

crystalline foliated rocks traceable nearly continuously on the west side of the main watershed. The geological relations of these masses have not yet been satisfactorily defined, and it does not appear to be established whether any portion of them are undoubtedly pre-Cambrian. They are divided by Sir J. Hector into two series, of which the lower consists of gneiss, granite, etc., with an overlying mass of hornblende, micaceous, and argillaceous schists (probably metamorphosed Devonian); while the upper consists of argillaceous slates and schists, which are regarded as probably altered Silurian or even Carboniferous rocks.⁶¹ In Canterbury there is a central zone of micaceous, talcose, and graphitic schists, overlain by chlorite and hornblende-schists, and lastly by a quartzitic zone interleaved with schists.⁶² Crystalline schists and gneisses form the rugged mountainous ground of southwestern Otago. The centre of this province is occupied by a broad band of gently inclined mica-schists and slates. These rocks are the main gold-bearing series of Otago.⁶³

In Australia, large areas of granite and of crystalline schists occur, but their precise relations have not yet been worked out. Some of these rocks have been described by Selwyn, Ulrich, R. L. Jack, R. A. F. Murray, and others, as probably including metamorphosed Palæozoic formations. But there are not improbably portions of them referable to a pre-Cambrian series.

PART II. PALÆOZOIC

It has been shown in the foregoing pages that though the stratified pre-Cambrian rocks are generally separated by an unconformability from formations of later age, such a break does not always occur, and that in its absence no sharp line of division can be drawn by way of upward limit to the pre-Cambrian series. It is obvious that the physical conditions of sedimentation underwent no universal interruption at the close of pre-Cambrian time, that these conditions had already been established long before the Cambrian period, and that

⁶¹ "Handbook of New Zealand," by J. Hector, M.D., Wellington, 1883.

⁶² Haast's "Geology of Canterbury," p. 252.

⁶³ Hutton's "Geology of Otago," p. 31.