

and various vicissitudes have since then interfered with the work. However, as some of the facts observed are of interest it is proposed to give them here without attempting to elaborate them so fully as was originally contemplated.

The dykes of the Rainy Lake region show in a marked degree that variation from a fine texture at the dyke walls to a coarse texture in the middle of the dyke, which is more or less characteristic of dykes the world over. In the abstract referred to it was stated that "On examination of the dykes in question, it became apparent that this variation in the physical appearance of the dykes is not simply one of *texture* or degree of coarseness of the constituent minerals, but it is rather the incidental concomitant of important *structural*, *mineralogical* and *chemical* variations which appear very constantly in the same way in different dykes." It will be the object of the present paper to establish this general statement by giving some account of the facts upon which it is based.

A dyke about 150 feet wide which traverses Stop island on the south side of Rainy lake, in which the variations alluded to are strongly accentuated, will be first described somewhat in detail. From this dyke a series of four specimens was taken, viz.:

I at the contact with the dyke wall.

II at four feet from the contact.

III at fifteen feet from the contact.

IV at seventy-five feet from the contact (middle of dyke).

Textural variation.—To the unaided eye there is apparent a very distinct gradation in texture from that of an aphanitic rock at the contact to that of a coarse gabbro or diorite in the middle of the dyke. The gradation is rapid in the first four feet, less so from four feet to fifteen, and scarcely perceptible from fifteen feet to the middle of the dyke; the rock on which the observations were made in the field presenting a continuous, clean, fresh, glaciated surface. In order to arrive at some definite information regarding the gradation in texture, careful measurements were made of the constituent minerals in thin sections of the different specimens. The following are the results of these measurements:

I Ground mass.

Pyroxene—largest grains..... .0315 mm

Ave. diameter..... .030 mm

Feldspar in slender needles.

Ave. size..... .004 × .052 mm

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