in the irregularitie[illegible] the sili roof. Where the quartzites are in contact with [illegible]abbro, very little metamorphism has taken place.[1] Th[illegible]planation also accounts for the absorption of the quartzites by the red rock. The red rims around the quartzites in the gabbro may be red rock which has frozen to the quartzite. The blocks with the red rim then sank into the gabbro zone and were caught when the sili solidified.

The composite sills, as described above, sometimes have a basic upper contact. This basic layer has a specific gravity of 2·966 and hence cannot represent the quickly chilled original magma, for in a sill which is half granite (micropegmatite), the specific gravity of the original magma after solidification and cooling would be 2·80. Hence there has been some differentiation of the basic elements to the cooler part of the magmatic chamber followed by differentiation under the action of gravity. A similar phenomenon of differentiation towards the cooler parts of a magmatic chamber has been described by Lawson.[2] In this case, the intrusive mass is a dyke 150 feet wide with the following variations in chemical composition.

| | I | II |
|---|---|---|
| $SiO_2$ | 47·83 | 57·50 |
| $Fe_2O_3$, FeO | 4·57 | 5·07 |
| $Al_2O_3$ | 30·28 | 23·44 |
| CaO | 6·72 | [illegible]·32 |
| MgO | 4·32 | [illegible]·6 |
| $K_2O$ | trace. | 0·45 |
| $Na_2O$ | 1·30 | 2·01 |
| $P_2O_5$ | 2·19 | 2·02 |
| Loss on ignition | 2·05 | 2·25 |
| S.G. | 3·028 | 2·856 |

I. At the contact of the dyke wall.
II. At 75 feet from the contact, the middle of the dyke.

These two extreme types grade into each other and are considered as differentiates from an original homogeneous magma, differentiation being due to the difference in temperature at the

[1]Bailey, W. S., U. S. G. S., Bull., 109, p. 105.
[2]Lawson, A. C., Am. Geol., vol. 7, 1891, p. 153.