As this report professes to deal only with those formations that yield alluvial gold, the older Secondary, Palæozoic, and schistose formations will be dealt with in the shortest manner possible. Some of them, it may be, contain alluvial gold, but this has yet to be proved. There are thick strata of indurated conglomerates and pebble-beds in the Hawkdun Mountains, and indurated angular breccias at the eastern end of the Mount Ida Range, both of which might contain gold; but no one has as yet thought of testing these deposits, and they would require a considerable percentage of the metal to pay for working, as the material would have to be crushed in a battery mill to set the gold free.

Oolitic, Liassic, and Permian conglomerates of a granitic character occur immediately to the south and west of the district reported on. These are likely to contain gold, and on more than one occasion gold has been reported as occurring in these rocks. Mr. John Buchanan, late Botanist and Draughtsman to the Geological Department, informed the writer many years ago that he had obtained gold from the conglomerates occurring between the Kaihiku Range and the Lower Mataura. To the south-west these rocks do not occur within the area mapped. Trias or Permian beds are possibly present in some parts of the Horse Range, on the north-east side of the great anticline, and hence their appearance in the extended classification, although not shown on the map nor in the sections, unaltered rocks older than the Cretaceous period being taken together as "old rocks."

The following scheme of classification includes all the rock-formations known to occur within the boundaries of the Otago goldfields, as on the map:—

Table of Formations occurring within the Otago Goldfields.

Formation.	Name of Series.	Character of Beds.	Principal Localities.
Recent	Recent	Sand- and gravel-beds, fresh water or marine	Widespread throughout the district.
Pleistocene and Upper Pliocene	Glacier-deposits ..	Angular detritus ..	Glacier-deposits, confined to the west and north-west parts of district.
	Old lake deposits ..	Well-rolled shingle, usually sandstone	Sandstone gravels forming terraces, and shore-deposits within the old lake-basins of the interior.
Lower Pliocene ..	Maori or terrace bottom	Sandstone gravels, clays and lignite at places	Old lake-basins; Switzer's; Kaitangata Coalfield, &c.
" " ..	Newer breccia conglomerate and quartz drift	Slaty breccias and gravels, apparently a river-deposit, quartz drifts, &c.	Criffel Face, Cardrona Valley; Devonshire Diggings, Tinker's and Drybread, Manuherikia Valley; Little Kyeburn, Maniototo Basin.
Miocene	Fresh water series ..	Light-coloured shales, greenish clays, quartz drifts with beds of lignite	Kawarau Gorge; Cardrona, Nevis, and Manuherikia Valleys; Ida Valley, and in part the Maniototo Basin.
Lower Miocene ..	Pareora series ..	Fossiliferous greensands underlain by quartz grits	Kyeburn River, Upper Kyeburn at coal-mine.
Cretaceo-tertiary ..	Upper series	Limestones and calcareous sands	Along the coast from Oamaru to Waihola.
" ..	Middle series	Marly clays, volcanic tufas, and greensands	Oamaru and Waitaki district, and the coast-line to mouth of the Molyneux; Skipper's; Naseby; Switzer's, and Lake Wakatipu.
" ..	Lower series	Shales and quartz sandstones with coal-seams; quartz grits and breccia conglomerates	Along the coast north of mouth of the Molyneux; inland from Naseby to Tuapeka; Switzer's; Bob's Cove to Skipper's, &c.; Lake Wakatipu district.
Trias-Carboniferous	Wairoa, Kaihiku, Maitai series	Sandstones and indurated shales	Kakanui Mountains; Kaihiku Range.
Devonian ..	Te Anau series ..	Indurated coarse breccias, sandstones and pebble-beds, shales, &c.	The Kakanui Mountains; Mount Ida and Hawkdun Mountains; Mount St. Bathan's, &c.
Metamorphic ..	Upper schists ..	Grey flaggy arenaceous schists, sometimes with quartz foliæ, but these not characteristic of the rocks	From Hamilton's to the upper part of Shag Valley; Silver Peak to Chain Hills, Dunedin; Taieri Gorge (lower) by way of Mount Stuart, across the Molyneux to the Pomahaka Valley and Switzer's, thence to the southern and central part of the Eyre Mountains.
" ..	Middle schists ..	Soft silky mica-schists with or without their somewhat regular laminæ of quartz	Lindis Valley; Arrow and Shotover Valleys; between Lawrence and Waipori.
" ..	Lower schists ..	Mica-schists, calcareous, strongly foliated with elliptic masses of quartz; siliceous and chloritic schists, with an abundance of magnetite, in crystals or massive	East slopes of the Richardson Mountains; greater part of interior Otago to the northern boundary of the provincial district; the eastern and southern limit is that of the upper schist in these directions.
Volcanic ..	Miocene volcanic rocks	Sheet and columnar basaltic rocks	Neighbourhood of Dunedin; Waihola.
" ..	Cretaceo-tertiary volcanic rocks	Sheet and columnar basaltic rocks	From the Maraewhenua River along the coast-line to Waihola Gorge; Upper Shag Valley, and south side of the Maniototo Plain; Taieri Gorge; Mount Highlay; Moonlight and Nenthorn Creeks, &c.