In many cases they have been so destroyed by denudation as only to show faint traces; but those traces are unmistakeable, showing that certain fixed causes were at work from the commencement of the so-called glacier period, down, no doubt, to the present time. When a glacier has travelled for many miles through mountains before it breaks through on to the flats, those lines, although keeping the same relative distance from each other, have very little slope; but when they come through the hills and approach the sea, the slope is more rapid, as on the Franz Josef and the Fox. . . .

The time which it takes for the snow high up on a *névé* to reach the terminus of a glacier is not yet known, so we cannot tell as yet whether a heavy snowfall, such as took place last year, and also some seventeen years ago, may not years afterwards cause a decided advance at the terminus. Several years of a light snowfall may have a contrary effect. But the time required to produce these effects—of either advance or retreat—has yet to be determined, and that can only be done after observations have been taken extending over a series of years.

In the map, the curved lines show the trend of the glacier, first on one side, then on the other. Standing at point K and looking across the ice, it has the appearance of having been ploughed by a very bad team, the furrows varying from six inches to a couple of feet. This effect is caused by the different layers of ice lying almost perpendicularly. At that place these lines, or stratifications as they may be called, are not the result of different eras of snowfall, summer and winter markings, like the rings on a tree, as some people imagine, but are simply caused by pressure. Almost every substance in nature will show the same if the required pressure and direction is given. On the glacier there are round, well-shaped holes—some of small circumference, others larger—and they often go down to unknown depths. In some cases they are perpendicular for a short distance only, then they run level for several chains, at times coming out on the surface lower down the glacier, or taking a turn away down into darkness, or gradually tapering away to nothing. One we visited was well worth seeing. Going down about 20ft., by cutting a few steps, we found it then ran on a level in a splendid arch 20ft. high and about 6ft. broad, with a flat floor of clear ice. Its walls were garnished with glittering pinnacles, ledges, and niches of clear white ice, showing now and again a beautiful blue tint. There was plenty of light inside, but of rather a weird nature, giving the whole a pantomimic effect suggestive of fairies and demons. Those holes and tunnels are caused by water melting on the glacier in the summer, which works its way down into cracks on the ice, and the peculiar "horse-collar" looking arches, so often seen on *serac* ice, are the remains of those tunnels.

Bird Life.

There is very little to be said on the subject of native birds, at least in this report—cats, weasels, and such like, have done their work; scarcely a small native bird of any kind is to be seen, though wekas and keas are still to the fore, the latter being as tame as ever. But the introduced birds, such as blackbirds, thrushes, starlings, and a number of other varieties, are spreading all over the country. Hereditary instinct appears to enable them to escape the dangers that are exterminating the native birds.

There is no danger that Westland will ever want bird-life; still, very many people would prefer to see the native birds predominant, they, somehow or other, are more in keeping with their surroundings.