

having been impregnated by very hot vapors and solutions emanating from the granite.

**Alteration of the Intrusive Rock.**—Reference has been made above (p. 948) to the possible alteration of composition in an eruptive mass by fusing into itself some portion of the rocks through which it is intruded, and also to the remarkable change superinduced upon intrusive sills of diabase by contact with carbonaceous strata. Dr. Stecher, to whom I sent a carefully collected series of specimens illustrative of the intrusive sheets of the basin of the Firth of Forth and their contact phenomena, has investigated this question and obtained some interesting results. He shows that along the edges of contact with the sandstones or shales these diabases present a great abundance of well-defined crystals of olivine, that as the rock is examined progressively further from the contact these crystals become more or less corroded, while in the centre of the sheet they so entirely disappear that the rock appears as a diabase without olivine. He finds that the interior parts of the mass are more acid than the exterior parts, and he attributes this difference to the incorporation of silica from rocks (sandstones, etc.) broken through by the diabase. The outer olivine-bearing selvage he regards as representing the original composition of the rock at the time of its extrusion, and he thinks that the assimilation of acid material by the central still fluid and slowly cooling portion led to the corrosion and re-solution of the olivine which at the time of extrusion, as proved by the marginal selvage, was already perfectly crystallized out. In some of the rocks he found a surplus of silica which had crystallized as quartz. Recognizing that the first portion to take definite crystalline form would be more basic than the still liquid