(3) No shatter contacts were seen in any of the sills.

(4) The heat consumed in such a series of reactions, which are necessary under this hypothesis, would be very great and it is doubtful if the magma contained such a quantity of heat.

The remaining hypothesis is, that the granite (micropegmatite) in the composite sills was formed by differentiation in place.

This hypothesis is the one favoured by the author. In this case, there was an intrusion of a magma whose composition, in the case of any single sill, was the average of the whole contents of the sill in question. These sills have in some cases basic upper and lower contacts. The homogeneous magma which filled the composite sills would cool first along the contacts and hence the upper and lower contacts of the sill would be basic. Differentiation, acting on the remaining fluid portion, would cause the heavier constituents under the influence of gravity to gather in the lower part of the chamber concomitantly with the collection of the acid differentiate towards the upper part of the chamber. A similar distribution of acid and basic material in a laccolith has been described by Pirsson. A vertical section across the Shonkinsag laccolith[1] is as follows:—

Rock type.	Thickness in feet. (centre)	Thickness in feet. (outer wall)
Leucite basalt porphyry	5	10–15
Dense shonkinite	5	
Shonkinite	5–6	
Transition rock	3	
Syenite	25–30	
Transition rock	15	
Shonkinite	60–70	75
Leucite basalt porphyry	15	15
	140	100

The combined effect of convection and crystallization is used to explain the above occurrence of rock types in the laccolith. The same result could be obtained by differentiation under the

[1]Pirsson, L. V., U. S. G. S. Bull 37.