

action of gravity. This latter explanation is more applicable to differentiation in sills on account of their lateral extent. In the case of the Shonkinsag laccolith, there is direct evidence that the syenitic facies is not due to assimilation in place of the surrounding Cretaceous sediments, for the composition of the laccolith is dominately alkaline, while that of the enclosing sediments is salic. Another example called the Lugar sill is described by Tyrrell.¹ This intrusive mass 140 feet thick, enclosed by sandstones and shales, differentiated according to density into the following zones:—

	Rock type.	S.G.
Upper part 35 feet thick..	Teschenite, coarse, plus analcite.....	2.64
	“ normal.....	2.70
	“ camptonitic.....	2.98
	Menchiquitic.....	2.99
Central part 51.5 feet thick.....	Picrite.....	3.01
Lower part 17.5 feet thick	Teschenite, camptonitic.....	2.81
	“ normal.....	2.71

Tyrrell excludes assimilation in the formation of the above magma. This seems perfectly logical from the low percentage of silica and the presence of analcite in the resulting rocks.

In the Purcell sills, it is probable that assimilation of some of the enclosing quartzites took place, but assimilation of this kind is held to be a minor factor in the formation of the granite (micropegmatite) in the composite sills. Occasionally blocks of quartzites were found in the sills. When these xenoliths occur in the granite, they are charged with needles of hornblende which greatly resemble the hornblende of the gabbro. No contact aureole of micropegmatite was found around these blocks. In the gabbro the xenoliths only suffered a baking, the contact between the quartzite and the gabbro being sharp

¹Tyrrell, G. W., Trans. Geol. Soc. of Glasgow, vol. 13, 1909, p. 298.