

not inconsiderable proportion of the "upper gneiss" of western Ross-shire. Possibly other sedimentary material, such, for instance, as any which succeeded the Durness limestones, may have been involved in the gigantic crushing movements that produced the younger or eastern schists. As the detailed work of the Geological Survey advances the sources from which these schists have been derived may be more fully known. But the great fact has been abundantly established that the movements which pushed the rocks into their present positions and imparted to them their existing foliation took place after Cambrian time, and before the period of the Old Red Sandstone. We have thus a notable example of extensive regional metamorphism during the Palæozoic ages.

In the central, southern, and eastern Highlands of Scotland, that is, throughout the hilly ground east and south of the line of the Great Glen, an important series of metamorphic rocks is largely developed, the true stratigraphical position of which is not yet certainly known. They consist in large proportion of altered sedimentary strata, now found in the form of mica-schist, graphite-schist, andalusite-schist, phyllite, schistose-grit, graywacke and conglomerate, quartzite, limestone, and other rocks, together with epidiorites, chloritic schists, hornblende-schists, and other allied varieties which probably mark sills, lava-sheets or beds of tuff, intercalated among the sediments. The total thickness of this assemblage of rocks must amount to many thousand feet. Some of its members are so persistent as to form recognizable horizons, and to afford a basis for some approximation to a stratigraphical arrangement of the whole. In Perthshire, for example, the following groups in descending order have been mapped by the Geological Survey:

Dark schist and limestone (Blair Athol).

Quartzite (Ben-y-Gloe).

Graphite-schist.

Calcareous sericite-schist, and sericite-schist with bands of quartzite. On this horizon occurs a great mass of epidiorite and hornblende-schist.

Garnetiferous mica-schist and schistose pebbly grits.

Limestones (Loch Tay). Hornblende-schists occur above and below this horizon.

Garnetiferous mica-schists, schistose grits, with pebbly bands and thick bands of "green schists." Hornblendic sills begin to appear in this group.