

map of the Blairmore-Frank Coal Fields,¹ supplemented by data obtained by the writer in the country south of that shown on Leach's map, is about 550 square miles. Shortening the width of the formation due to faulting has been allowed for when information in regard to it was available.

Supposing a former extension westward of ten miles beyond their present width, the area originally subjected to the deposition of volcanic sediment may be conservatively placed at 600 square miles, with a maximum length of fifty miles from north to south, and a width of about fifteen miles. Assigning a minimum thickness to the formation of 1000 feet (a moderate estimate) and supposing them to thin out gradually to nothing toward the north, south, and east (neglecting for a moment their probable former extension westward from the longitude of Crowsnest mountain) we arrive at a volume for the volcanics of about thirty-five cubic miles. The inferred westward extension of the formation is wholly uncertain as regards quantitative data, but it seems probable that there should be assigned a total volume for the volcanics of about fifty cubic miles.

CONDITIONS OF DEPOSITION.

Summary.

It is evident from the stratified nature of the deposits and their conformability with and gradation into both the underlying Dakota and the superincumbent Benton that the volcanics are very largely of subaqueous origin. Furthermore the large number of water worn fragments of considerable size in many beds, the frequent false bedding, and the occurrence of coal in at least one locality indicate that the formation was largely deposited in shallow water. The unsorted character of numerous individual layers, and their lenticular nature supports the same conclusion; and it is possible that some beds are subaërial in origin, laid down where transporting and classifying currents did not sort the material.

¹Accompanying Part A, Ann. Rept. Geol. Survey, Canada, vol. XV, 1900.