

plateau north of that valley, and far to the south in Glen Lednoch between Comrie and Loch Tay. Several of these igneous intrusions consist partly of diorite and partly of granite, the more basic type being erupted prior to the more acid.

At the western margin of the basin on the lofty peaks of the Black Mount forest there is a terraced plateau of contemporaneous igneous rocks of Lower Old Red Sandstone age, pointing to the former extension of this volcanic series, the distribution of which is of importance in connection with the glaciation. These are pierced by plutonic rocks (granite), which have produced a certain amount of contact alteration in the lavas.

In the lower part of the basin of the Tay, which is almost wholly occupied by Old Red Sandstone, both the lower and upper divisions of that system are represented. The Lower Old Red Sandstone has by far the greater development, being divisible into a lower volcanic series and an overlying group of sandstones, conglomerates, and marls. Two great flexures cross the basin in a north-east and south-west direction, roughly parallel with the fault along the Highland border. One of these flexures forms a broad arch, exposing a great series of contemporaneous volcanic rocks in the Ochils and the Sidlaws; the other forms a great trough, in line with the valley of Strathmore, containing the highest members of this division in the basin of the Tay. The anti-clinal fold is prolonged far to the north-east into Forfarshire and Kincardineshire, where sandstones and flags appear in the crest of the arch. In the Ochils the total thickness of lavas, tuffs, and agglomerates in the north limb of the fold is about 6000 feet, and they were probably deposited on a gradually sinking area, nevertheless, some of the volcanic cones may have ultimately appeared above the level of the water and become subaerial. Rising out from underneath the overlying sandstones and marls, along the Highland border, the volcanic series again appears, though in a very attenuated form, consisting of andesitic lavas, which are associated with coarse conglomerates containing pebbles of volcanic rocks. Indeed, the lavas, conglomerates, and sandstones occur on the north side of the fault at Blairgowrie, and again at Crieff, where they rest unconformably on the metamorphic rocks. The broad tract of low ground between the Sidlaws and the Highland border has been carved out of the softer sandstones and marls overlying the volcanic series. The river Isla, when it enters the area occupied by this overlying sedimentary series, is deflected towards the south-west till it joins the Tay.

The long interval which elapsed between the Lower and Upper Old Red Sandstone periods was marked by great denudation of the members of the lower division of that system. The strata were thrown into anticlinal and synclinal folds, the axes of which are roughly parallel with the trend of the fault along the Highland border. And further,