

Massive grits with schists and conglomerate containing pebbles sometimes as large as a pigeon's egg. (Ben Ledi, Loch Achray, etc.).

Zone of slates (Aberfoyle).

Pebbly graywacke and grit with black shales and limestone below (Pass of Leny).

The Loch Tay Limestone has now been traced completely across the country from the Moray Firth through the Grampian Mountains to the west of Argyllshire, and some of the other zones have been followed for many miles. The metamorphosed condition of the rocks varies considerably, not only according to their composition, but even along the line of strike of the same group. On the whole the alteration appears to be most intense in the Central Highlands, and to become less as the rocks recede from that area toward the northeast and southwest. One of the most singular and instructive instances of this variation is that which has recently been mapped by J. B. Hill of the Geological Survey in the district of Loch Awe. A series of grits, phyllites, and limestones, resembling ordinary Palæozoic sediments, has there been followed by him northeastward, and has been found to pass along the strike into the thoroughly crystalline schists of the Central Highlands. Mr. Barrow of the Geological Survey has found the metamorphism in Forfarshire to be probably connected with the protrusion of large bodies of granite which often passes into a variety of gneiss. After the great terrestrial movements by which the rocks were folded and metamorphosed, large bodies of eruptive material, notably granite, invaded the schists and produced extensive metamorphism, as already stated (p. 1040). The change is most intense near the granite, where sillimanite imbedded in quartz is a conspicuous mineral in the schists. A little further away comes a band in which kyanite is often abundant, while at a still greater distance the predominant mineral is staurolite. These three successive zones of contact-metamorphism can be found passing through the same band of aluminous schistose material as it recedes from the eruptive rock.

At present no definite opinion can be expressed as to the stratigraphical position of this important group of metamorphic rocks, which forms the greater part of the Highlands of Scotland. On the one hand, it is conceivable that they may all be pre-Torridonian. They may be of the age of the Loch Maree limestones and mica-schists above referred to (p. 1176); or they may represent some part of the vast inter-