APPENDIX B.

GLACIAL SCENIC RESERVES OF WESTLAND.

By Arthur P. Harper, Late President of the New Zealand Alpine Club; Member of the Alpine Club, London; Author of "Pioneer Work in The Alps of New Zealand."

Dr. L. Cockayne and Dr. Teichelmann, in their joint article on these reserves which appeared in the annual report for the year ending 31st March, 1930, described very fully the vegetation, flora, and bird-life of this district, so I propose to confine myself to the physical and topographical features of reserves which, in my opinion, are certainly not surpassed and, in some particulars, probably not equalled by any similar alpine area in temperate latitudes (always excepting the Himalayas). They are well called "The Glacial Scenic Reserves," for within their boundaries are no less than twelve primary glaciers, also in the two great "neve" basins of the Franz Josef and Fox Glaciers (which will be described in more detail below) is to be found by far the largest snow-covered ice-field in New Zealand, and certainly larger than anything in Switzerland.

As these reserves are undoubtedly destined to be a great playground for the rising generation, I shall endeavour to give information which will assist parties to penetrate the lesser known portions of the reserves, as well as some data which will make it more interesting for travellers over the better-known routes.

Scenic Reserve 1019.

Topography.—Reserve 1019 (64,000 acres) takes in practically the whole watershed of the Karangarua River, and it is important to understand the topography. From Mount La Perouse (10,101 ft.) at the north-east corner of the reserve, the Main Divide of the Southern Alps runs about south for four miles, and then circles round in a south-westerly direction past the Footstool (9,079 ft.), Sefton (10,359 ft.), to Mount Brunner (8,678 ft.), thence it again goes south for two or three miles before turning south-west to the Haast Pass.

From La Perouse the Copland Range branches off to the west and divides Cook River from the Copland River (a branch of the Karangarua); from Mount Sefton the Karangarua Range runs for twelve miles rather north of west between the Copland and the Twain Rivers. From Mount Isabel the Hooker Range runs five miles to Mount Howitt due west, separating the McKerrow Glacier, which is the head of the Landsborough River, from the head of the Twain River, and then turns south-west to Fettes (8,092 ft.) and for about thirty miles runs parallel to the Main Divide. From Howitt a short precipitous offshoot goes west for about seven miles and divides the Twain from the Karangarua main stream, which rises near Mount Howitt and has a saddle leading into the McKerrow Glacier. The Hooker Range has therefore cut off the Karangarua main stream from the Main Divide. From Fettes Peak, an unnamed but very bold rock range extends north-west and forms the western boundary of the reserve.

The so-called main stream of the Karangarua is really not the largest; strictly speaking, it should be considered as a branch of the Twain River, which drains the very large ice-field of Sefton, whereas the Karangarua, above its junction with the Twain, is not glacier-fed.

Historical.—In 1889 the late Mr. C. E. Douglas, one of our greatest West Coast explorers, conducted the first exploration of the Landsborough River, and looked into the head of the Twain River and saw the Douglas Glacier, and in 1894 Messrs. Fyfe and Geo. Graham crossed from the Mueller Glacier and succeeded in also visiting this glacier. They returned to the east without attempting to reach the west coast. In 1894–95 I made the first complete exploration of the Main Branch and the Twain River when, accompanied by a Maori, we succeeded in reaching the headwaters of these rivers from the west coast. In 1908 Dr. Macintosh Bell, following my route, went in and examined the Douglas Glacier; in December, 1928, a party consisting of my daughter Rosamond, and Messrs. S. A. Wiren, R. Lucas, and C. Turner Williams and myself succeeded in making the first transinsular pass, crossing from the Hermitage to the west coast via Fyfe's Pass at the head of the Mueller Glacier and down the Karangarua River. In 1934 and 1936 Messrs. A. J. Scott, W. S. Russell, and C. Johnston went into the Twain from the east.

The Copland River was first explored and mapped by Mr. Douglas in 1892. In March, 1894, Mr. E. A. Fitzgerald (A.C.), with his guide Zurbriggen, using Douglas's map, succeeded in making the first transinsular pass via this river from the Hermitage over Fitzgerald Pass (6,863 ft.), not used since. I showed them a route back via Fox Glacier, and returned alone over a pass about a mile north of Fitzgerald's Pass, now frequently crossed and known as Copland Pass (6,950 ft.). Then, in company with R. Fiddian, completed the exploration of the glaciers at the head of the River. In 1905 Dr. Teichelmann (A.C.) and H. Newton (A.C.), with guides Clarke and Batson, made the first crossing of Baker's Saddle (7,148 ft.), and went down the Strauchon Glacier and out by the Copland branch to the west coast. This valley is now one of the best known on the coast.

Description.—Cassell's Flat is situated just outside this reserve at 680 ft. above sea-level. Like most of these flats in the heart of the great ranges, Cassell's is the centre of magnificent scenery surrounded by high rocky mountains, reaching the line of perpetual snow (see Fig. 1). It is roughly one mile and a half long and one mile wide, and into it three streams—the Main Branch, the Twain River, and Regina Creek—flow through magnificent gorges over high cataracts, which I believe are unique in New Zealand.

The structure of this piece of country is most interesting, for the three valleys centring on Cassell's Flat are typical hanging valleys—that is, they descend at a normal slope from heads of the rivers and then the valley-floor drops abruptly for several hundred feet into Cassell's Flat. In the course of ages the water has cut deep gorges at the entrances of the lower valley, and huge boulders, left by ancient