the foot of the range on which the Bendigo reefs occur. Also the extensive so-called Miller's Flat, between Arrow and Queenstown, which, to all appearances, represents an old channel of the Shotover River, and should, as such, be very rich, judging from the splendid yields obtained from the river workings higher up. Mr. Warden Beetham first drew my attention to this dormant field, the high prospective mining value of which is believed in by many miners in the district. Another very promising area I take also to be the extension of Macrae's Flat towards the Taieri River.

Older Drift.—This comprises all those enormous deposits of harder gravel and cement called "false bottom," "Maori bottom"—from its brown colour—upon which the newer drift rests in the extensive old lake-basins of the Manuherikia, Upper Taieri, Clutha, and other river valleys. Also, the cement and gravel worked on the tops of the ranges between Milton and Havelock, that remarkable cement deposit of the Blue Spur near Lawrence, and the false bottom of Weatherstone and Waitahuna Flats, which three latter, it must be borne in mind, represent also nothing else than lacustrine deposits, though small in surface extent, yet of comparatively great depth. The character and relation of all these deposits to the newer drift would at once suggest, to anyone acquainted with the gold fields of Victoria, the existence of runs or leads in their deepest parts or gutters; for, from the fact that they are all composed of the same kind of rock material as the newer drift, there is no reason why they should not be equally auriferous. But yet, on comparing the relative conditions under which deposition of water-worn material takes place in water-courses—river and creek channels—which latter the Victorian deep leads unmistakably represent, we find great differences; namely, whilst in a continuous water-course, with evenly falling bottom, the current is steady onward, deposition takes place all along, and—leaving exceptions, caused by turns and local obstructions, unconsidered—the heaviest material settles in the deepest part, it is not so in a lake. There the current of the water of a river, or and smaller water-course, on entering at one end, or any part round the circumference of the lake, gets suddenly checked either on account of the surface expanse or the depth, or both combined, of the stagnant mass of water, and the consequence is that the heaviest of the waterworn material (including, with regard to both the newer and the older drifts, most of the gold), settles along the side of the lake-basin, whilst towards the centre of the latter there is gradually less and finer material deposited. And this process goes on till the basin is ultimately filled up, though towards the other end or outlet of the lake the deposited material will then consist of an increasing thickness of poor and light stuff at the bottom, and a thinning stratum of heavy one at the top. Of course the more inlets or sources of supply the lake has, the more they vary in strength, the more irregularly they are distributed around the margin of the lake, and the nearer its outlet, the more irregularity will be observed in the arrangement of heavy and light material towards the latter part and the centre. For these reasons, therefore, the old deposits of the lake-basins mentioned do not, in my opinion, contain deep leads in the true meaning of the term, but what I think very likely is, that a certain width around the circumference of each deposit is auriferous and payable, or, perhaps, richly so—(there may be more than one layer of washdirt)—in front and near the mouths of old, or of those present main water-courses, which seem also to have been the sources of supply in olden times. And thus, these sides would, respecting the Manuherikia basin, for instance, conform with those of the present upper drift workings (Tinker's, Drybread, St. Bathan's, &c.). Only in cases of very circumscribed basins, there would be chance, especially if the inflowing currents were strong and much charged with material, of coarse stuff and gold being distributed all over the basins, though the heaviest stuff and richest gold would likewise be deposited partly on the inlet sides, partly on those rises on which the currents impinged; and, if these were steep, it would partly also slide down to the deepest parts of the basins. Of this feature, the Blue Spur furnishes, in my opinion, a striking example. In a long, but very narrow basin, the gold might also be carried by the current far down the centre, and if supplies came in at places down the sides, such a trough might prove auriferous for its whole or the greater part of its length, just according to the number and position of these supply channels. In this respect the valley of the Waipori (false bottom) offers, I think, by no means a bad chance. If anything deserves the term "lead," it would be the old drift-filled channels leading into or connecting two or more lake-basins lying in the same line of drainage, or the end channels leading towards the sea. Of such leads, some have been wholly or removed by denudation—they once existed over our heads, as Mr. Vincent Pyke aptly remarked to me; for instance, that between the Blue Spur and the false bottom of Weatherstone Flat, and part of the one that must have supplied the Blue Spur from the north-west, both which, with the denudation of adjoining parts of the latter itself, respectively furnished the gold to Gabriel's and Munroe's Gullies. The cement deposit on the top of the ranges between Milton and Havelock may also represent remnants of denudation of such a lead. However, I am convinced there are some channels of this kind yet existing, which it would be advisable to look for; for instance, two—one connecting the old drift-lakes of Weatherstone and Waitahuna Flats, and the other which fed the Blue Spur from beyond Munroe's Gully. In fact, I think, there is even a likelihood of the existence of similar deposits in that direction. From what I learned about the Cardrona workings, they certainly seem to represent a true old lead, and so does also a deposit Mr. H. J. Cope kindly informed me of, namely, a succession of cemented gravel hills, commencing at the Eight-Mile Diggings, Arrow River at a height of at least 500, feet above Arrow, and dividing into two branches—one terminating at Roaring Billy, the other at the Arrow River, about one mile from Arrowtown. This lead has in places been worked by adits, and found highly payable. In summing up my observations about the old drifts, I certainly think it not only very promising and advisable to prospect for the old channel between certain of the lake-basins mentioned, but also to test the false bottom of the lake basins themselves at the places previously indicated. The cheapest and most convenient mode of effecting these trials would, no doubt, be by boring.

In herewith concluding this report, I beg to return my cordial thanks to Mr. Mackellar, the Secretary for the Gold Fields, for his urbanity, and the kind and valuable assistance he afforded me in my work during the time of our joint travel, and to state that I found on the part of all—whether engaged or interested in mining—with whom I came in contact, an earnest desire to further, in every way, the object of my visit. In the subsequent descriptions of the reefs, I have given the names of those who principally aided me in my examinations, whilst I beg here especially to acknowledge my