

The
Summit
Road

ITS SCENERY
BOTANY
GEOLOGY

By B. E. BAUGHAN
L. COCKAYNE, Ph.D., F.R.S.
R. SPEIGHT, M.Sc., F.G.S.

R. J. Hart
102 Robert St
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Price: 2/-

*The Proceeds of the Sale of this Booklet
will be devoted to the Funds of the
Summit Road Association.*

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1914

SUMMIT ROAD ASSOCIATION.

The Association was organised in 1909.

Any person may become a member of the Association on payment of a subscription of not less than five shillings per annum.

The Association was formed for the purpose of making a road along the Summit of the Port Hills from Godley Head Lighthouse to Gebbie's Pass, from which point it is intended to carry the road by way of the Port track saddle, round the head of Kaituna Valley, until the road junctions with the Kaituna Valley Road, and so link up the Peninsula Summit Road with the Port Hills Summit Road. When this work is done Christchurch and Akaroa will be connected by a hill road which will not be surpassed by any road in New Zealand, for the varied beauty of the views to be seen at almost every turn.

It is a work worth being associated with.

Through the co-operation and generous help of the land-owners, the remaining areas of bush on the roadside, and where it is intended the road shall be, are being reserved and protected. These reserves of the ancient forest of the Port Hills and Banks Peninsula Hills will, in the years to come, prove a great source of pleasure and delight to the people who may journey by this highway over the hills to Akaroa.

Such a work is worth helping.

The Association gratefully acknowledges, on behalf of the public, the generous gifts of Messrs. Arthur and Richard Morten, of the five reserves situated at different points on the Summit Road between Evans' Pass and Dyer's Pass. The gift of one and a half acres of bush at Cass' Peak, by Mr. Robert Allan, and six and three-quarters acres of bush adjoining, presented by the Hon. R. Heaton Rhodes; also the gift of Ahuriri Bush, with land adjoining, making a fine reserve of twenty-six acres, the gift of Mr. Richard M. D. Morten. Through the generosity of Mr. A. E. G. Rhodes, a very fine piece of the ancient forest on Banks Peninsula has been secured, and, through the sympathetic co-operation of Mr. Walter F. Parkinson, other areas of bush in the Kaituna Valley are in course of being acquired.

A record like this deserves the support of the public.

Anyone wishing to become a member of the Association may do so by communicating with Mr. C. H. Gilby, Secretary and Treasurer of the Association, Royal Exchange Buildings, Cathedral Square, Telephone 3489, or to Mr. H. G. Ell, M.P., Taramea Street, Spreydon.

Telephone 2478.



INTRODUCTORY.

 **T**HERE is no need to explain why this little book has been produced; its contents speak plainly for themselves. That it should be so, an ever-who seek the without regret is that its are complete and elude chapters entomology, in und. If, how-veloped, a second edition is demanded, these omissions can be rectified, and also the geological and botanical chapters amplified. Perhaps a brief account of how the idea of the Summit Road first originated may not be out of place.

In the year 1900, Mr. W. Reece, then Mayor of Christchurch, Mr. Albert Loe, at that time the owner of Kennedy's Bush, and myself set out from Christchurch for that piece of forest, the last of any extent on the Port Hills, in the hope that it might be secured as a sanctuary for the fast-vanishing indigenous birds. Previous to that occasion I had never approached the Bush by way of Dyer's Pass and the hardly noticeable rough track along the summit of the hills, having made use of the old Kennedy's Bush road, which leaves the Plains at Halswell; but from 1903 onwards I had occasion

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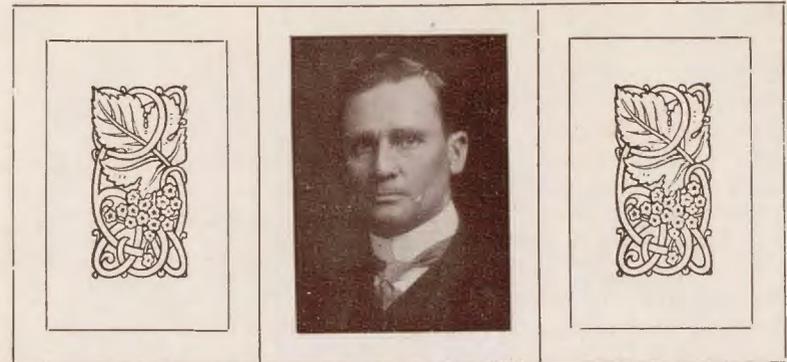
In addition to the expressions of thanks mentioned on page 2, the thanks of the Association are due to Mr. S. Hurst Seager, for his services to the Association as honorary architect.

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INTRODUCTORY.



HERE is no need to explain why this little book has been produced; its contents speak plainly for themselves. That it should be acceptable to those, an ever-increasing band, who seek the breezy uplands, is without question. The only regret is that its contents are not more complete and that it does not include chapters on animal life and entomology, in which the hills abound. If, however, as is to be hoped, a second edition is demanded, these omissions can be rectified, and also the geological and botanical chapters amplified. Perhaps a brief account of how the idea of the Summit Road first originated may not be out of place.

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to make many more excursions by the summit route, and learnt to enjoy more and more the beauty of the views to be seen at almost every turn.

Then the question of access to different parts of the Port Hills arose, and this led to an examination of the old maps. From these it was discovered that the road reserve which led from Dyer's Pass to Hoon Hay Valley was, in many places, at an impossible grade. So the owners of the land through which that road passed were approached, in order to secure their consent to such necessary deviations as would provide a better grade. Further study of the old maps showed that along a considerable part of the way no reserve for a road had been set aside, and thus the idea originated of forming a continuous path right from Godley Head to Gebbie's Pass, which would ultimately be widened so as to become available for driving.

On going into the matter in detail in order to see how far existing road reserves could be taken advantage of, if the Summit Road were to materialize, it was found that there was a gap at the Sumner end, between Mount Pleasant and Evans' Pass, and another between Hoon Hay Valley and Cooper's Knob. The following owners and trustees of the land to be acquired, when approached, at once fell in with the proposal, consenting that the road should be carried through their properties: Messrs. J. Cracroft Wilson, A. R. V. Morten, R. M. D. Morten, A. Loe, R. Allan and Langdale, the Hon. R. Heaton Rhodes and Mesdames J. Cracroft Wilson, Gray and Allan.

In concluding this brief introduction, reference must be made to the valuable work performed by Messrs. G. H. M. McClure, A. G. Allom and E. deC. Drury, who surveyed different parts of the road, and to the various Commissioners of Crown Lands and officers of the Survey Department, who rendered much willing assistance. Much sympathetic help has also been rendered by the Hon. E. C. J. Stevens, Mr. H. P. Hill, Mr. Henry Cotterill, Major H. S. E. Hobday, Mr. G. H. N. Helmore, and Mr. E. J. Ross. To Mr. Walter Robinson the public are indebted for the very fine Panoramic Profile of the hills visible from a point on the Summit Road—where the road turns eastward on Sugar Loaf Spur. As the result of much labour, Mr. Edgar Lovell-Smith has produced a very instructive Relief Map of the Port Hills. To Mr. S. F. Webb and to Mr. Charles Beken the thanks of the public are due for the pretty and instructive views of the hills.

H. G. ELL,

Christchurch, March 10th, 1914.



THE SUMMIT ROAD.

AN ATTEMPT TO DESCRIBE IT.

By B. E. BAUGHAN.



RISING suddenly up from a corner of the Canterbury Plains, the Port Hills rear for miles along the sky their tawny, semi-circular rampart of rocky and jagged crests, and send down into the flat a succession of long, tawny spurs, enclosing long, tawny-green valleys. Their fantastic sky-line suggests at once a volcanic origin; and they are, in fact, really the outlying spurs of Banks Peninsula, that odd, volcanic excrescence upon the east coast of the South Island of New Zealand. The height of them reaches sometimes an altitude of nearly two thousand feet; it is never less than one thousand; and close to their summits all the way, truncating only some of the higher peaks, overlooking now the Harbour, now the Plains, runs the smooth and easy track known as the Summit Road. It leads from the lighthouse at Godley Head to Cooper's Knob—a distance of

twenty-four miles in all ; but it can be reached from the flat at various points in its career—from Sumner, Clifton, Opawa, Cashmere, other tracks or roads run up to it.

Strike it where you will, what a walk it offers ! Everywhere it is well-graded, in places almost level : its air, coming from whichever way fresh off the snows or sea, is so light and pure, so brisk and invigorating, that five miles along the summit of the hills seem no more than one mile on the flat ; and then—the view ! Different points along the route yield, of course, different outlooks, but the main effect is everywhere

the same ; everywhere a free and mighty panorama commands at once and liberates eye and mind alike. About a thousand feet below the spectator, the vast plain of Canterbury, flat apparently as any sea, criss-crossed with hedges, dotted with trees and homesteads and chequered green and brown by cultivation, spreads itself widely out beneath an immense sky. Southward, that is, to one's left as one

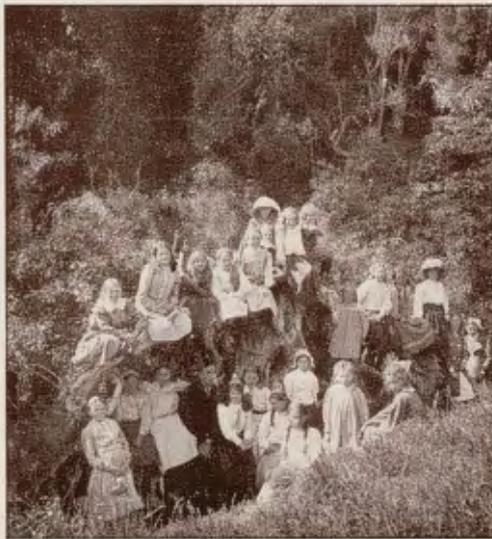


Photo.] School Picnic at Kennedy's Bush. [Kennedy.

stands looking, it flows on apparently for ever ; northward it meets, by means of a beautiful great crescent curve of yellow sand, the further plain, blue and shining, of the sea ; within it, not far from the coast, amid dark bouquets of trees and glittering curls of smoke,

“ A sounding city, rich and warm,

to adapt the words of John Davidson,

Smoulders and glitters in the plain,”

with a river shining beyond ; and, then, as if all this were not enough, forty miles or so across it, facing the beholder, there stands superbly a huge, magnificent wall of mountains, parallel

with the plain, and, stretching beyond it out to sea as far as the eye can reach : range behind range, shoulder above shoulder : based upon purple, shadowed with blue and bronze, crowned, and fully clothed in winter, with pure white.

Such is the view from the Plains side ; but often the Road leads you to the other side of the summits, and shows you a scene quite different—of less breadth but more detail. Here, there is a glimpse down into the turquoise mirror of Lyttelton Harbour . . . there, the revelation of its full seven miles, and of the corrugated landscape beyond of Banks Peninsula, all a tumble and toss of grassy heights, green or brown, according to the season. Now a naked dark grey crag stands just before you, nobly silhouetted on bare sky ; now a bit of native Bush, interrupting the tawny tussock, relieves your eye with its fresh and restful green. And always—except when mists enshroud the Road, and then the wise walker leaves it alone—there is an expanse of sky, and there are aerial glories to be seen, that of themselves reveal to the plain-dweller not a new heaven only, but also a new earth.

Is, then, the news so surprising, which world-wide travellers tell us Christchurch folk ?—namely, that in our Summit Road we have a possession of whose worth we are as yet but half conscious : that it is one of the show-places of New Zealand, and that hardly anywhere else, if indeed anywhere else at all, in the wide world, is its vast and varied combination to be matched, of plain and snowpeaks, city and harbour and sea—of space, grandeur, and cosmic interest. Some day we shall wake up about it ; and then we shall vaunt our advantage and advertise our view, and all give due honour perhaps, to that loyal lover of both the city and the hills, to whose public spirit in the first place, and unremitting perseverance in the next, his fellow citizens owe the existence of their Summit Road.

Would anyone care to come for a walk along the Summit Road to-day—right along the whole length of it, as it is at



Photo.]

[Webb.

Dripping Spring, above Governor's Bay.

present, and yet just a brief, easy walk, as shortly to be got over as this article? Well, then, suppose we start by taking the Hills tram from the Square, and walk through the pines of Victoria Park to the new track above the Dyer's Pass Road. Why, we are already, less than an hour since leaving the city, quite up in the hills! And how sweet the tussock smells! with what a smile the little bright-yellow native "wood-sorrel" gazes up from its nest in the stones, and how the skylarks sing! The track leads up along the side of a great spur, Latter's Spur, and looks, as it goes, down into the fair green of Cashmere Valley, and over to its opposite wall of tumbled rocks and grass. Presently it comes out close to Dyer's Pass itself; and there, running from the Pass, towards Sumner on the left, to Cooper's Knob on the right, behold the Summit Road! Let us explore it first as far as Cooper's Knob—Cooper was a trader long ago with the Canterbury Maoris before Canterbury was; Lyttelton Harbour was once called, after him, Port Cooper; and the Knob is one of the hill-crests above it.

Past the scenic reserve, then, of Coronation Hill, with Governor's Gap at the further side of it giving an exquisite little side-peep deep down between grey rocks, into a green valley opening on blue sea; below a high hill-top (Marley's) crowned with dark pines, and then . . . lo! all of a sudden, what a change—and what a picture! Gone is Cashmere Valley, gone are the plains; and here, twelve hundred feet below, in all its length and breadth, is Lyttelton Harbour: spread out beneath us like a long, narrow, irregular lake, whose satiny surface, of a blue particularly sweet and vivid, is sunk deep down among an absolute tumult of great, grassy, rock-topped hills, tawny in sunshine, violet-shadowed, and, here and there along the water's edge, emerald with pasture or black with trees. How lovely and how calm it lies; yet here was once a steaming, seething crater! Governor's Bay, with its homes and trees and gardens, spreads just below us. Two long peninsulas (cooled lava flows) prawl out like russet lizards upon the blue water, separating, the one Governor's Bay from Head of the Bay, the other Head of the Bay from Charteris; beyond them both lies the tree-set hump of the quarantine station, Quail Island (so called from the flushing there, in 1842, of some of the native quail, rare then, now extinct); and, a long way on, far past the white mid-harbour beacons that at this distance look almost like white sails, the rocky heads stand out, one on each side, with the sapphire sea between them and beyond. And midway, on the left side of the Harbour—what is that fairy settlement, that cluster of red roofs and dark trees, nestling back between the spurs, yet

stretching out, as it were, two long arms to enfold blue water and black hulls; can those really be the roofs and moles of Lyttelton—Lyttelton of the tunnel smoke? Lyttelton of the steamer smells? Lyttelton it is—but with its smoke and smells all cleansed, up here on the far-sighted Road, and with its real romance revealed—ay, for "There go the ships!"

One could stay looking at this lovely scene for hours; but Kennedy's Bush and Cooper's Knob are waiting. Round the brow of Hoon Hay Park, then, next, with ancient, many-headed cabbage trees dotting the crest above us, and a long tree-scattered valley leading to the plain below; then under the grey fortress of Mt. Ada, and round to three small knolls among the tussock—Rocky, Kiri-kiri (speargrass), and Nancy's Knoll; and another wide and splendid view, as little like the Harbour as can be. For now, far beneath us lies, expands, in every direction, the flat and open plain, all irregular patches of colour like a child's school-map; with the noble barrier of the mountains on the west; and on the east—is that huge azure gulf all sky? No, that is the blue of the open ocean out there, below the blue of heaven; and do you see, towards the seeming base of it, what look like stripes of purple cloud, with a cloudier blue below—the dun blue of a Rhine-stone? that changeful sheen is Lake Ellesmere, those purple clouds are its sea-shore. And turn now, and look north, and see that other inlet of blue, shaped like a spoon-tip—that is ocean also, that is Pegasus Bay. We stand here between sea and sea.

A little further, and the scent of clover and capeweed grows stronger, and tall cocksfoot grasses fringe the track; we come out upon the rim of a beautiful rounded valley cup, filled with real green Bush—Kennedy's. Kennedy was a woodsman who lived here with his family in the sixties. Much of the Bush was cut out in the early days, when two woodcutters, the brothers Foster, made their homes up here. Much, fortunately, remains—the only fair-sized specimen of native Bush in the immediate vicinity of Christchurch. In one sense, Kennedy's Bush might almost be called the starting place of the Summit Road, for it was his success in getting this beautiful place declared a scenic reserve that gave Mr. H. G. Ell the thrice happy idea of making the people free for all time of these summits.

A solitary *wbare*, relic of past sheep-farming days, used to look picturesque enough down there among the ribbonwoods and matipos of the Bush; and at the further end of the valley-head, a patch of rose-red clay still makes a delightful contrast with the fresh green of the foliage. Cass's Peak, with Cass's Spur (Cass was an early surveyor), makes

the further boundary of the valley, and from Lizzie's Look-out there is another lovely view of the Harbour and of the Peninsula Hills. The Peak itself, one of the Seven Sleepers, as these summits at the Harbour head are called, is a fine, stern grey face of rock towering above green Bush, and fronting in proud loneliness all the empty air to seaward. I do not know from which side of its own spur it looks the nobler. Pause, though, a moment on the Spur itself, and take a look back—at the long slopes of good green Bush, at the dark crags



Beken, Photo.] Mr. Ell, Bishop Julius and Mrs. Julius, and Mrs. J. Cracroft Wilson Dec. 12th, 1908.

above, gathering together and seeming to bend forward in a company over the harbour (you can see very well from here the curve of the crater lip), and at the peep of blue outer sea beyond them.

On again! More quiet tawny slopes below, more crags above . . . several patches of bright flax glittering in the sun . . . of green Bush that bathes the eye . . . and now, again, another tremendous view, perhaps the most tremendous of all, of plain and ocean and mountains. We are here some fifteen hundred feet up in air; the outlook is almost a circle; and before a view so vast, a sigh breaks from one's lips—a sigh of satisfaction and relief. Man was meant to take wide views, there is no doubt of it. No wonder that this generation dreams of tracts higher even than our Summit Road, and of journeys through the air.

From Vast View a new valley falls open at our feet—a valley great and green, with black plantations and red roofs showing at its mouth, and in the plain a little way beyond, the village of Tai Tapu. Three strange excrescences crown the spur, or rather spurs, that form the valley's opposite wall—Cooper's Knob right at the top, flat-headed Tableland Hill at the bottom, and, between the two, the likeness of the back and head of a Titan retriever dog, swimming away plainward with his muzzle lifted towards Heaven as if in desperation and appeal. Did he set out for a careless swim some autediluvian morning, that poor dog, and come upon the crater in full blast, and become petrified with fright even as he fled away? As a matter of fact—or of imagination if you will—in the company of all these summits, quiet though they lie, there really is always a sense of cataclysm and shock . . . they come strolling upwards out of the plains so gradually and smoothly . . . rear up all of a sudden so sharply . . . stop so short . . . then fall so sheer down towards the Harbour. It is not only the outer frame of Nature that is here so vast, you get a continual hint of her illimitable power as well.

Beyond Cooper's Knob the Road, at present, does not go, but we can climb that rock-top, if you will, and get a glimpse of the way that go it might . . . past the Harbour Head, along Gebbie's Pass, over into the crowd of the Peninsular Hills, and so towards Akaroa, along their summits. What an unparalleled hill road that would be! But will be, ever? Well—

“Who bodes himsel' a silken gown
Is sure to wear a sleeve o't.”

Therefore, at least let us bode! But, for the present, we must go back, with many a fresh view on the way, but no time even to mention them, in order to return to Dyer's Pass, and explore the other half of our Road, towards Sumner. An inn is really very badly needed at Dyer's Pass, to minister to the Summit pilgrim. With what a view, what air, what sunsets, too, it could regale also the week-end visitor from the City!

But, since this walk of ours is on cool paper, since our boots are still quite comfortable, and the fifteen miles of tramping have left our throats unparched, forward, towards Sumner! Above us towers now the Sugarloaf, 1630 feet high. Round the shoulder of it, and ah! what a dramatic vision! Partial peeps of the city we have had, it is true, often on our return walk from the Knob, but now, all of a sudden, here is the whole of it spread beneath our feet—its windows flashing in the sun, its curls of smoke glittering up into the air, its roofs of red and grey, its spires and domes, trees and green garden-spaces, diversifying the Plain. Beyond it, to the right, opens the fair blue of Pegasus Bay; past it, straight ahead,

stands the sublime purple and white of the mountains ; about it sweeps the Plain. It is Man's contribution to the landscape, and as much a part of it now as the unalterable Alps themselves, though, sixty years ago, where now it lies there was nothing but tussock and swamp. From the picturesque point of view, it is in many ways valuable to the landscape ; vitally, it is invaluable. Some people are squeamish about man's interference with Nature ; but does not Nature herself court that interference—having made man ? Some of her pictorial effects he may, he does undoubtedly, spoil ; but her poetical, her cosmic aspect—that, how enormously he enhances ! The presence of the Cape-to-Cairo railway bridge, for instance, amid the very spray of the Victoria Falls, takes nothing away from Nature's impressiveness, but emphasises it, instead—doubles her declaration of Power, by setting next to her own triumph of "inanimate" creation, the triumph of that other creation of hers—her son. So here, the presence of our city in the plains, I will not say lends them a soul, since a soul in their own kind I am persuaded they have already—but it vivifies them in another sense. Visibly breathing, doing, making, there it lies, what a reservoir of change ! How many actions, how many feelings, how many thoughts, far-reaching, immortal, and ever active, all, are at this moment coming, down there, to the birth ! "The joyful and the sorrowful are there ; men are dying there, men are being born ; men are praying—on the other side of a partition, men are cursing . . . Friend, thou seest here a living link in that issue of History, which inweaves all Being." Yes, Teufelsdröckh would have enjoyed this view of Christchurch from the Summit Road.

But we have so much yet to see, we must get on—round the head now of great green Bowen's Valley, with the dark pines of Victoria Park very distinct on one side of it, and the red buildings of the Sanatorium visible near its bottom. Little glimpses of Bush greet us here and there—now on the Harbour side of the Sugarloaf, now above Rapaki, and again at Bush Head and in Dry Bush Valley, where the remains of the old cob cottage still stand beside the burnt trees. All these remnants of growth show very clearly how well these sheltered valley-heads would respond to the Summit Association's scheme for replanting them with native trees, if funds would but allow.

And now we come to a pathetic human touch upon the great care-freeness of the hills. On the spur above Dry Bush stands a slender iron pillar ; there is a second on the slope a little way below ; and these commemorate the pitiful death of two little boys, one ten, the other only eight, who, in 1883, having been across the hills on a fishing expedition to Rapaki,

were caught on their way back in a blinding snow-storm, and, wandering till they were worn-out, "perished here," as the pillars simply say. And they were so near to safety, too ! only a few steps further, and one of them would have reached a point whence he could have seen the lights of Opawa. Poor little souls ! The tragic death of a child seems always double tragedy, and that again seems doubled here by the indifference of these giant hills.

And now a new item comes into the view—the joint estuary, namely, of the Avon and Heathcote rivers, at high tide a lagoon, at ebb a maze of lovely, shining scrolls of sand and water, like a shield damascened with silver and gold. The outer ocean, too, begins to open before us, in fact, from this point on, the sea begins to make the main feature of the picture—just as between here and Dyer's Pass it was the city that most occupied the eye, and between Dyer's Pass and Cooper's Knob, the mountains and the plain. Witch Hill now raises on our right its strange grey-green head—Dog's Head, the Maoris called it ; I suppose the streak of red rock at one side of the base was the animal's mouth. Just this side of it, there is a remarkable, really fine bold wall of what looks like Cyclopean masonry—Giant's Causeway, one of the dykes mentioned and explained in Mr. Speight's article on the geology of these hills. And now the Road brings us to the other side of the summits—we look down into the Harbour again . . . delicious to the eye after the long tawniness of the hills comes that sudden, sweet, unbelievable blue ! see, too, how clear the crater curve shows from here. Yonder, as it rounds, against the sky, stand out the two antique cabbage-trees above Hoon Hay . . . and beyond them, all the Seven Sleepers, Mt. Ada, Cass's Peak, the Lion Rock, Cooper's Knob, and the smaller ones between. We must turn our backs on them, though ; we must push on. Soon, between the rocky outcrops of the Tors upon our right, and of great craggy Castle Rock on our left (have you ever noticed how finely Castle Rock shows from the Sumner tram-line ?), we are passing round the head of Heathcote Valley : green marshes spread its floor, orchards and blue-gum plantations hang upon its further side, and the little settlement in its midst is bisected by a long straight line, ending, apparently, in a cornfield. Ah ! even as we look, a puff of smoke, a distant rumble, and away along that long, straight line speeds the train from Lyttelton. A moment ago it must have been actually beneath our feet—more than half a mile beneath them ; for this is where the Heathcote-Lyttelton tunnel brings nowadays through the hills both people and produce. In "the old days," fifty years ago, it was over the hills that everybody and everything had to come—up and down this steep Bridle

Track whose saddle, 1130 feet above sea-level, now we cross. Round, a long way round, the precipitous rock-face of Hill Morten (Mt. Cavendish of earlier days), through a short cutting in the solid rock, and we come on to the shoulder of Mt. Pleasant. Here, a very little way from the Road, is the outjut known as Weir's Look-out (Weir was a shepherd); and it is well worth while to go down to it, for the great picture it provides has some entirely new features. To the left, lies the Heathcote Valley, and the eastern side of the city. Right ahead are the mountains, running seaward; in the foreground spreads the estuary, patterned with rare colours, and sprinkled, maybe, with sails; while, away to the right, far away, the long coast-line of Banks Peninsula is flung out upon the great, and open and lonely ocean, point after point, head after head, of russet-brown and tawny, purple and bronze, running up inland to a great multitude of many-folded hills. It is chiefly this view, of headlands and of ocean, that meets us now as we pass along Mt. Pleasant, with here a glimpse down on to Redcliffs and Monck's Bay, and their fairy fleet of yachts at anchor: the red roofs of Clifton just showing over the spur, and soon the blue-gums appearing and the hawthorns and the site of the burnt homestead of "Hornbrook's"* Major Hornbrook was one of the few early settlers who had an eye for the hills. Up here he made his home, and from here he used to descry the arrival of ships from overseas, and signal the news from the top of Mt. Pleasant, just above his homestead, down to Lyttelton.

From Hornbrook's another ten minutes or so brings us on to Clifton Spur, and out upon one of the most beautiful outlooks in the whole walk. On the left, wide and shining,

"Light upon light, line upon line,
Purple and pink and opaline"

(I quote one of the younger poets of Christchurch, Mr. Philip Carrington), lie the plain and part of the city; in the foreground, the estuary's mosaic of blue and green, the yellow, many-shadowed dunes, the dark pine woods of New Brighton, the white foam-fringe, and beautiful blue swan's neck of Pegasus Bay. The black pier of New Brighton, so little from here, and yet so delicately distinct, is like a tiny finger pointing out at once the great scale of things and the crystal quality of the air; and beyond, as background to both land and sea, the long range of the Puketeraki (the Hills of Heaven) seems to run right out into the ocean, while straight ahead of us the sublime white peaks of the Kaikouras, based apparently on nothing earthlier than blue air, shine up like some far-off

*Now being rebuilt.

City of God. On the left, two azure glimpses of the Harbour, and the dark trees and white buildings of the light-house at Godley Head, lead on the eye to the tossing hills of the Peninsula, and the serene spread sea. A little further, and all the Sumner Valley opens out. How tidy and how prosperous it looks! and, first of all our valleys, it opens on the ocean. Right up to the head of it, past two pretty bits of ribbonwood Bush, and we are out upon Evan's Pass, on the Lyttelton-Sumner Road. By and by the Summit Road will cross this, and run along for another four miles right to Godley Head. But for the present our walk is done.

Now, all this while, in surveying this great scene, we have neglected to notice a most important part of it—what one



Beken, Photo]

Port Cooper, from Kennedy's Bush.

might call its air-scape. And this is like observing the features, but neglecting to read the expression, of a most expressive face. The mountains, the freedom and wide expanses of the landscape give it grandeur; but it is the incessant changes of colour and light and shade that invest it with charm. And incessant they are. On this gigantic canvas the hours and seasons paint continually, and produce ever a new scene. The plain is as sensitive as the sea to all the moods of the sky, and the sky here is so vast there is room for many moods.

The very mountains, stable though they are, change incessantly. In winter they are white with snow often to their very bases; and on a frosty morning, beneath a jewel-blue

sky, they marshal forth how lordly, how angelic a procession ! After midsummer, purple is their favourite wear ; but I have also seen them clothed by rainbows in pale rose and delicate green. Sometimes they look like one continuous wall, sometimes the ranges stand distinctly one behind another, and you may pick out not only every peak but also every river-gorge that intersects their chain. Dawn reveals on each fine morning the marching of the mountains into light, one peak after another striding forward into the sunshine, while the foothills below, still in shade, are of the velvety colour of violets. Morning sees the snows still clear, silver-white gashed deep with cobalt ; or, if the sun be hot, perhaps the summits have tossed themselves already out of sight into a curdle of luminous cloud. Noon shows them melting pale and wraithlike into the pale blue of the sky ; in the afternoon they lie in shadow against the light, and it is only the Kaikouras, far out at sea, that stand all rose at sunset . . . except, indeed, on nor'-west evenings, of which we must presently say a little more.

Then, the Plain. Naturally the Plain varies with the season. Ploughland and pasture, in the winter, patch it with English greens and browns—it would be a great sight to see it, for once, all white with snow, but this, I imagine, can happen only rarely, for winter here, though shrewish at moments, is seldom stern for days. Spring flings across the Plain a Joseph's coat of green in many tints, threads it with shining silver by means of rain-filled runnels, and paints the little rivers brightly blue. The budding willows, too, build daily on it soft round mounds of green, and perhaps it is in spring that the luminous violet vapour, so often lying on it like a bloom, is at its loveliest. Then comes summer, and the Plain turns yellow ; from haytime to harvest its gold deepens, as its riches increase, till Autumn substitutes, first the pallor of the stubble, then, by means of March rains and the plough, the pleasant eye-reviving squares of green again and brown. And both spring and autumn scatter the Plain with jewels, here glinting, there gleaming, yonder blazing brightly—the homely yet splendid jewels of farm fires, which, in turn, fasten to the bosom of the Plain long veils and broideries of bright waving smoke. The effect of these latter, as, spiralling up into the air and incessantly changing both in form and volume, they catch and vary the light, is entrancing, and fills both the Plain and one's own mind with fancy. In spring they seem like the prayers and aspirations of new-sown paddocks rising up to heaven ; in autumn one imagines the Plain dotted with the altar-pyres of a wide thanksgiving.

It is vapour, indeed, of various kinds that, from the artistic point of view, makes half the beauty of the Plain ; nor does

it need the passage of a season, even of a day, to prove this. Sunrise, especially in winter, reveals the face of the flat covered with silken mists that ebb and flow through the most delicate gradations of colour—white, silver, ivory, dun and fawn, opal, amethyst, violet and rose. Even high noon steals seldom all the bloom away, and sunset suffuses it again with a glamour of purple and rose, or a breath blue as wood smoke. Then there are accesses—white days, when all the sky is pearly-pale, and all the Plain lies dreaming under a light warm haze, and here and there a shower of soft gold light comes Jove-like down from Heaven upon this sleeping Danae ; or blue days, when the white sea-fog comes rolling in. This is one of the most spectacular effects of the Road. Above, the sky is stainless azure ; opposite, the mountain peaks rise purple ; but, between the Road and them, as if by magic, all the accustomed scene is gone. There is no city, and no sea and no plain—nothing, but an immense floor, of the whiteness and texture of wool, rent here and there by crevasses of deep blue, and all moving, billowing, rolling—but all noiseless. It is not unlike a great glacier to look at, only that it changes as you look ; softly it washes in and out of the valleys ; the spurs stand out into it like headlands advanced into the ocean. I have heard the church bells of the city come up out of such a mist ; and it was like listening to the bells of some drowned city of romance. Something of the same effect you may get again almost any day at twilight, when the street lamps gleam with a pale and ghostly fire through the likeness of a gauzy sheet drawn level across along the middle of the hills and across the city.

Then there is the magic of mingled shadow and shine. Think of a windy day, an easterly day for choice, with the clouds all rushing piecemeal, and between them long shafts and largesses of light slipping down to the Plain, and chasing across it—with ever a flying patch of sweet green, most vividly bright, about their unseen feet, and ever a shadow at heel ! And here is a delightful little vignette from the pen of that delicate observer of Nature, Mr. Johannes C. Andersen. "The day had been overcast, and rain had fallen and still threatened. As I stood on Nancy's Knoll, the clouds far away parted, and a flood of light streamed through on to the Plain, lighting up the beautifully fresh green fields. The cloud rift extended slowly towards Kennedy's Bush Valley, and the flood of light approached like a glory, darkness before and darkness behind, until it reached the entrance to the valley, and bathed either spur with sunshine. There it halted. . . . The valley had taken on the appearance of a dell of faerie. There was the high forbidding bluff at its head (Cass's Peak),

softened by drifting cloud, and the valley itself, mysteriously dark and alluring, lightened towards its entrance until it opened into the streaming glory."

And then, the city! He must have really but a poor and puny conception of beauty, who, watching the city from the hills, can ignore the poetry, not only of her presence, but of her appearance also. Early morning is one of her best times, when, out of the milky, sunshot mists, house walls begin to gleam, and windows to twinkle as the sun comes up. Black tree-tops, chimneys, spires, stand up clear and "take the morning," trains bear aloft their long streamers of bright vapour, running eastward to the port, south and north to the rest of the Island, and worldward either way; and from farm and factory and little family kitchen, up springs the chimney-smoke that is the city's manifest of human life and of Colonial independence and advance. "Nothing but smoke!" Ah! but smoke is not nothing from up here. One loves to see the sunlight catch, one after another, all these little private and public streamers of energy, as the Heavenly approval may be supposed to shine upon all righteous action, personal or national, and turn it to a thing also of beauty. Or go up into the hills upon some showery morning, when the sky is a congregation of grey vapours, and sudden obliterating showers alternate with bright little bursts of sunshine—and see the city then! Against a lofty and massive background of inky gloom, how coloured it shows, how clean! with all its tints of buff and red and grey refreshed by the rain, and the sudden lovely finger of the sunshine magically illumining whatever it points to, and making rubies of the red roofs, gold roofs of the grey, and a vivid emerald of every lawn . . . Yonder some window sparkles like a diamond, there a wet wall glitters like glass, and against all the smother and unfeatured dinginess beyond, how precious, how engagingly does every bit of detail show up! And when the inevitable shower blots all this spot of brightness out, it does not matter—another is immediately unveiled. The city on a day like this is an unconquerable stronghold of resolute cheerfulness. She is like Hawthorn's Phœbe Pyncheon, in the "House of the Seven Gables," or one of those happy natures which, while still involved in sorrow, are yet susceptible to every touch of consolation; ready to be cheered, quick to catch comfort, accessible and affable to every least beam of light.

But it is at night that the city really shines—shines both figuratively and literally: hangs jewels upon the bosom both of night and of the Plain, and, pictorially, more than vindicates her makers. For at night she becomes a great bouquet of golden flowers; low down in the darkness she spreads a con-

gregation of stars. Her street lamps make lanes of light, her house-lamps a lustrous network of gems. Taller illuminations and lit towers looks like cressets and torches raised on high. The bright-headed trains show like migrating glow-worms, the tram-cars, darting and pausing, are real fire-flies. Whether the view of the city at night is better from above Cashmere or above Clifton, may be debated. Cashmere shows more of the city, Clifton more of the starriness; for there, in addition to almost all the great constellation of Christchurch, the darkness is strewn also with the lesser ones of New Brighton, Redcliffs, and Sumner, man-made galaxies of the ground; and the ferry-boat going north glides like a shooting star across the sea. A moonless night is good, a moonless, starry night the best of all, for then, as you stand on Clifton Spur, the whole world seems paven and ceiled with eyes of friendliness.

But the finest aerial effect the Summit Road can offer is, I suppose, a sunset—a sunset on a nor'west day. From many notes of such, I take the following.

"A thick pall of purple-grey cloud was bent across the western sky from north to south in a long curve, and completely hid the descending sun. Between this characteristic 'arch' and the ranges, ran a long gash of strange, very pure, green-blue; and a surge and curdle of clouds, coppery-gold and silver, was tossed up at the seaward end of it. In the gash itself, some small, sinister-looking clouds, black in colour, and humped like porpoises, lay stirless, and the rest of the sky was of a flaked and feathery soft grey. As the invisible sun sank, towards the gash, the whole fantastic sky-scape began to glow, as with an inner flame. What was silver richened into gold, what was gold deepened and brightened; the porpoise-clouds purpled, the cloud-towers in the east grew rosy, shafts and suffusions of pale light slanted from the sky across the mountains, and presently a passing skirt of radiance raised a dust of gold upon the Plain, far-off. Suddenly, the sun drops, clear and sheer, out of his cloud-pall into the clear sky of the gash. O miracle! O effulgence! The sky is flooded with light, the Plain with gladness. It is as if a great weight of despondency had been lifted off the world. The hillside grasses burn, the city windows sparkle, its walls gleam with the smooth brightness of marble, its red roofs glow! Then the sun sinks lower, and the glory fades . . . fades . . . Wait! Scarcely has the last ray left the earth, than the resurrection of the light begins, and, in the after-glow, colour has a second, and a brighter, birth. First, the grey flakes, ash-coloured, of the sky, turned to strewn rose-petals; on the mountains lay again the glow of dawn, more solemn, however, less triumphal; and myriads of cloud angels, with violet robes and wings of

BIRD'S-EYE VIEW OF PORT HILLS, SHOWING SUMMIT ROAD.



REFERENCE.

Summit Road extends from Godley Head Lighthouse to beyond Cooper's Knob (25).

Reserves shown thus

Springs shown thus X

Roads and Tracks shown thus ———

No.		No.		No.	
1	Evan's Pass (Zig-Zag)	10	Dry Bush	19	Nancy's Knoll
2	Mount Pleasant	11	Bush Head	20	Kennedy's Bush
3	Hillmorton (Cavendish)	12	Sugarloaf	21	Lizzie's Lookout
4	Weir's Lookout	13	Coronation Hill	22	Cass Peak
4a	Bridle Path	14	Victoria Park	23	Cass Peak Bush
5	Castle Rock	15	Marley's Hill	24	Burke's Bush
6	The Tors	16	Hoon Hay Hill	25	Cooper's Knob
7	Giant Tor	17	Mount Ada	26	Dog's Head
8	Witch Hill	18	Rocky Knoll	27	Pinnacle Hill
9	Giant's Causeway	18a	Kiri Kiri Knoll	28	Ahuriri Bush

rose, appeared to be streaming, hands folded on their breasts, towards that sacred spot in the west where Day's last act was now accomplishing . . . And now it seemed as though all Colour were exhaling all itself in one long, gradual breath. The whole sky flamed and flamed afresh with rose and purple, gold and copper and silver, and all burning, all luminous, all on fire. . . . One marvelled how the clouds could hold so much intensity. It seemed every moment as though something must burst, and Colour overflow . . . one held one's breath. . . . But then, very gradually, began the great inhalation; the flame became a glow, the glow quieted . . . red-gold passed into rose, cool spaces of green and blue and daffodil began to assert themselves between the fading, cooling clouds, and then the clouds themselves turned grey . . . the pallor of a pearl took possession of the clear gash, the mountains confused themselves with the clouds, the journeying angels withdrew in long hoods of grey, and in the west the fire was put out."

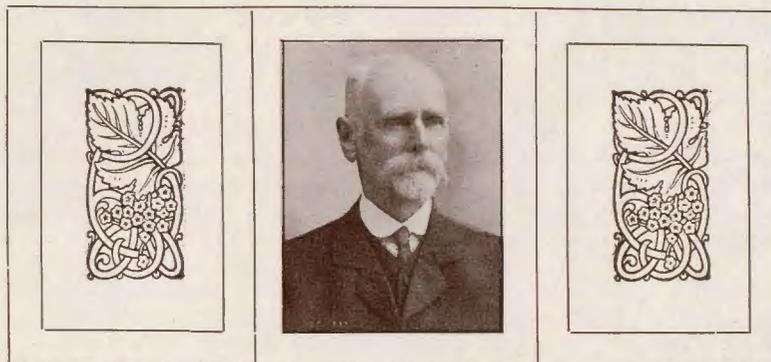
I give this description simply as one specimen, but nothing could truly describe a nor-west Canterbury sunset, and no two are alike. I have watched many a sunset in the tropics and in different parts of the world, but, so far, the only sunset I ever saw that could compete in gorgeousness with a Canterbury nor-wester was in the Karroo, South Africa.

Yes, delights of the eye are many, upon the Summit Road, and there are other delights as well. With every step one takes, every breath one draws here, high upon the hills, health comes newly into one's veins, and elasticity into one's fibres. But I question whether the greatest joy of all lies not in the largeness, the breadth, the room, of this great prospect. One is delivered here from the tyranny of detail; all the lines are large and all the "fever and fret" of little things seems only not ridiculous because it is too remote to be felt at all. The fine sheerness of the crags, the large and leisurely descending of the spurs, the spread of the Plain, the long march of the mountains, the royal simplicity of the Bay's one ample curve, the wide wings of the sky—all these do more than satisfy the eye; they rest, and they enfranchise, and they ennoble the soul.

"I will flee unto the hills, whence cometh my help."

How true that is for many of us, both in a literal and a spiritual sense! As we stand looking here, overlooking our daily level, seeing all our setting in a new perspective, Life itself enlarges its proportions and clears and widens its atmosphere, till up on the Summit Road,

"The soul's wings grow wide."



A SKETCH OF THE BOTANY OF THE SUMMIT ROAD AND ITS ENVIRONS.

By Dr. L. COCKAYNE, F.L.S., F.R.S.



THE Port Hills form a portion of Banks Peninsula, so named by Captain Cook in honour of Sir Joseph Banks, who, with Dr. Solander, made in 1769 the first collection of New Zealand plants, 360 species in all. It was not until seventy-one years later that E. Raoul, surgeon to the French exploring expedition that visited Akaroa, studied the plants of Banks Peninsula itself and made many important discoveries. As for the actual Port Hills, it remained for Mr. J. F. Armstrong, for many years Curator of the Christchurch Botanic Gardens, to tell us of what their flora consisted, which he did, in 1870, in the second volume of the Transactions of the New Zealand Institute. Armstrong divided the area into: Dry Bush (115 species), Mount Pleasant Bush (100 species), and Port Hills and Sumner, north side of the range (131 species). So far as I have examined the locality, the total number of species of flowering plants and ferns is 205, which belong to 54 families and 131 genera.

Before proceeding further, it must be impressed upon the reader that the greater part of the plants are to be found in no other part of the world, and in that lies much of their special interest, as also the reason why every effort should

be made to save them from extermination. The Summit Road Reserves provide the necessary haven for refuge and this is by no means the least worthy of the aims for which such have been established. So much by way of introduction.

Let us now stroll leisurely along the road itself, deviating at times to right or left, and examining what plants may strike the eye so as to get a bowing acquaintance, no mean privilege, with some few species of perhaps the most remarkable flora of the temperate zone.

The first view of the landscape gives the impression of a brownish grass-covering merely. But let us look more closely, and in the open spaces between the prevailing tussocks various herbs will be noticed, while here and there shrubs rise above the mass of vegetation.

First, as to the herbs. Here is the Lowland Bluebell (*Wahlenbergia gracilis*) a foot or more tall, its stems slender and angled, the leaves narrow and the flowers small, bell-shaped and blue or white. In many places, creeping close to the ground, the Yellow Wood-sorrel (*Oxalis corniculata*) may be easily recognised by its small leaf of three leaflets, sour to the taste, its small bright yellow flowers and the stout seed-pod, which, on bursting, scatters the seeds on all sides. Next, a little turf-making plant may meet the eye, having deeply-cut, hairy, aromatic leaves and small button-like pale-yellow flower-heads on slender stalks. This is Haast's *Cotula* (*Cotula Haastii*), a very rare plant except on the Port Hills. Rather more conspicuous is the Ground Convolvulus (*Convolvulus erubescens*) winding round the grasses and bearing white bell-shaped flowers one-third to three-quarters of an inch across, and heart- or spear-shaped leaves half an inch in length. Another plant of the same family that we shall certainly find is the Creeping *Dichondra* (*Dichondra repens*). You will know it by the broad patches of creeping and rooting stems bearing kidney-shaped leaves a quarter to one inch across, and silky back and front, and the widely-open greenish-yellow flowers one sixth of an inch in diameter. Let us keep a look out for a strange looking plant with stiff leaves with sharp, needle-like points in an erect rosette and the massive flower-stalk two or three feet tall. Who can guess that it belongs to the Carrot family? But plant relationships depend on floral structure, not on general habit or even form of leaf. It is the Spear-grass (*Aciphylla squarrosa*), the name "grass" being misleading, as it has nothing in common with real grasses. This yellow flower that we next examine, its petals not joined together and its stamens numerous, is the common New Zealand Buttercup (*Ranunculus hirtus*).

Note the erect stem and the long-stalked hairy leaves divided into three leaflets, which are, again, cut into segments. If we examine the tussock closely we shall see that there are two species, one the Common or Silver Tussock-grass (*Poa caespitosa*) with smooth stems and outer floral leaf without a bristle, and the other the Hard Tussock-grass (*Festuca novae-zealandiae*) with slightly rough stems and outer floral leaves with bristles. The turf-making grass, which is everywhere and year by year becoming more abundant, is the Common Oat-grass (*Danthonia semiannularis*). If the flower be examined with a pocket lens, two transverse rings of silky hairs can be seen. If, however, there are only two tufts of



Beken, Photo.] Governor's Bay and Mount Herbert, from the Road.

hair, not rings, the plant will be *Danthonia pilosa*. By farmers both species are called "Danthonia," notwithstanding in most places the latter is far the more valuable fodder plant. By this time, if it be mid-summer, or later, the garments of the plant-hunting pedestrian will be covered below with the brown, clinging burrs of the Red-flowered Piripiri (*Acaena novae-zealandiae*), a species that needs no further description. Earlier on, its red flower-heads are distinctly pleasing.

And now to the shrubs of the open. This one with dark, inter-lacing stems amply furnished with stout, woody spines, is the Wild Irishman (*Discaria toumatou*), while this, without leaves, but with erect, green stems, which, in due season, bear rather pretty purple, pea-like flowers, is the Common New Zealand Broom (*Carmichaelia subulata*). The genus would

be purely a New Zealand one were it not that one species, a leafy plant, by the bye, occurs on Lord Howe Island. Should a plant of *Carmichaelia subulata* be found growing in the shade, note whether it has developed leaves. In some places burning the tussock has encouraged the growth of the Tutu (*Coriaria ruseifolia*) which now forms broad patches. This plant, on the borderland between herbs and shrubs, has a long, stout branching underground stem. The above-ground stem is four angled; the leaves are more or less egg-shaped and one to three inches long. In autumn the plant bears masses of small, globose purplish-black berries. All parts, the juice of the fruits excepted, are highly poisonous.

At many points it is easy to reach the rocks on the southern side of the road. They will amply repay a visit, since on them grow two especially remarkable plants, one shrubby, the other herbaceous.

The shrub, named by Raoul (*Veronica Lavaudiana*), is almost the most beautiful of its numerous kindred. It grows in inhospitable rock-crevices. The leaves are one-third to one inch in length, very thick, dark-green, and margined with red. The flowers, pink in the bud, but finally white, occur in considerable numbers on branched flower-stems. Lavaud's *Veronica* is found only on Banks Peninsula, thus affording a truly remarkable example of restricted distribution. The herbaceous plant which may be named the Port Hills' Groundsel (*Senecio saxifragoides*) grows best on more shaded rocks where soil has accumulated. It can be instantly recognised by its great rosettes of broad, oblong leaves, three to six inches long, clothed beneath with a mat of white woolly hairs. The flower heads, raised on stout, erect, branching stems, are one inch or more in diameter and bright yellow. The distribution of this plant is also most noteworthy. At Akaroa, and possibly over much of Banks Peninsula, it is absent, but in its stead is its very counterfeit (*Senecio lagopus*), the only distinction between the two species being the abundant bristly hairs of the latter. And yet, this bristly-haired plant is wanting, so far as I know, on the Port Hills, though it is not confined to Banks Peninsula, but is even found in the North Island, near Wellington! Another common plant of these Port Hills' rocks is the Black Shield Fern (*Polystichum Richardi*) easily recognised by its hard, dark-coloured leaves. A true Flax (*Linum monogynum*) will be seen here and there. It can be identified by its delicate large, pure white flowers in bunches, each with five sepals, petals and stamens, and its numerous, sharp-pointed leaves, a quarter to an inch in length. The shrub in the rock-clefts with very stiff leaves, two inches long, with wavy margins

covered beneath with a mat of white hairs, and bearing an abundance of daisy-like flower-heads, is the Akiraho (*Olearia Forsteri*). The Broadleaf (*Griselinia littoralis*) occurs in similar situations. It has glossy, green, thick, egg-shaped leaves, round at the tip, and unequal-sided at the base. Both this and the *Olearia* grow also in the forest, and then are usually much larger. A close, bushy shrub, two to five feet tall, with short, narrow, bright-green leaves and small white flowers in dense clusters, grows both on rocks and on the outskirts of the patches of forest. It is called the smooth-leaved *Veronica* (*Veronica leiophylla*). All the species of *Veronica* possess only two stamens, and the corolla is tubular below, but above spreads out into four lobes. Another *Veronica*, fairly common on the Port Hills, is the Koromiko or Willow-leaved *Veronica* (*Veronica salicifolia*), which differs from the

last-named shrub in its more open habit, greater stature, much longer and broader willow-like leaves, and clusters of flowers four to ten inches in length. Nearly all the species of *Veronica*, of which there are



Webb]

[Photo.

Sugar Loaf Spur, Dyer's Pass Road below.

more than one hundred in New Zealand, are easy to cultivate and grow readily from cuttings.

Let us leave the rocks and investigate one or other of the small patches of forest in the gullies, remnants of a once extensive tree-community. A new chum to the "bush" would grasp with confidence any neighbouring shrub should he stumble on the steep forest-floor. If the plant be the Shrubby Nettle (*Urtica ferox*), its stinging hairs will, once and for all, impress the species and its apt name, "ferox," on his memory. Shrubs with wiry, interlacing, slender branches are a feature of the undergrowth. Many of these belong to the genus *Coprosma*. The so-called "berries," each containing two small stones, flat on one surface and convex on the other, at once proclaim any shrub a *Coprosma*. But it is not easy for a novice to separate them into their species. Perhaps for the beginner the colour of the fruits is the best mark, but it

is not infallible. Thus, *Coprosma rotundifolia*, *C. areolata*, *C. propinqua*, *C. rhamnoides*, and *C. crassifolia* have red, black, dark bluish, port-wine and translucent-white coloured fruits respectively. Other shrubs "mimic" the *Coprosma*-form. This is so also in the juvenile stage of the following four trees, but the adults are of ordinary tree-form, while their leaves are much larger, and, the Kowhai excepted, of a different shape.—

(1) The Lace-bark (*Hoheria angustifolia*) is a tree about thirty feet tall, with narrow, oblong leaves having long and finely-pointed teeth on their margins. The flowers are bunched together in the leaf-angles; they are white and their stamens are united into a tube surrounding the pistil.

(2) The Lowland Ribbon-wood (*Plagianthus betulinus*) being of the same family as the last species, has similar stamens, but the flowers are small, green, and inconspicuous were it not for their being in great branched bundles. The adult leaves are egg-shaped, one to three inches long, sharp-pointed and coarsely toothed.

(3) The Kaikomako (*Pennantia corymbosa*) has more or less oblong leaves, one to four inches long, which are deeply waved, lobed, or even toothed on the margin. The flowers are white, numerous and fragrant; the petals and stamens are five in number, and the fruit fleshy, berry-like and black.

(4) The Kowhai (*Sophora microphylla*) is at once distinguished by its large, golden-yellow pea-like blossoms and feather-like leaves, with twenty-five to forty pairs of leaflets.

The Mahoe (*Meliccytus ramiflorus*) is a common shrub, or small tree, with dull-green, oblong, lance-shaped leaves, two to five inches long, ending in a short point, and numerous small, greenish flowers on the actual branches. The berries are small, fleshy and violet-blue. Another most common tree or shrub is the New Zealand Fuchsia (*Fuchsia excorticata*), which is to be known by the long strips of papery bark hanging from the trunk, the soft, deciduous, egg-shaped or lance-shaped leaves, two to five inches long, which are silvery beneath, and the juicy, purple-black berries half an inch long. The flowers commence to open before the leaves appear in spring; they are at first green and purple, but finally fade to dull red. The Shrubby Fuchsia (*Fuchsia Colensoi*) is very similar but much smaller in all its parts and more twiggy. It is a shrub in the open, but may be a scrambling climber in the forest. There are two small trees that may easily be mistaken for one another, namely, the Mapau (*Rapanea Urvillei*), and the Kohukohu (*Pittosporum tenuifolium*),

incorrectly designated "Matipo" by gardeners, as in "Matipo hedge." The former can at once be recognised by its reddish twigs, tiny whitish flowers crowded together on the actual branches, and, later on, the black berries. The *Pittosporum*, on the contrary, has dark purple, almost black, flowers in the leaf-angles and woody seed-vessels, which open by three valves and expose the black seeds embedded in a sticky substance. The Tarata (*Pittosporum eugenioides*) has very glossy leaves, strongly-scented when bruised, and the flowers



[Beken, Photo.]

Cooper's Knob and Dog's Head Hill.

small, but conspicuous through their number, on branched flower stalks and yellow colour. In some places the Pepper Tree (*Drimys colorata*) is common; it is a small shrub with black stems and smooth leaves blotched with dark red or purple and very "hot" when chewed. Although generally found near the sea, the true Pepper or Kawakawa (*Macropiper excelsum*) is abundant near the summit of the Port Hills in many forest patches. The smooth branches, jointed and swollen where the leaves pass off betray its presence. The large heart-shaped pointed leaves, two to five inches long, their stalk broadly winged, are unlike those of any other forest plant. Where the forest has been destroyed that beautiful tree, the Ngaio (*Myoporum laetum*) may still linger, affording welcome shade. You cannot mistake its spreading rounded head of branches with the soft, bright green leaves, one and a half to four inches long, dotted with round pelucid glands. The flowers are in bunches of two to six. They are about half-an-inch in diameter, bell-

shaped. and white-spotted with purple. The "berry" is fleshy, a quarter-of-an-inch long, and reddish-purple.

As in all New Zealand forests, climbing plants are a special feature. These may be divided into scramblers, root-climbers, winding-plants, and tendril-climbers. The Bush-lawyer (*Rubus australis* and other species) is a scrambler which climbs by means of the hooked prickles on its leaf-stalks and midribs. In the Leafless lawyer (*Rubus cissoides* var. *pauperatus*) the leaf-blades may be virtually wanting, and the leaf reduced to midribs. This is the form of the open, but, in the forest-shade, reduced and true leaves occur on the same plant, but it is only from shoots bearing the latter that flowers arise. The species of *Clematis* climb by means of leaf-tendrils. The one with large white flowers is *Clematis indivisa*. The most common on the Port Hills is the inaptly named *Clematis foetida*, with its profusion of sweet-smelling yellowish flowers. There are two species of New Zealand Jasmine (*Parsonsia*). Both are winding climbers and are separated from other forest-plants by their narrow kidney bean like seed-cases, four to six inches long, which finally split open and set free the numerous seeds, each tipped with a tuft of long, silky hairs. *Parsonsia heterophylla* has broad, adult leaves and white flowers, whereas in *Parsonsia capsularis* the leaves are narrower and the flowers reddish and smaller. The species of *Muehlenbeckia* are also winders. The leaves are variable in form. Both species are recognised by their small, black, three-sided seed partly enclosed in a translucent succulent covering. The large-leaved species is *Muehlenbeckia australis*, and the small-leaved *Muehlenbeckia complexa*; its flowers, too, are far fewer together than those of the former. The latter species, when growing in the open, forms conspicuous rounded bushes.

There are obviously many more plants left undescribed than have been dealt with, for I have only attempted to give the uninitiated in non-technical language a clue to the names of those plants they are most likely to see. I have attempted, too, to show that there are interests on the Summit Road other than those of scenery and exercise, and that there are treasures to be religiously guarded. Learning the names is merely a preliminary in plant acquaintanceship. There is not one species of the whole two hundred and five of the Port Hills but can, if we succeed in laying bare its secrets, tell us, in the history of its life and its relationships, a story of unsurpassing interest.



THE SUMMIT ROAD.

A WALK ROUND THE RIM OF THE CRATER OF
AN OLD VOLCANO.

By R. SPEIGHT, M.Sc., F.G.S.



NOT the least of the interests presented by the view from the Summit Road is that furnished by a consideration of the three chief features of the landscape, and how they have originated. In the far distance lie the Southern Alps, with even sky line and bold escarpment facing the Plains, affording an excellent example of the results of those stupendous forces which crush the rocks and fold them up into long ridges as if they were sheets of parchment. At the base of the range lies the broad expanse of plain, suggesting to the casual observer the stagnation of all geological activity, but yet due to a cause which continues unobtrusively and, acting for long spaces of time, produces the greatest changes to which the earth's surface is subject. While all around we are reminded of volcanic action, an agency which appals with its paroxysms, yet by comparison with the two former is of relatively small moment. One single flood in the Rakaia or Waimakariri probably produces more permanent change than half a dozen of the ordinary eruptions which at one time devastated the

flanks of the old volcano of Lyttelton. But, after all, it is that last phase of geological activity which impresses the human mind most and is the especial subject of this brief description.

THE GEBBIE'S PASS VOLCANO.

Long ago, before there was any volcano at all, in the neighbourhood of Lyttelton, how many thousands, or even millions, of years ago it is impossible to say, the land consisted of old sedimentary rocks, slates and sandstones, now exposed at the surface on or near the low ridge which divides Gebbie's Valley from Teddington. Whether this was an island or part of a great extent of land we cannot say, but, in all probability the first eruptions took place near the borders of the sea which then covered the major portion of the area now occupied by the Dominion of New Zealand. These eruptions were violent in character, and the ashes and stones were hurled forth and piled in huge heaps near the present crest of Gebbie's Pass. Following this were great outpourings of lava, white or pinkish in colour, and known to geologists as Rhyolite, similar in nature to that discharged about the same time from centres at Malvern, Rakaiia Gorge, and Mount Somers. These floods of liquid rock ran down in a southerly direction to the floor of Gebbie's Valley, while to the north they extended as far as the back of Quail Island and the eastern shores of Charteris Bay, and formed the long peninsulas which stretch in to the upper portion of the present harbour opposite Governor's Bay. These lava flows and the sedimentaries underlying them were rent at the same time by fissures, and through these poured liquid material which solidified sometimes as rock, and sometimes as volcanic glass, the latter known generally as pitchstone, being closely related to the obsidian which the Maoris used for scrapers and rude knives. Such injected fissures are called dykes, and, as they are generally of harder nature than the surrounding rocks, they stand up as walls above the surface. Good examples of these are to be seen near the summit of Gebbie's Pass, and particularly in the hills which surround the Harbour, but the last belong to a later period of activity.

The first eruptions were, however, mild in character compared with those which built up Mount Somers and the Rockwood Hills, but the second phase produced a volcanic mass which is probably greater in bulk than any other existing in New Zealand. What space of time elapsed before the second period commenced is impossible to say, but opportunity was

afforded for wearing down the original cones, and a part of the debris derived therefrom formed deposits of sandstone which have been quarried for building stone at Little Quail Island and at Governor's Bay.

THE LYTTELTON VOLCANO.

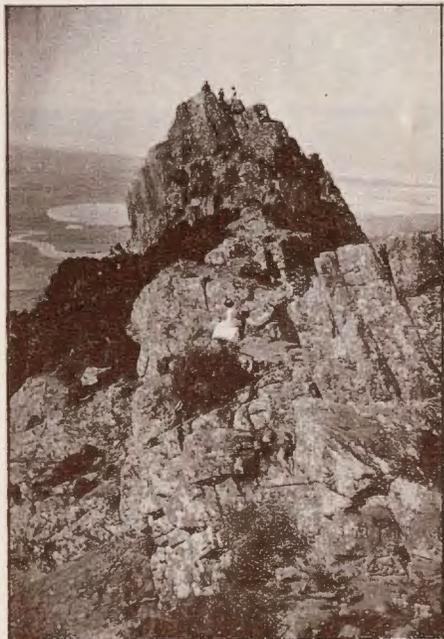
The centre of eruption appears to have moved from near Gebbie's Pass to the middle of what is now known as Lyttelton Harbour. From this vent poured forth enormous flows of lava and showers of stones and ashes. The latter form layers of rubbly rock interstratified with the lava, and are to be clearly seen in many places, but especially so in the old sea cliff which threatens the road to Sumner. The solid lava here forms masses which project beyond the more easily weathered fragmentary layers, and apparently overhang the road. Could one see the internal structure of the old volcano, it would disclose a similar interbedding of solid rock and rubble in all parts.

Radiating from the harbour as a centre, like the spokes of a wheel or like the cracks in a broken pane of glass, are numerous dykes, from mere ribands an inch or so in width, to masses, exceeding a hundred feet in thickness, cutting, like vertical walls, the solid flows and rubble layers. Some stand out far above the surface, owing to their resistant nature, and form notable features of the landscape, e.g., Castle Rock above Heathcote, the Giant's Causeway on Witch Hill above Rakaiia; but they also occur on almost every chain of the track, cutting across it nearly at right angles, and all, or nearly all, pointing to the neighbourhood of Quail Island. Some of these dykes have been quarried for building stone, notably that on Marley's Hill, which supplied the stone for the Cathedral and the Bank of New Zealand, and the one in Kennedy's Bush itself, from which the Colonial Bank building, now the Tourist Office, and other buildings in Christchurch are constructed. These dykes form, as it were, the ribs of the mountain, holding it firmly together and helping it to resist the enormous strains to which it is exposed before and during eruptions. They were formed at widely different intervals, and they differ much in chemical composition and in internal structure. Judging from the persistent nature of these dykes, it is clear that the mountain must have been split at times from top to bottom, and the liquid material, which welled from the fissures, must have looked at night like a red-hot streak across the country. At different points the discharge would approximate to those from a small volcano, and miniature lava cones were built up.

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Such can be seen in the small hill below Cooper's Knob, on one side of the valley leading to Colonel Heaton Rhodes' house, while, on the other side of the valley, exactly opposite it, there is another cone forming its counterpart in shape and the character of its lava.

By these outpourings from the interior of the earth, the mountain was built up, slowly, in all probability, destruction alternating with construction, till a giant cone was raised, rivalling Ruapehu or Egmont in size and form, while from a neighbouring centre near Akaroa a similar mountain arose. But the usual fate of loftily built volcanoes overtook these two. As building proceeded, the expansive force of the steam included in the lava was not equal to raising it to a great height unless under specially active conditions, and the volcano grew quieter and quieter. The crater at the top, with the pipe leading down from it, became choked up and this checked for a time the volcanic forces. But it was like tying down the safety valve of a boiler and stoking up the fires. The strength of the mountain was, for a time, more than sufficient, but at length it was not competent to resist the ever increasing strain. A mighty explosion took place, blowing away the top of the cone and leaving a gaping chasm now forming the harbour. The ragged ring of cliffs marking the edge of this great cavity can be well seen from Mount Pleasant, and, on looking west, from Cooper's Knob, the marked contrasts between the precipitous interior slopes and the long gentle slope facing the Plains producing a striking contrast, and furnishing one of the best scenic effects to be observed from the track.



Beken.]

[Photo.

Castle Rock—Te Titi o Kahukura.

MOUNT HERBERT AND QUAIL ISLAND.

After this great outburst, the centre of activity appears to have moved to the eastern side of the Harbour, and eruptions took place from the neighbourhood of Mount Herbert. On the edge of the crater ring a mountain was constructed, chiefly of flows of lava, which ran down in all directions and formed, to the north, the long gentle slope which reaches the sea at Diamond Harbour. The contrast between the easy gradient by which Mount Herbert is approached from this side, and the precipitous faces on the northern shore of the harbour is most marked. These eruptions do not appear to have been of a violent character, and they are not associated in any way with the formation of dykes. Stretching further to the southeast, past the shoulder of Mount Herbert, lie Mount Fitzgerald and Mount Sinclair, which were formed about the same time and in a similar manner.

The last dying flicker of volcanic action took place in all probability from Quail Island, although this may have been partly contemporaneous with the eruptions from Mount Herbert. On the island are the remains of a small crater partly filled with a level sheet of columnar basalt, lying over fragmentary material and layers of volcanic mud. This appears to have closed the history of Lyttelton as a volcano.

SUBSEQUENT HISTORY.

Its subsequent story deals with the degradation and dissection of the cone by water and other denuding agents. Attacks were made by the sea along the outer edge, and the wall, already weakened in all probability by the great explosion, was completely reduced in one place which allowed the sea to enter the floor of the crater. The ring was also broken at Gebbie's Valley, and deep gullies were eaten out on the flanks of the cone so that the wall which separates their heads from the slopes facing the harbour is at times of the narrowest width. In all probability the land has experienced a gradual settling down owing to the abstraction of material from beneath, and the loading of the surface with an enormous weight of volcanic matter, but numerous ups and downs have undoubtedly occurred before the present level has been reached, and even now there are signs that the crust is not really stable, and that just at the present a slight upward movement is taking place.

During times of elevation, the enlargement of the crater and the formation of spurs and valleys would proceed apace, and now, during a time of relative depression, the lower

courses of these stream-eroded valleys have been invaded by the sea, and we have such excellent examples of drowned valleys as Charteris Bay and Purau.

A special feature of the period following on the decline of volcanic activity was the covering of the surface with a coating of loose, soft, friable, yellowish loam, known as loess. It varies in thickness from a few inches up to more than twenty-five feet, and, being spread far and wide, it forms a notable constituent of the fertile soil for which these hills are famous. Its mode of formation is not quite clear, but it is almost certainly of glacial origin, and was swept over the hills by strong winds from the beds of glacial streams which at one period wandered over the Plains. Miniature dust storms can still be seen during a Nor'-wester, but the storms of former days must have been fiercer, and the loose material at their disposal must have vastly exceeded even that which is furnished by the river beds of the present time. Striking as the scene is now, what must it have been when from every valley of the mountains there issued a stream of ice, deploying fan-like on to the plains, and the peaks and ranges in their vicinity were clad with perpetual snow.



PORT HILLS MAORI NAMES.

By JAS. COWAN.

Te Tihi o Kahukura ("The Crest or Summit of Kahukura")—Castle Rock, on Port Hills, named after the great deity of the South Island tribes, the god whose symbol was the rainbow.

Te Irika o Kahukura ("The uplifting of Kahukura")—On the hills near where the old track went over the hills to Rapaki, so called because a small carved image of Kahukura, the God, was kept here in a sacred place. It was kept on a *whata*, or wooden platform, and there the priests went to consult the oracle.

Matuku-Takotako—A large cave in the hill face up the Cashmere Valley, not far below the terminus of the tramway line. A very ancient name, evidently brought from Polynesia. It was used by the ancient tribe Ngati-Mamoe, one of whose chiefs was killed there by Ngai-Tahu.

Omikihi also **Wai-mokihi** ("the place of flax-stick rafts")—The ancient swamp through (or near) which the Heathcote (Opaawaho) ran at the foot of the Cashmere Hills.

Te Pou-o-Tutaemaro—The point at the cutting near Redcliffs, where the hills come down abruptly to the Heathcote Estuary. It means "The Post of Tutaemaro," who was an ancient Ngai-Tahu explorer.

Te Kuru—The Cashmere swamp.

Rapanui—Shag Rock, Heathcote Estuary. Interesting because it is one of the native names of Easter Island, in the Eastern Pacific. It has several meanings, one of which may be given as "the root of the land."

Tauhinu-Korokio—An ancient Ngati-Mamoe pa which stood on Mount Pleasant, near Major Hornbrook's old place. The name refers to the two plants common here formerly, the heather-like *tauhinu*, and the small plant known as the *korokio*. There was a good spring of water close by, and this important fact no doubt determined the situation of the Ngati-Mamoe hillmen's village. The pa was captured by the Ngai-Tahu about the end of the seventeenth century. There is, in the folk-lore of the old Maoris, a "tapu" attached to the site of the ancient pa, and Maoris camping there have been taken mysteriously ill; This was attributed to the mysterious power of the "tapu."

O-kete-upoko—The summit of the hills above Lyttelton, meaning "The Basket of Heads." It was so called from a war incident of ancient times, when the Chief Te Rangi-whakaputa cut off the heads of several of the Ngati-Mamoe people whom he killed here, and, carrying them up the heights, placed them on the summit.

Te Whakatakanga-o-te-Ngarehu a Tamatea—That portion of the Port Hills crest extending from the high peak above Rapaki, to Oketeupoko (Lyttelton). It means the place where Tamatea left the ashes of his camp fire. This ancient explorer camped one night somewhere near where the old quarry is at the foot of Witch Hill.

Omawete—Cooper's Knob—A series of crags rising to an altitude of 1880 feet, was named by the Ngaitahu natives, Omawete. This name memorises, like so many others, an incident of the ancient wars. After Rangi-whakaputa and his men had conquered the various Ngati-Mamoe pas around the harbour, over two centuries ago, they found frequent diversion in hunting out the fugitive hapus. One day there was a skirmish in the forest at the foot of the tall volcanic pile of Cooper's Knob, and a chief of the Ngati-Mamoe, one Mawete, from Manuka pa, was killed there, and his name, with the prefix "O," meaning "Place of," was given to the spot where he fell.

Rapaki, (not Raupaki, as it is erroneously spelled on the maps), the small Maori village on Lyttelton Harbour, is a contraction of the full name Te Rapaki-a-Te Rangi-whakaputa, meaning "The waist-mat of Te eangi-whakaputa." H. T. Tikao, the chief man of Rapaki, says that two hundred years ago the warrior Te Rangi-whakaputa settled here awhile when the harbour-side fighting was done. He was one of the northern invaders, a kinsman and contemporary of Moki, Tu-rakau-tahi and other Ngai-Tahu conquerors at the end of the seventeenth century. On the beach below the present village he left his waist-garment, a kilt of flax or toi leaves, probably in connection with the act of "tapa"-ing the place as his possession, and from the fact of this "rapaki," which would be a "tapu" one, being cast there the place received its name.

Te Poho-o-Tamatea and Te Upoko-o-Mahuraki—The sharp, rocky peak overlooking the Maori village of Rapaki. The first name, meaning "Tamatea's Breast," was given by the Maori chief and explorer, Tamatea, who came from the Eastern Pacific in the canoe Takitimu, and who travelled overland to this district from Southland five centuries ago. A later-comer endeavoured to displace the famous name of Tamatea by giving his own to this peak. This man was Mahuraki (a dialectical variant of the northern Mahurangi), a Ngai-Tahu sub-chief, who lived three to four generations ago. The name by which he christened it, "Te Upoko-o-Mahuraki," means "Mahuraki's Head." But although this name is remembered and occasionally used by the people of Rapaki, it is the Poho-o-Tamatea that is most honoured and most often quoted.

Orongomai—The old Ngai-Tahu name of Cass Peak, the trachyte height which rises 1780 feet above the waters of Governor's Bay, overlooking the remnant of the ancient forest at Kennedy's Bush. It means "the place where voices are heard," or, literally, "Place of sounding-hitherward." The story is that when Te Rangi-whakaputa and his followers landed, in their search for the Ngati-Mamoe, after taking the pa at Ohinetahi, in Governor's Bay, the scouts entered the bush, and at the foot of Cass Peak heard the voices of a party of men in the bush; these men were Ngati-Mamoe, who had come across from their pa at Manuka, on the Plains side of the range. Led by the scouts—the "torotoro"—the invaders rushed upon the Ngati-Mamoe, some of whom they killed. The survivors fled over the hills to Manuka, a large pa which it is believed stood on a knoll at the foot of the range not far from Tai Tapu.

LYTTELTON BAY NAMES.

Corsair Bay and Cass Bay, as Hone Taare Tikao tells us, have Maori names which contain a reference not only to the ancient forests which clothed the slopes of the Port Hills and descended to the beach, but to one of the vanished practices of the Native people, fire-making by wood-friction. Corsair Bay was named by Te Rangi-whakaputa, Motu-kauati-iti, meaning "Little Fire-making Tree-grove," and Cass Bay was Motu-kauati-rahi, or "Great Fire-making Tree-Grove." The bays were so designated because on the shores and slopes above there were plentiful thickets of the kaikomako (*penantia corymbosa*), the small tree into which Mahuika, a Maori Prometheus, threw fire from his finger-tips, in Maori-Poynesian mythology, so that it should not be extinguished by Maui's deluge. Fire was obtained by the process of taking a dry block of the wood and rubbing a groove in it with a stick of hardwood—with an incantation to give more power to the elbow—until the dust and shavings became ignited. The kaikomako wood is used as the "kauati," the piece which is rubbed; the pointed rubbing stick which the operator works to and fro is the "kaurima." "Motu" in these two names is a tree-clump or grove. There are none of the ancient fire trees on the bay shores nowadays; the pakeha's *pinus insignis* and cocksfoot grass have long supplanted them.

JAS. COWAN, in "Canterbury Times," 11 February, 1914.

DISTANCES ALONG SUMMIT ROAD.

From DYER'S PASS to White's (Rapaki) Road	..	3 $\frac{1}{2}$	miles
Rapaki Road to Bridle Path	1 $\frac{3}{4}$	"
Bridle Path to The Cutting	1	"
The Cutting to Hornbrook's	$\frac{3}{4}$	"
Hornbrook's to Richmond Hill Spur	$\frac{3}{4}$	"
Richmond Hill Spur to Evan's Pass (Zig Zag)	1 $\frac{1}{2}$	"
From Dyer's Pass to Evan's Pass (Zig-Zag)	9	"
Evan's Pass to Lighthouse	4 $\frac{1}{2}$	"
From DYER'S PASS to Kennedy's Bush House	2 $\frac{3}{4}$	miles
Kennedy's Bush to Cooper's Knob	2 $\frac{1}{4}$	"
Cooper's Knob to Ahuriri Bush	$\frac{1}{2}$	"
From DYER'S PASS to Ahuriri Bush	5 $\frac{1}{2}$	"
From GODLEY HEAD LIGHTHOUSE to Ahuriri Bush	18 $\frac{3}{4}$	"

A ROUND TRIP.

From CHRISTCHURCH POST OFFICE to—	Mls.	Chs.	Yds.
Hillhyrst	3	17	12
Duff's Store	4	9	12
Tram Terminus	4	54	1
Dyer's Pass	6	64	1
Governor's Bay	8	39	1
Lyttelton Railway	14	29	1
Zig-Zag or Evan's Pass	16	62	1
Sumner Post Office	18	77	1
Heathcote Bridge	22	13	1
Christchurch Post Office	26	30	0
Packwood's to Duff's Store, via Dyer's Pass	0	70	0

HEIGHTS ABOVE SEA LEVEL.

Light House	.. 480 ft.	Cass' Peak	.. 1780 ft.
Mount Pleasant	.. 1637 „	Cooper's Knob	.. 1880 „
Castle Rock	.. 1487 „	Evans' Pass (Zig-Zag)	625 „
The Tors	.. 1270 „	Bridle Path	.. 1130 „
Witch Hill	.. 1215 „	Dyer's Pass	.. 1080 „
Sugar Loaf	.. 1630 „	Tram Terminus	.. 624 „
Marley's Hill	.. 1646 „	Duff's Store	.. 428 „

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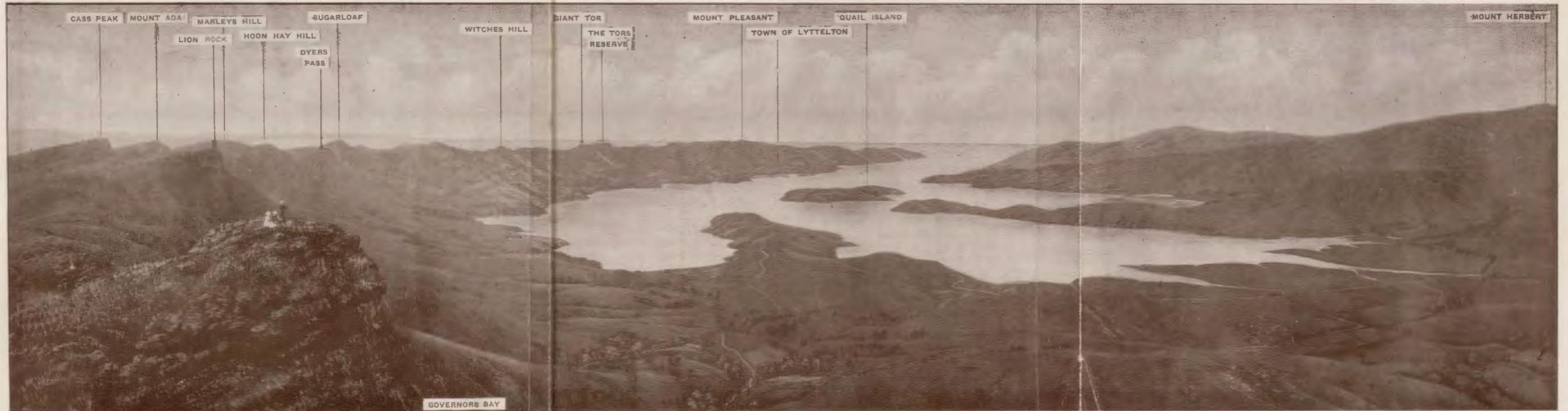
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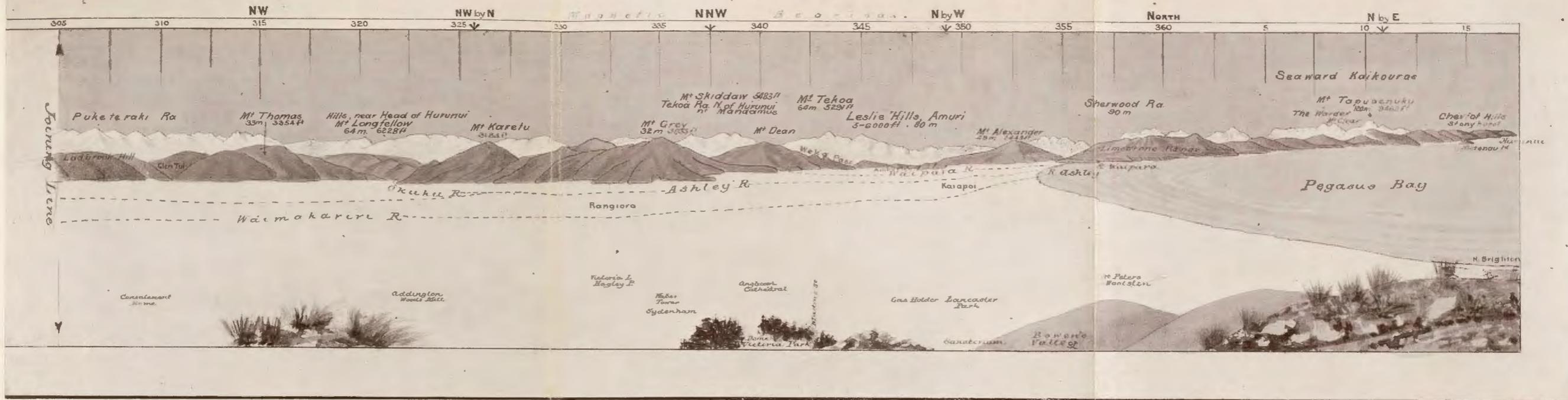
S. F. WEBB, Photo.

View from Clock Tower, Sydenham Post Office.



S. F. WEBB Photo.

View looking down Harbour from near Cooper's Knob.



PANORAMIC PROFILE OF THE HILLS VISIBLE FROM
THE SUMMIT ROAD, PORT HILLS, CHRISTCHURCH,
AS SEEN FROM THE SEAT NEAR DYER'S PASS.

NOTE.—There will be practically no change in the apparent positions and forms of the distant hills from whatever position in the neighbourhood they may be viewed, but their positions relative, or with regard, to land marks about Christchurch will be correct only at or about the spot from which the sketches were made.

WALTER F. ROBINSON, L.S., F.R.G.S.
School of Engineering,
Canterbury College.

1913.

