

accumulations of the intervening tract (Fig. 75). It is possible approximately to measure the amount of vertical displacement involved in this movement. The various sedimentary formations of the valley—Upper Silurian, Old Red Sandstone, and Carboniferous—cannot on the lowest estimate have a united thickness of less than 20,000 feet. They are all shallow-water formations. We are therefore shut up to the conclusion that the amount of subsidence in central Scotland must have been at least 20,000 feet, or about four miles. This enormous displacement no doubt went on slowly and intermittently, while at the same time the regions of the Highlands and Southern Uplands were being uplifted. The subsidence may have ceased for prolonged periods, and may have been subsequently resumed. All we can say is that it lasted from the Lower Silurian, at least to the close of the Carboniferous period. During that enormously protracted interval, the subterranean movement was not a mere uniform depression of the area. There were local uplifts here and there, which brought older deposits up to the surface again. And contemporaneous with all these underground disturbances, continuous denudation of the surface went on apace. The evidence of ancient erosion is not less striking than that of later times. Thus thousands of feet of the lavas, conglomerates, and sandstones of the Lower Old Red Sandstone had been removed from the area of what is now the Firth of Tay before the Upper Old Red Sandstone was deposited. The whole Carboniferous system down to the lower limestones was stripped off some parts of Ayrshire before the Permian sandstones were laid down. The story of the denudation of the Midland Valley, like that of the rest of the kingdom, is thus by no means a simple one. On the one hand, it carries us back far into the records of Palæozoic time; on the other, it tells of the