

conformable upon the Laurentian; the assumption being always that both assemblages of rocks were composed of metamorphosed sediments. The answer was held to hinge upon the parallelism or absence of parallelism between the foliation of the Laurentian granites and syenites and the planes of bedding and schistosity of the rocks which are in contact with them. Bell, Dawson, Selwyn, and McKellar contended for a conformable sequence. Logan is silent on this question, but seems to have been in no doubt as to the unconformable superposition of the true Huronian of Lake Huron upon the Laurentian. Hunt has always contended for an unconformity, but as he also had in mind the true Huronian, which he once regarded as Cambrian, his contentions do not seem to apply to such rocks as are clearly Archean and intimately involved with the Laurentian gneisses. It is therefore fair to say that the drift of opinion in Canada, and probably also in the United States, is in the direction of conformable sequence throughout the Archean, without a break between the lower (Laurentian) and upper (Ontarian) systems. This view has recently been emphatically endorsed by Professor Alex. Winchell* as a result of his observations in northern Minnesota. Dawson has recently, as a result of his studies of analogous conditions on the Pacific coast, thrown over his earlier opinions as to the conformable sequence between these two divisions of the Archean on the Lake of the Woods, and is now in accord with the writer as to the nature of the relations which obtain there, and which will be set forth in the sequel.†

Irruptive Contact on Lake of the Woods.—Up to the date of the publication of the writer's report on the geology of the Lake of the Woods (1885), the possibility of any other relationship between the two great divisions of the Archean than those of conformity or unconformity do not seem to have been entertained. In that report the writer pointed out that the relationship was one of neither conformity nor unconformity, but of an entirely different order. Evidence was adduced in some detail to show that the conditions of the contact between the Laurentian and the Keewatin are essentially those which obtain between any Paleozoic or later intrusion of granite and the bedded rocks through which it breaks. The contact was shown to be a brecciated one, the granitoid gneiss ramifying through the schists in apophyses, both transverse and parallel to the strike of the schist, and holding in abundance fragments from the Keewatin formations, which had clearly been broken off from the latter while it was in a hard and brittle state and had found their way into the Laurentian often for considerable distances from the contact, as well as more notably in its proximity. The conditions observed indicate clearly that we had no question of conformity or unconformity to deal with, but with the contact of an irruptive igneous mass, of

* Geol. and Nat. Hist. Survey of Minnesota, 15th Annual Report, 1886, pp. 181, 190, et seq.; 16th Annual Report, 1887, pp. 335, 336, 350, 364, et seq.

† Annual Report Geol. Survey of Canada, Vol. II, N. S., 1886, p. 13n.