

biotite. Under the microscope the grains of quartz, whose average size is 0.08 mm., shows a pitted structure as if acted upon by a solvent. Biotite is present in large amount. This difference in degree and kind of metamorphism between these two laminae suggests that the texture as well as the composition had some influence on the contact metamorphism induced by the sill on the enclosing sediments. In the St. Mary sills, where a sill 140 feet in thickness was intruded into fine-grained argillaceous quartzites, the contact effects are very slight and extend for a distance of 3 feet from the upper contact. The only result visible in the hand specimen, is a slight baking of the sediments. Under the microscope, this baking is seen to consist of a slight coalescence of the quartz grains whose average diameter is 0.09 mm. Muscovite, which, in general, is restricted to the contact metamorphosed sediments, is present in rod-like individuals. Biotite, common to all the sediments of the Aldridge formation, occurs in irregular masses 0.49 mm. in diameter.

Summary of the Contact Metamorphism.—The sharp line of demarcation between the sill and the sediments is worthy of notice, for though, as the microscopical examination showed, there is a gradational change from sediments into granophyr, yet this change takes place in a zone with a width only a small fraction of an inch. The very small amount of contact metamorphism induced by the intrusion is perhaps what might be expected, when the intruded rock is a fine-grained quartzite. It consists of a baking of the sediments for a maximum distance of 3 feet from the contact, with the formation of muscovite and the transference of ferric constituents from the gabbro into the quartzites for the distance of 1 foot.

THE STRUCTURE OF SILLS.

The Moyie Sills.—One of the finest, as well as one of the most easily accessible examples of differentiated and undifferentiated sills, is exposed on the western slope of the mountain west of Kingsgate, B.C., on the International Boundary line. This section was described in some detail by Daly¹.

¹R. A. Daly, Summary Report, Geol. Surv. Can., 1904, p. 98A.
R. A. Daly, Amer. Jour. Sci., 4th Series, vol. 20, 1905, p. 185.
R. A. Daly, Festschrift zum Siebzigsten Geburtstage von Harry Rosenbusch, 1906, p. 203.